

**UMR-IWW System Navigation Study
Combined NECC/ECC Meeting**

November 14, 2007

8:00 AM to 3:00 PM

Crowne Plaza St. Paul Riverfront

Attendees

Butch Atwood	ILDNR	Bill Franz	USEPA	Paul Rohde	Waterways Council
Ken Barr	CEMVR	Barry Johnson	USGS	Tim Schlagenhaft	MNDNR
Gretchen Benjamin	WI DNR	Tom Keevin	CEMVS	Heather Schoonover	IATP
Doug Blodgett	TNC	Jerry Knapper	Ingram Barge	Terry Smith	CEMVD
Kevin Bluhm	CEMVP	Martin Konrad	IADNR	Rebecca Soileau	CEMVP
Tom Boland	MACTEC	Dick Lambert	MNDOT	Chuck Sptizack	CEMVR
Dru Buntin	MODNR	Catherine McCalvin	TNC	Janet Sternburg	MODOC
Jack Carr	CEMVR	Barb Naramore	UMRBA	Holly Stoerker	UMRBA
Mark Cornish	CEMVR	Katie Nelson	CEMVR	Todd Strole	TNC
Jeff DeZellar	CEMVP	Rick Nelson	USFWS	Scott Whitney	CEMVR
Jon Duyvejonck	USFWS	Tammy Nicholson	IA DOT	Rich Worthington	CECWPD
Al Fenedick	USEPA	Don Powell	CEMVP	Scott Yess	USFWS
				Randy Urich	CEMVP

Actions

Responsible	Action	Date Due	Done
Barr	Send electronic copy of RED benefits broken out by state to NECC/ECC.	23-Nov-07	1-7-08
Barr	Create simplified funding slide and send to NECC/ECC.	16-Nov-07	11-19-07
Barr	Mail Goals/Objectives Report	23-Nov-07	11-1-07
Barr	Set-up conference call Tues, 15 Jan 08, 10:00 am	15-Jan-08	1-2-08

Minutes

8:00 Introductions

Barr

8:15 Re-evaluation Report Comments

Carr

Presentation 1

- Carr shared overview of comments received on the products that went into the Re-evaluation Report (Global Grain Model, Non-Grain Traffic Forecasts, Shipper Response Studies, Survey Model, and general comments).
- Carr also presented other areas of study that need to be addressed.

Rohde Did you say rail capacity report received favorable comments?

Carr Favorable comments were- we like having you consider rail capacity. Idea was good. Comments did say this report didn't go far enough.

Rohde It needed to be more quantitative.

Carr Our reviewers would have liked a more detailed quantitative study.

Spitzack We went through process of EPR panel commenting, Corps responding, and EPR writing report on process. They will write a final executive summary that you will see.

Schoonover Interim report said cost/benefit section is still under review. Did EPR see that?

Spitzack Yes, they saw B/C information at the beginning and commented on the write-up which included B/C ratios. The final interim report will include cost-benefit information.

9:45 Re-evaluation Report Discussion

Spitzack

Presentation 2

Toast to WRDA:



- Spitzack covered Re-Evaluation report schedule.
- Spitzack also mentioned the Corps did not receive a lot of feedback from partners and stakeholders. Got a letter from UMRBA, report from Mark Beorkrem of the Nicolette Island Coalition, letter from Fish and Wildlife Service requesting review of global warming in report, Comments from Heather Schoonover on assumptions and sustainability of agriculture in future.

Schoonover: We reviewed trade trends in ethanol (too low in report) switch grass, oil crisis, climate concerns, nothing about agriculture crashing.

- Spitzack discussed multi-modal considerations, global trade increasing and challenges to transportation infrastructure. He mentioned explosive growth in containers and demand on truck and trailers.
- Emphasized movement from project by project approach by Corps to system wide adaptive management approach.

Barr: Will stakeholders see responses to their comments as a letter response?

Spitzack: Yes, responses are drafted, just not yet sent out.

10:30 NESP Implementation Strategy Part One First Increment Plan Navigation

Spitzack

- Spitzack noted we will have a teleconference prior to next meeting on FY09 workplan.

- There will be a workshop with stakeholder groups to discuss goals and objectives at system level and prioritizing. Will get into reach planning. Kick-off meeting in April on Pool 5 effort.
- NESP first report to Congress in 2009. Need to determine elements to emphasize in Congressional Report.
- Jeff Stamper has worked out four scenarios as to how implementation would happen at different funding levels.
- Overview of construction schedule for locks.

Lambert Question on lock closures on UMR and IWW

Spitzack It's a matter of where work is done. Can they utilize other lock chamber? Stamper will call navigation people to discuss closures and when they are most appropriate. Will verify plan with carriers.

Barr When will Stamper make that meeting/call?

Spitzack I suspect January. Report needs to be done by February.

- Prices are in constant dollars on slides. There will be quite a difference in real cost at time of construction.
- Public involvement: UMRS website out in February. Will show watersheds and projects and stage of development. Newsletters out in January-will discuss WRDA. The PDT is discussing public meetings now.
- Corps and FWS met about collaborating and willingness to co-chair River Council.

Nelson re: Corps and FWS meeting: We are trying to make sure we are clear on coordination and collaboration. Some things we will have to deal with (ex: Endangered Species Act Sec 7). Don't want to hold up project work. Also we discussed how to get buy-in of our management.

Barr Staffing and good communication was a topic also. Need dialogue at PDT level.

Rohde What is Sec 7?

Nelson It says if federal project effects endangered species, then Endangered Species Act requires consultation between Corps and FWS on how to address effects to endangered species. We also talked about role of science panel and system goals and objectives.

Rohde Were there minutes we could review?

Spitzack There were no minutes-we have notes but pretty informal. I can get them to you.

10:30 WRDA Update

Spitzack/Worthington

McCalvin We are still unclear about the river council and what's in WRDA.

Spitzack With regards to institutional arrangements we discussed the FWS being co-chair. We still need to discuss that with stakeholders in general. NECC/ECC should define now how River Council should be shaped. Most of work needs done at regional level. NECC/ECC should set goals at reach level. Need to use river teams more.

McCalvin The role of NGOs on river teams is an informal role. Considering the big role teams will play for NESP, we would like to see a more formal opportunity for NGOs on river teams. What are your thoughts for developing an Illinois River Team vs. integrated with current teams?

Nelson We discussed your second question. Other states raised concern that if IL had river team that may give them a leg up on additional funding for projects. States didn't support it. There needs to be discussion about how we will incorporate NGOs. We need to set some schedule for

this year. Lay out questions on role of teams and set schedule to resolve. This will be a big piece of 2009 report to congress since there will be no construction progress at that time.

McCalvin We need to think about institutional arrangements and get calendar set or permanent process.

Soileau The things you suggested are part of our plan. Your input is important and it will be important to get stakeholders to help develop plans or revise them.

Whitney Isn't implementation guidance important to guide us in this. Do we want to get ahead of ourselves?

Spitzack We need an active approach with a willingness to adapt to guidance requirements.

Nelson Rich Worthington is engrained in process. It's easy to get feedback from him.

Worthington Let me make a clarification, what I'd like to do: guidance from Washington should be minimal. In Washington they should deal with big issues, set national and regional levels, delegate authority to convene panel. How that panel gets integrated into institutional arrangements and River Council should be hashed out regionally or locally. Second part is how much in weeds ASA wants to get. We don't know yet. I want to share draft guidance informally with NECC/ECC before it goes further.

Benjamin For implementation guidance, who creates it? Are we competing with other projects like Everglades?

Worthington: Yes, each needs guidance. Secretary's office will establish their team and HQ will work with that team.

Benjamin On Institutional Arrangements should we be quite?

Worthington We at headquarters want to be quite on institutional arrangements. In terms of states communicating desires to administration that would be appropriate.

Sternburg (addressed to Worthington) What is the timeframe for a draft of guidance to NECC/ECC?

Worthington Within a month I hope to have a draft to share with NECC/ECC before meeting with ASA.

McCalvin Should we wait for that draft or be doing something now?

Worthington Depends on topic. Areas like what NGO's roles should be- move forward. Implementation guidance will deal with what is in legislation.

Spitzack What about concept of independence?

Worthington NGO community was responsible for that.

McCalvin I think we were trying to make it look like task force for Everglades... I'm not sure what intention was behind it.

Worthington What should it mean?

McCalvin I'd like to see River Council be independent from process and from Corps.

Rhode We agree with that definition.

Worthington Independence would be interpreted as input from collaborative process where as states, agencies, NGOs, and public has input into decision making process.

Worthington (read passage from law) According to legislation- panel has two roles: provide independent guidance, and consultation to rank proposed projects.

Spitzack WRDA provides two specific roles. It could be in a collaborative process.

McCalvin In terms of setting up process, Rebecca suggested sending out draft reports. Do we want to set-up benchmarks and list issues we need to resolve? I'd like to see that.

Spitzack I would like to see that, too. Need to work with HQ and I think everyone will support it. Have a teleconference. This has to be considered by River Resources Teams as to how they see this affecting them.

Barr I think we can get focus with river teams now that we are in implementation phase.

Benjamin In charters it's all governmental.

Barr Workgroups excluded NGOs?

Benjamin NGOs can't vote. But they do try to get to consensus.

McCalvin Voting for how projects are ranked may be important.

Soileau There are two docs: Project Management Plan from Corps, other is where we left off on operation of River Council.

Barr Introduced Todd Strole. Todd is an IPA assigned to St. Louis District from TNC.

Strole Interested in floodplain restoration and how we could bring our experience and planning.

Barr: Timing is good-in third quarter we will do geomorphic reach assessment.

10:13 NESP Implementation Strategy Part Two

Barr

First Increment Plan Ecosystem

Presentation 3 and 2 Handouts

- Barr went over Stamper's funding alternatives slide.
- Note, in 2007 we got 14 million, not 50 million as forecast on the slide.

Nelson 260 a year for Navigation?

Barr There is a more recent update than this diagram.

Nelson Peak year of 260 million, what would be current number?

Barr Base plan, eco about 130 million. Peaks don't happen in same year.

Benjamin There's also theoretically a 10 million increment of LTMP that should be added. Will you take that into account in future?

Barr As a group we need to. It will have to come back into formula. Since these are authorized amounts we could take 10 million and add it to this. Then when we don't get full funding, what happens to the splits? We need a strategy.

Spitzack It adds a third element to consideration of allocation on funding.

Barr Perhaps EMP minimal sustainable- approach? I don't know answer.

Barr Presents reach slides on Ecosystem Base Plan:

- Real Estate cost will be a real cost to specific projects above it on slide 2. Won't show up on geomorphic reaches slides. Sums to 300, first time we are showing cultural resource work. 78 small projects not included in 227 at bottom.

Benjamin 100 million dollars on fish passage- if we spend less, can we move 40 million to other projects?

Barr As I understand authority, fish passage is authorized at a specific amount but not sites. Construction authorization will wait until re-authorization after first increment. We wouldn't move funding to other activity. Same for hinge point.

Spitzack The language in WRDA- does that support that or did they just list projects and put Dollar amount?

Worthington Fish passage number is indexed to 2006 and is ??? million for four passages and 19.

Schlagenhaft Do we have 10 specific projects identified for floodplain restoration?

Barr no, 10 (500 acres a piece) for floodplain restoration. 35,000 acres and 35 million a year.

Worthington Cost of individual project shouldn't exceed 25 million.

McCalvin Under adaptive management we could change these preset sizes?

Barr Authorization is to do these types of activities, so yes.

McCalvin For system level, given appropriations won't be amount we want, how will we deal with questions system wide of accomplishing goals –prioritizing goals between reach to reach.

Barr Each floodplain reach has unique requirements and when reporting back to congress we should report equitable progress of each reach river floodplain reach.

Johnson Adaptive management line, what's included?

Barr 136 million over 15 years divided by 4 and put one in each reach.

Johnson What types of things are paid for in that money?

Barr These types of meetings, systemic tools, science panel. Restoration Response Monitoring and Evaluation (RRME) would be collecting data after. Above 1% limit on monitoring, typically seen in projects elsewhere.

Worthington Setting individual project goals on tiered system, setting those goals and monitoring progress with performance measures would be project funded activity?

Barr Some, but others will be out of this RRME.

Worthington It seems like congress wanted a project report card. Will we do that?

Barr Agreeing on how to do this reporting is essential for first report to congress.

Lambert Have we said what these ecosystem projects will do for each state?

Barr We broke out benefits to each state in RED analysis.

Carr That was done at request of states. How many jobs created, etc.

Lambert Is that something that could be resurrected to get continued state support?

Carr Yes, we look at it in terms of cost and jobs created.

Benjamin Can you get this to us electronically?

Ken: I will send it when I get back to office. (see report titled: "Regional Impacts of Proposed Navigation and Ecosystem Improvements on the Upper Mississippi River and Illinois Waterway", Aug 4, 2004 pgs 44-48, located on the NESP website under the economic reports. NESP Website address: <http://www2.mvr.usace.army.mil/UMRS/NESP/default.cfm>)

Sternburg WRDA talked about acquisition and easements- what that entails?

Whitney No more than 25 million a year mentioned for that purpose.

Sternburg Who watches over those things?

Worthington Our guidance will be vague because of presumption that you can't assure realization of benefits as well with easement instrument. Depends what easement says. Problem you get into, if you put them in easements you pay just as much.

Barr In regulatory world we use preservation covenants.

Schlagenhaft Number in project cost doesn't include real estate?

Barr That is correct in this slide. The real estate costs will be part of total project costs.

McCalvin Most degraded reaches are lower ones. A lot more money and projects are identified in healthy reaches. It would be interesting to reconcile and be able to answer why we have spent most money in best reaches.

Barr Fewer larger projects in lower river, but larger projects anticipated (5,000 acres 500 acre)

- Barr going to make one slide that shows this information and sent out by Friday.
- Jan 9-10 SGO workshop in Quad Cities.
- Reach Meetings beginning in April 20, 2008 (pool 5). Draft agenda out prior to meeting and have conference call.
- Dec 4-5 River Resources Forum
- Corps will mail out goals and objectives report.

Spitzack New Ecosystem objective on slide 9: this is applicable to UMR rather than a program focus. It's much broader than NESP.

Johnson Need to resolve the 7 habitat types were a reflection of 5.... Believed by identifying objectives by reaches it embedded structure and function. It's not clear function and process are embedded in ... resolve inconsistency between process.

Schlagenhaft What do we want out of habitats? Are we measuring what we create?

11:30 Lunch

12:30 Forest Plan/HGM Update

Urich

Presentation 4 and three handouts

- Have spent 400 K up to this point. System plan 75% complete. To be finished this fiscal year.
- Reno bottoms PIR (project implementation reports) to be completed this year. Reed Canary Grass has taken over.
- Described Hydrogeomorphic Modeling and Analysis (HGM).
- Feasibility of completing a system wide HGM assessment report? Result: is feasible and would take 3-5 years.

Benjamin As we started looking at projects from feasibility study we run into issues that make it hard to move forward. Forest plan looks like it would be easy to get going. Is that true?

Barr Yes. On federal land 100% fed. Needs project implementation report and Cost/Benefit analysis.

Whitney Ready to go in FY 09.

12:55 NESP/UMR Web portal & Public Involvement

Bluhm

- NESP website: new look and feel last summer. If you have thoughts and input we would appreciate it. Need a more visual layout to show projects in works, completed, and planned by reach. Broader than NESP. Whole UMR. In future could add DSS etc.
- Want to keep usable and not too complex. Beta version-live in Jan.

Lambert What is website address?

Bluhm On sustainability handout. <http://www2.mvr.usace.army.mil/UMRS/NESP/>

Benjamin About a year ago you talked to us about PR program for Everglades. Lots of ideas. Now that we have authorized bill what do you think are most important things we need to focus on PR wise? We are so basic with website and newsletter.

Bluhm Building awareness needs to be our first step. Grassroots level people need involved. We have talked about doing round of public meetings once we have WRDA authorization. Early

next year- Feb. We need to let people know how this will affect them positively. Need to give enough information so they understand why it's good. Develop active user base for mailings. Also, need to use PR news releases that show positive RED for local economies.

Benjamin Public meetings are a tool, but they don't work very well because you schedule them one night and they may not attend. Not the best way to get info to people. Good next step to take, but it won't get us very far in my opinion.

Bluhm You are correct. We need to go beyond public meetings. Hopefully the website will become a huge tool. Also, electronic distribution mail list growing.

McCalvin Coordination on communications: should we form a committee with stakeholders to pursue public involvement. We need a combined effort to get this message out. Why do outreach is important for us to ask. Everglades is failing to get federal money according to New York Times. How much should we rely on Everglades as example?

Bluhm Need to get communications network more active. Comment about everglades: Whether or not they would get more or less money with or without PR is questionable, I don't know. They are spending millions; it would be interesting to see if it pays off.

Spitzack You will be getting in contact with people relating to public meetings and it would be a good time to engage communications network.

Bluhm Whole idea of communications network is all PR aspects. What forum would work best for that?

Spitzack Right now it will be teleconference because of funding.

2:00 FY 08 Work Plan Update FY 09 Capability

Whitney

Presentation 5 and one handout

- Whitney will be available to handle questions on workplan.
- Prepared to shut down NESP end of December without more \$ from congress. (CBE)
- We have started first quarter at 10 million dollar burn rate even though we only have 2.2 million.
- We will lose 8-9 months if we shut down. Will lose Engineers to New Orleans, etc.
- Traffic Management Concepts has lagged. New team leader to work on it this year.

Barr If we end up getting 12-14 million and implementation guidance, would Pierce County and Root River be one to talk about firing up cost share. Scheniman Chute needs transferred to NESP. Those 3 things are not on this list, but we could work on. My gut feeling is if we are not above 10 million, we won't do much with those 3.

Schlagenhaft We need to flush out what floodplain restoration means even with less than 10 million scenario.

DeZellar Those plans shouldn't be very dusty.

Schlagenhaft Authorization identifies states as non-federal potential contractor. They are on this spreadsheet as private sector contracts.

Whitney Correct. Includes planning I believe.

Schlagenhaft Critical for states to try to keep up. They need additional resources.

- 12.5 million of 16 million construction potential FY 09 capability is ecosystem. 2/3 ecosystem and 1/3 navigation.

McCalvin Pool 5 water level management?

DeZellar Looking at data. Smaller scale measures. Changing reservoir manuals.

McCalvin Could I get a copy of projects and priorities? In future it would be nice to vote on these projects.

Barr Let's set up a conference call at least a month before next meeting: Jan 3, Thurs, 9am.

Note: 3 Jan 08 meeting not set-up. Now scheduled for 15 Jan 08 at 10:00 am.

2:30 Partner Comments

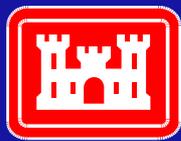
Benjamin We have a new secretary and he has asked what WRDA is about. We will brief him.

Cornish Main channel fish trawling will occur in December for NESP Project E: systemic mitigation.

Conference Call Schedule/Upcoming Meetings

- A conference call before NECC/ECC meeting: Tues, 15 Jan 07, 10:00 am.
- 9-10 Jan 07 SGO workshop in Quad Cities.
- 22 Feb 07 next NECC/ECC.

2:50 Adjourn



**UPPER MISSISSIPPI RIVER SYSTEM
NAVIGATION AND ECOSYSTEM
SUSTAINABILITY PROGRAM**



**PRESENTATION
TO THE
NECC/ECC**

NOVEMBER 14, 2007

ST. PAUL, MN

BY

JACK CARR, ROCK ISLAND DISTRICT



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



GLOBAL GRAIN MODEL

- Grain Traffic Forecast Model (GGM) shows great improvement and accomplishment in spatial modeling approach used by USACE.
- Received specific comments/suggestions on areas of improving the GGM. For instance, model should address the influence of price on production and consumption over time.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



GLOBAL GRAIN MODEL (Cont'd)

- Precision of Results would benefit from Greater Disaggregating of Domestic Supply and Demand Regions.
- Sensitivity Analyses would make major improvement in the evaluation. Related comments requests greater number of scenarios.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



NON-GRAIN TRAFFIC FORECAST

- Current Analysis is not sufficient.
- Lacks an economic framework.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



NON-GRAIN TRAFFIC FORECAST (Cont'd)

- Statistical analysis criticisms - few (8 years) years of observation were used to forecast a half-century into the future.
- Pursue development of spatial models that give consideration to regional commodity suppliers and demands and linking the multi-model transportation network. –This would be similar to Global Grain Model, only applied to non-grain commodities.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



SHIPPER RESPONSE STUDIES (GRAIN AND NON- GRAIN)

- Represents major improvement and provides important new information for the Corps.
- Concept is a major improvement, application still needs work.
- Specific Improvements needed regarding:
 - Representative nature of respondents'
 - Low survey return rates.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



SURVEY MODEL

The Survey model is not multi-model model

Need to recognize and move toward multi-modal analysis if the full impact of investment in the inland waterway system is to be fully measured.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



OTHER AREAS OF STUDY THAT NEED TO BE ADDRESSED

- Need to evaluate the Value of Redundancy in case of National catastrophe or National security event.
- Further Analysis of potential traffic diversion from other modes (to water) for low value traffic.
- Write-up should draw consistency between conclusions, recommendations, and computed NED benefits.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



OTHER AREAS OF STUDY THAT NEED TO BE ADDRESSED (Cont'd)

- Need for expanded, more quantified Rail Capacity report.
- Modeling off waterway congestion.
- Move toward one model that embraces survey model, grain and non-grain commodity flows, transportation demand, and lock delay information.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



OTHER AREAS OF STUDY THAT NEED TO BE ADDRESSED (Cont'd)

- Refinement of traffic forecast beyond 2020 to address the question: Is the role of water transportation likely to expand or change in response to capacity limitations facing ports, rail, and truck operations?



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



OTHER AREAS OF STUDY THAT NEED TO BE ADDRESSED (Cont'd)

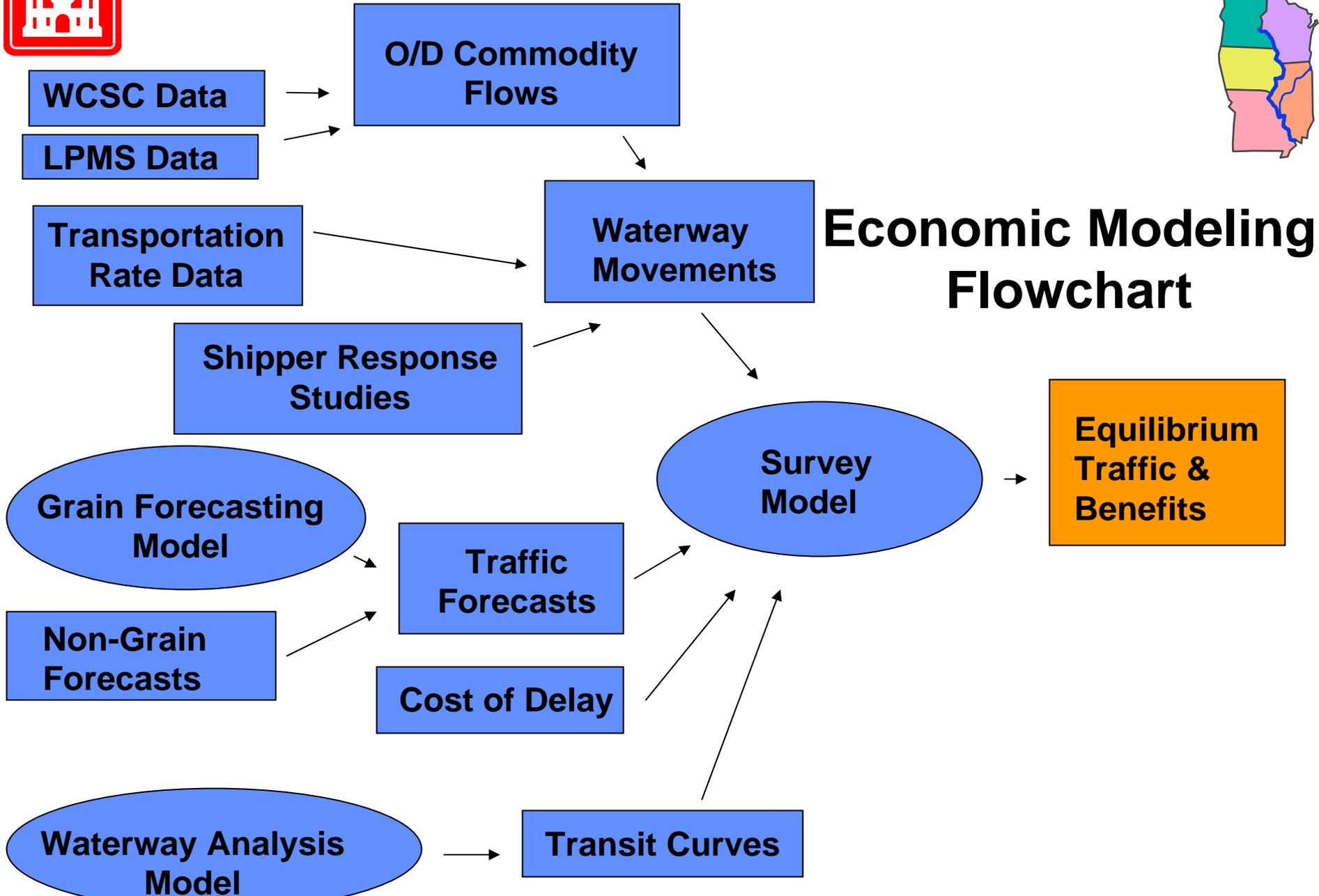
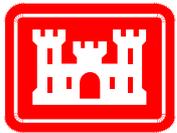
- Several reviewers asked us to develop additional scenarios:
 - Central Scenario
 - Base Case or Starting Point from which high and low scenarios follow.
 - Multi-modal Scenario.
 - Higher Ethanol Demand Scenario.



OVERVIEW OF FORMAL EXTERNAL REVIEW PANEL COMMENTS



- QUESTIONS?

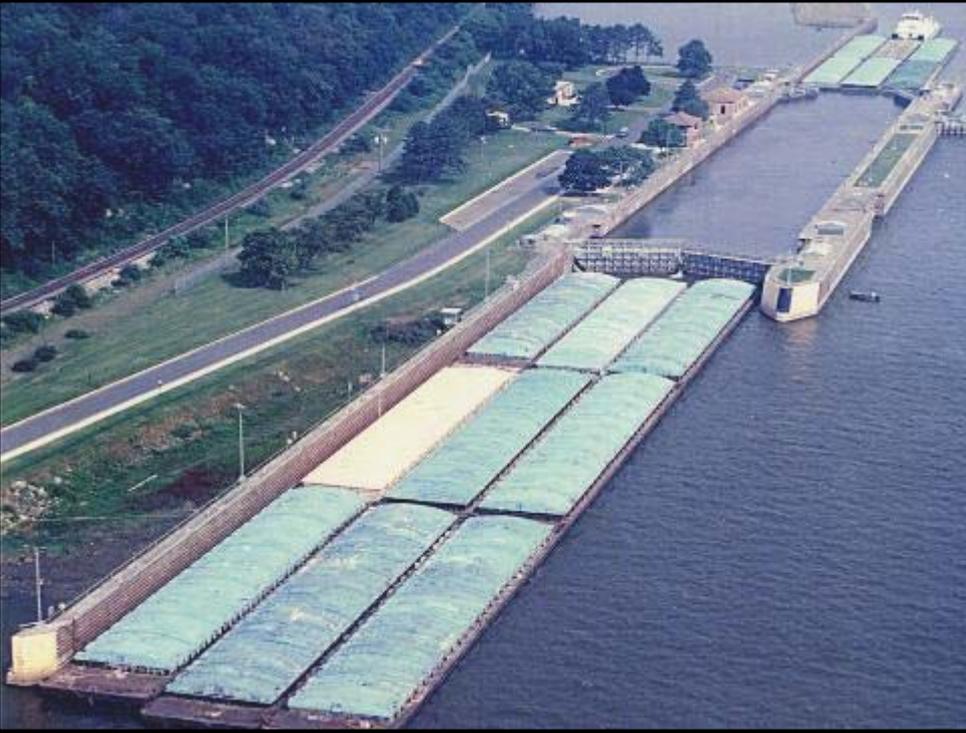


One Team: Relevant, Ready, Responsive, Reliable



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Upper Mississippi River System



Navigation & Ecosystem Sustainability Program (NESP)

One Team: Relevant, Ready, Responsive and Reliable



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Topics



- Economic Reevaluation
- Moving Forward
 - USACE implementation guidance
 - First increment plan – ecosystem
 - First increment plan – navigation
 - Communication & Public Involvement
 - Collaboration & Partnership



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Reevaluation



Interim Report - Schedule

- 15 Aug 07 Preliminary Findings
 - 30 Sep 07 Partner Comments
 - 30 Oct 07 EPR Panel Comments
 - 31 Dec 07 Draft Report
 - Jan-Feb Public Review
 - 31 Mar 08 Final Interim Report
-



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Reevaluation Review

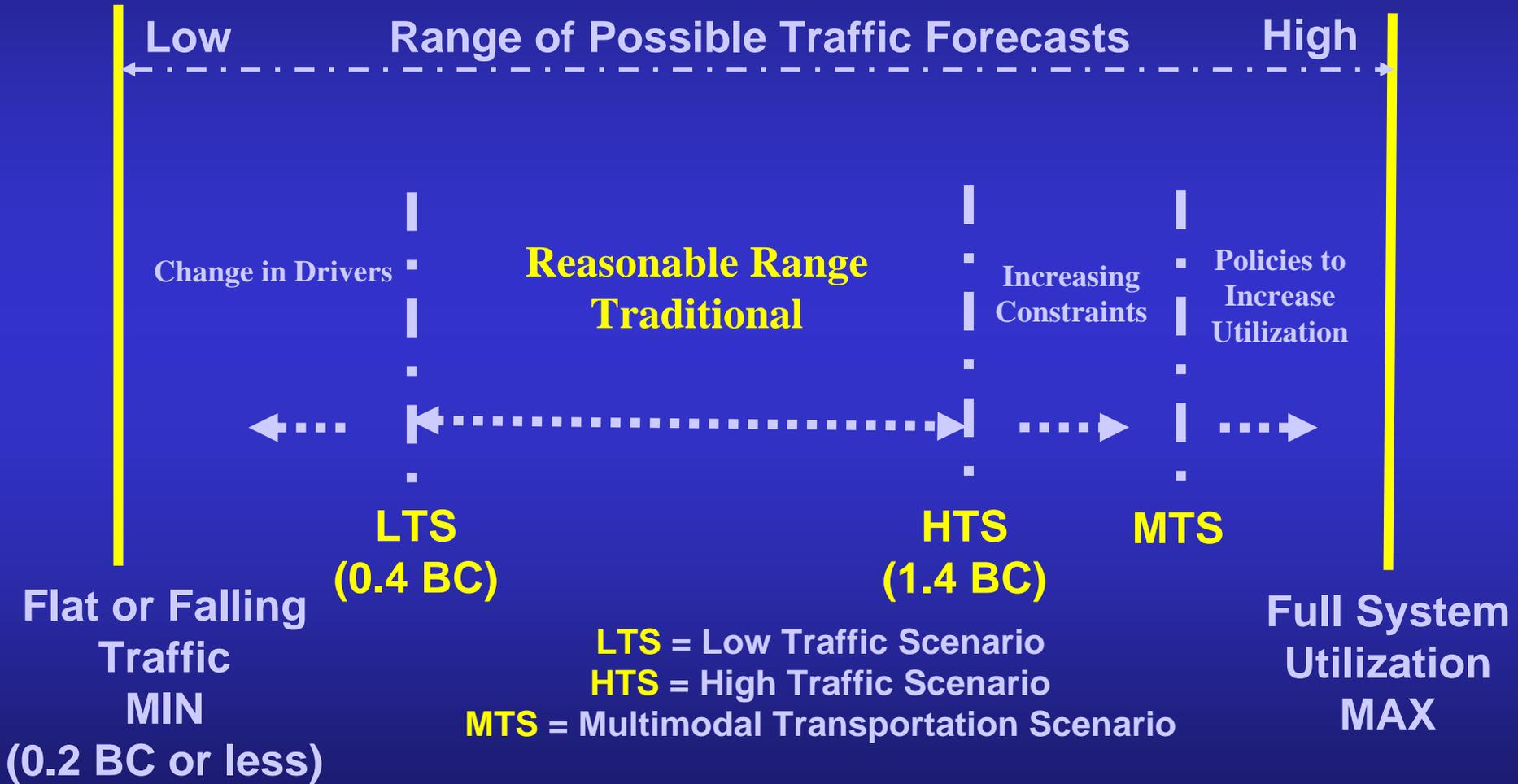


- External Peer Review Panel
- Independent Technical Review Team
- Partners & Stakeholders



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Reevaluation Risk Framework





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Reevaluation Recommendations



- Endorse dual-purpose RP
- Support coordination & collaboration
- Support innovations
- Support development of multimodal tools



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Moving Forward

Implementation Guidance



- Design & construction of navigation
 - Level of approval authority
- Project Implementation Reports (PIR)
 - Process for preparation, review, and approval
 - Level of approval authority
 - Content of PIR
 - External Peer Review



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Moving Forward

Implementation Guidance



- **Guidance on project implementation**
 - Feasibility Cost Share Agreement (FCSA)
 - Partner Agreements
 - Reimbursement for lands > non-federal share
 - Credit for in-kind services
 - Monitoring and adaptive management⁴
 - **Model agreements and delegation of authority**



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Moving Forward

Implementation Guidance



- Consultation and funding agreements
- Implementation of Reports to Congress
- Advisory Panel
 - Delegated authority to convene panel
 - Level of panel ... regional or national
 - Role of panel
 - Independence of panel
- Comparable Progress



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Moving Forward

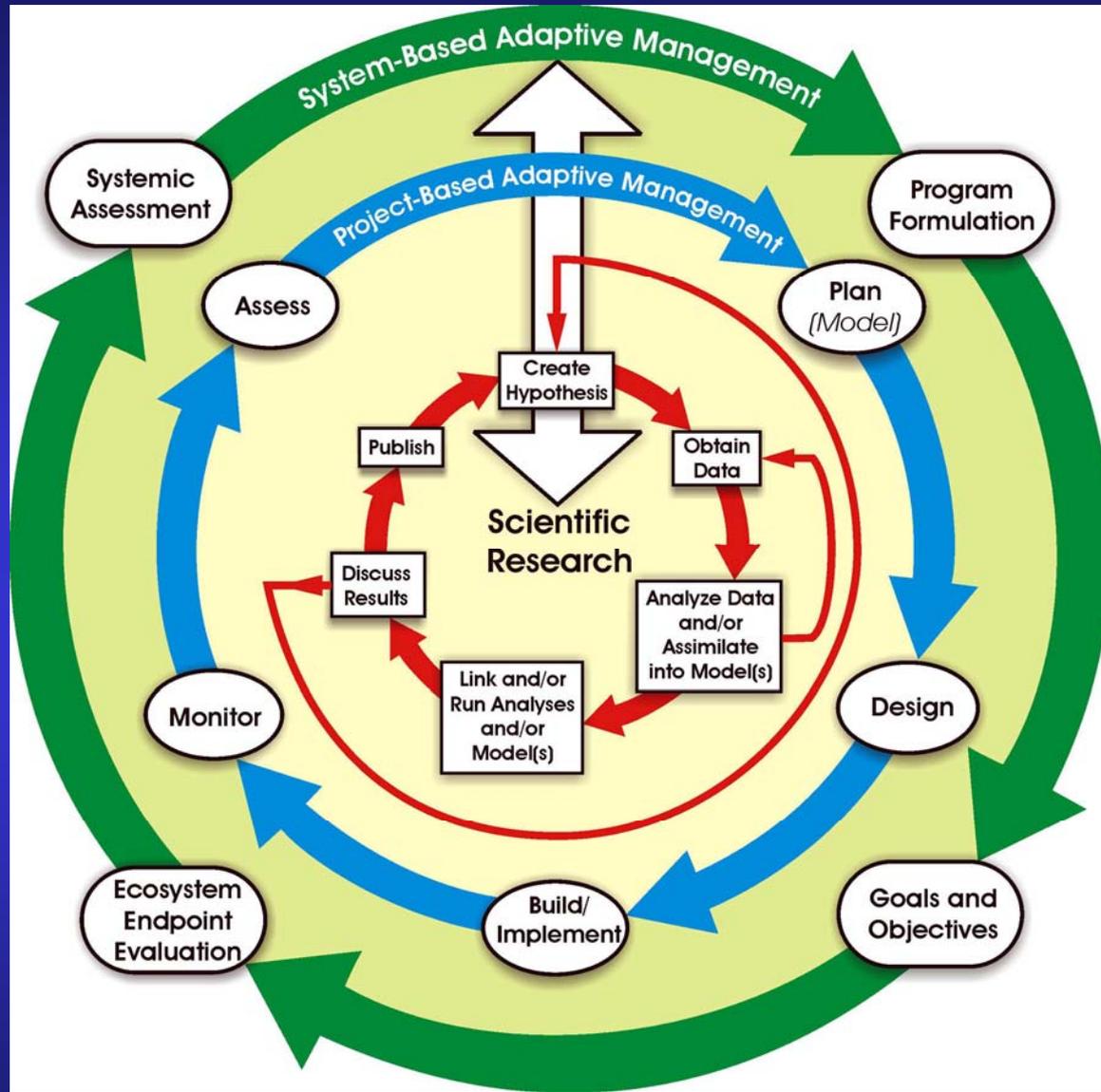
ER First Increment Plan



- **FY 2009 Work Plan** Feb 2008
- **Multiple funding scenarios** Feb 2008
 - **Funding breakdowns**
- **Corps planning process** Sep 2008
 - **System focus**
- **Adaptive management process** Sep 2008
 - **Goals and objectives**
 - **Reach plans and priorities**
- **First Report to Congress** 2009



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Applying Adaptive Management to a System



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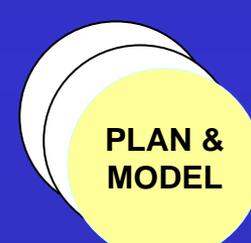
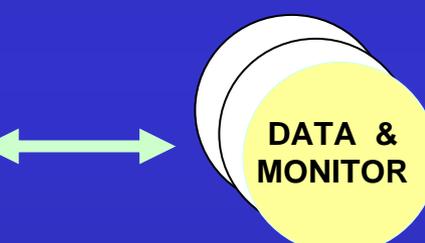
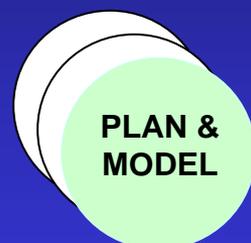
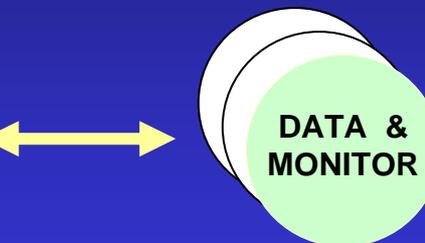
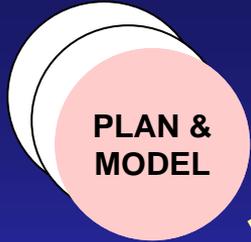
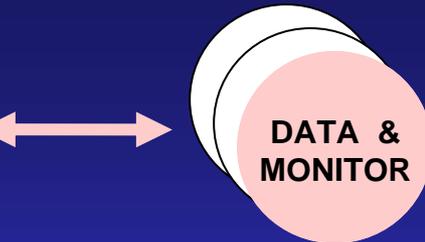
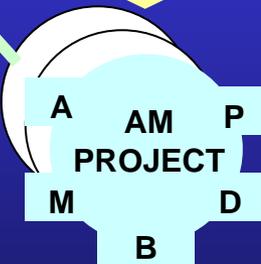
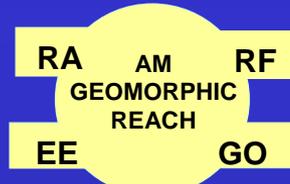
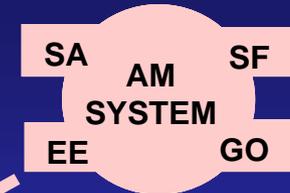
SCIENCE PANEL (advisory role)

RIVER SUPPORT TEAM, (RST)

RIVER TEAMS + WORK GROUPS

ER PDTs

RIVER COUNCIL



REACH & SYSTEM PDTs

UMRS - Four Levels of Adaptive Management



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Moving Forward

NAV First Increment Plan



- FY 2009 Work Plan Feb 2008
- Multiple funding scenarios Feb 2008
 - Impacts on time, cost, navigation, benefits
- Corps design process Sep 2008
- Adaptive management Sep 2008
- Traffic management Sep 2008



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Moving Forward

NAV First Increment Plan



Summary Table = \$100 m/yr flat funding

MR Lock Construction	2010 - 2031	Sys Benefits 2032
MR Lock Closures	2012 – 2030	
IWW Lock Construction	2013 – 2034	Sys Benefits 2035
IWW Lock Closures	Minimal	
Total Costs	\$2,330,000,000	

Summary Table = \$150 m/yr flat funding

MR Lock Construction	2010 - 2027	Sys Benefits 2028
MR Lock Closures	2011 – 2026	
IWW Lock Construction	2013 – 2029	Sys Benefits 2030
IWW Lock Closures	Minimal	
Total Costs	2,292,000,000	



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Moving Forward

NAV First Increment Plan



Summary Table = Baseline (2005-2008 actual)

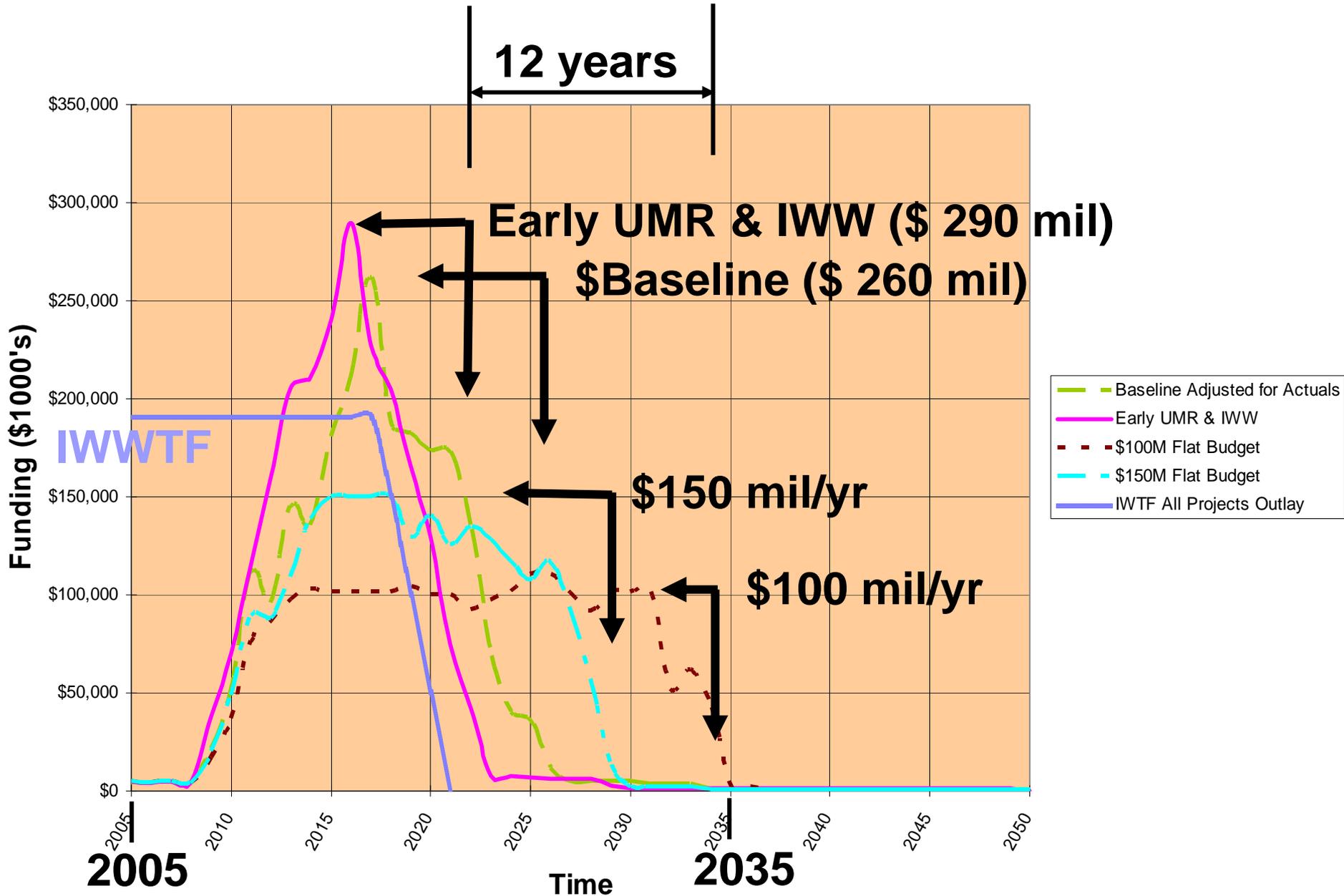
MR Lock Construction	2010 – 2024	Sys Benefits 2025
MR Lock Closures	2012 – 2022	
IWW Lock Construction	2013 – 2026	Sys Benefits 2027
IWW Lock Closures	Minimal	
Total Costs	\$2,330,000,000	

Summary Table = Early UMR & IWW

MR Lock Construction	2010 - 2022	Sys Benefits 2023
MR Lock Closures	2011 – 2021	
IWW Lock Construction	2012 – 2022	Sys Benefits 2023
IWW Lock Closures	Minimal	
Total Costs	2,292,000,000	

One Team: Relevant, Ready, Responsive and Reliable

NESP Navigation Component Funding Alternatives





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Moving Forward Communication & Public Involvement



- **UMRS Website** Feb 2008
- **Newsletter** Jan 2008
- **Public Meetings** Feb 2008
 - **WRDA**
 - **Reevaluation**
 - **Integrated management - partners**



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Moving Forward

Collaboration & Partnership

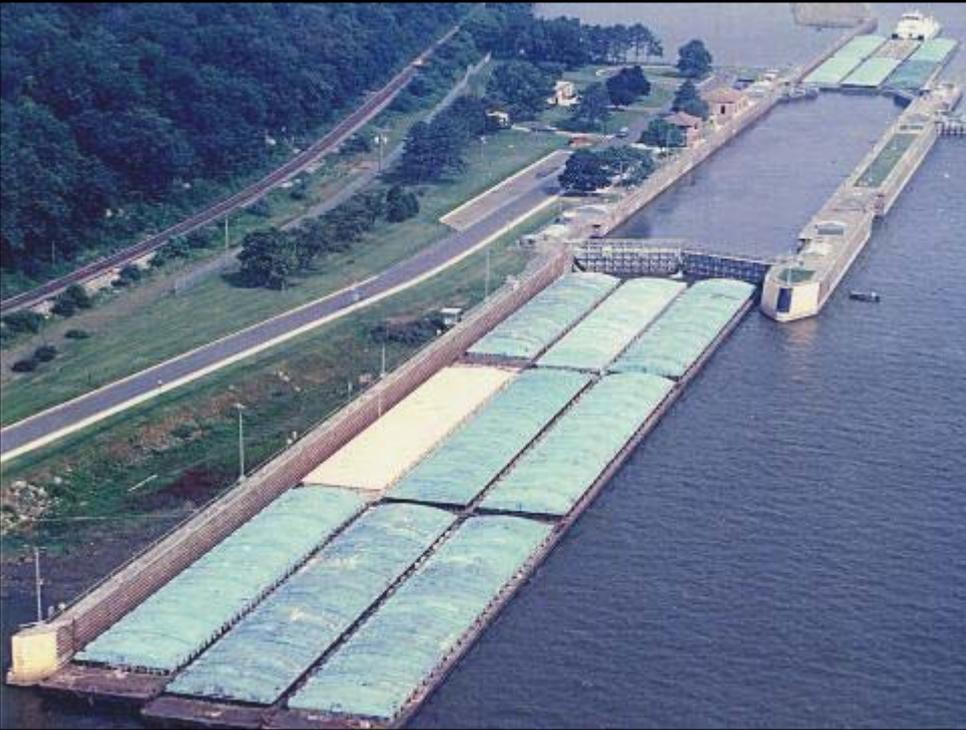


- USFWS and USACE meeting in Oct 07
- NECC-ECC in transition
- River Teams
- USACE - TNC



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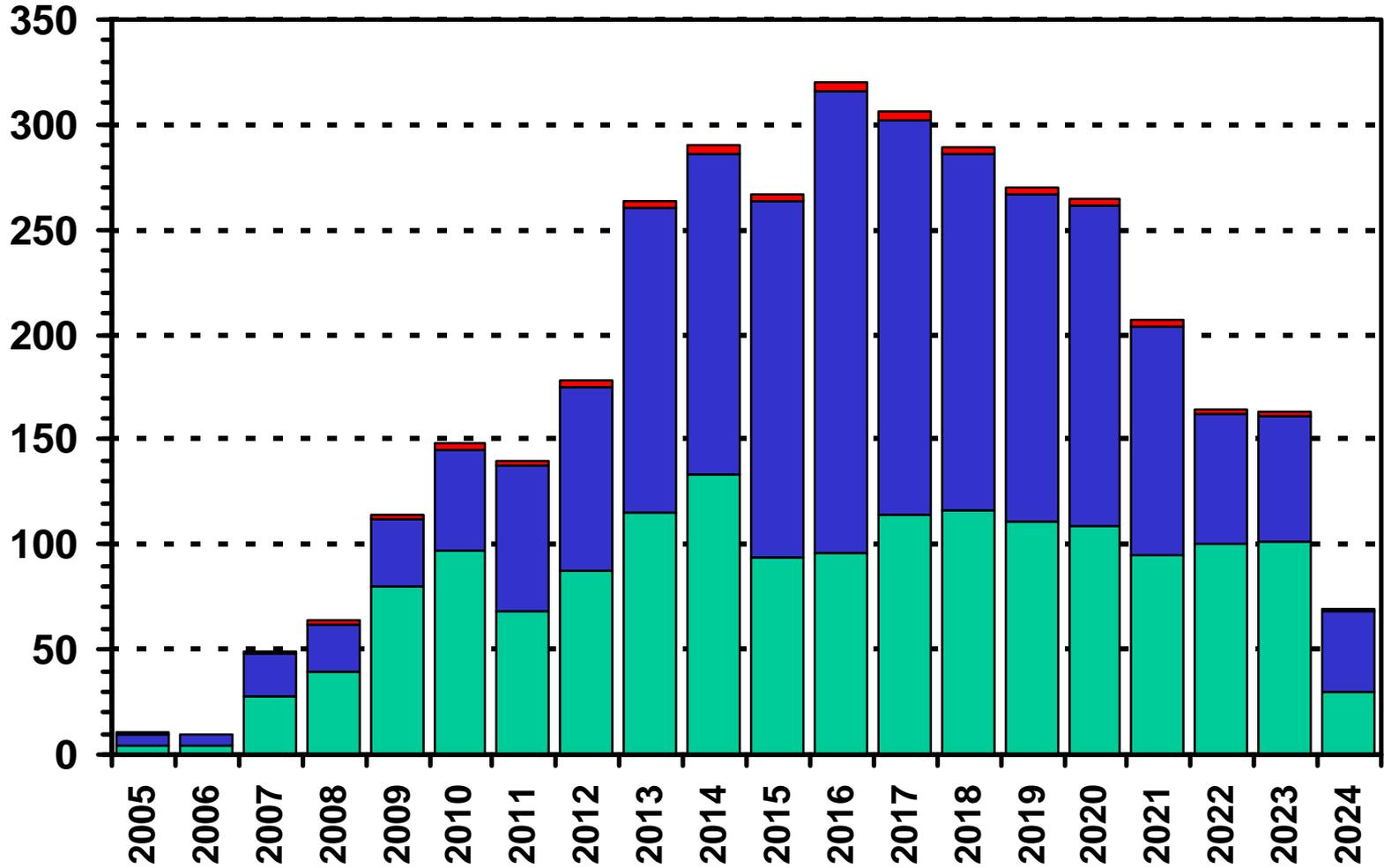
Upper Mississippi River System



*To seek long-term sustainability of the
economic uses and ecological integrity of the
Upper Mississippi River System*

One Team: Relevant, Ready, Responsive and Reliable

Nav Feasibility Study First Increment Plan (Blue Nav, Green Ecosystem)



Total Ecosystem First Increment Plan (15 year)		
	Number of Projects	Costs (2003 millions)
Ecosystem Measures		Measure
Adaptive Management	-	\$136.0
Cultural Stewardship	78	\$13.0
Cultural Mitigation		\$13.0
Forest Management	0	\$37.6
Island Building	23	\$150.9
Fish Passage	4	\$209.0
Floodplain Restoration (Pools 1-13)	10	\$18.0
Floodplain Restoration (Rest of UMR-IWW)	7	\$140.0
Water Level Management - Pool	13	\$61.7
Water Level Management - Backwater	5	\$38.3
Backwater Restoration (Dredging)	33	\$145.5
Side Channel Restoration	29	\$80.8
Wing Dam/Dike Alteration	19	\$28.5
Island Protection	33	\$31.1
Shoreline Protection	40	\$37.6
Topographic Diversity	9	\$13.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$136.0
Total	227	\$1,315.8
Real Estate		\$146.0
Grand Total		\$1,461.8

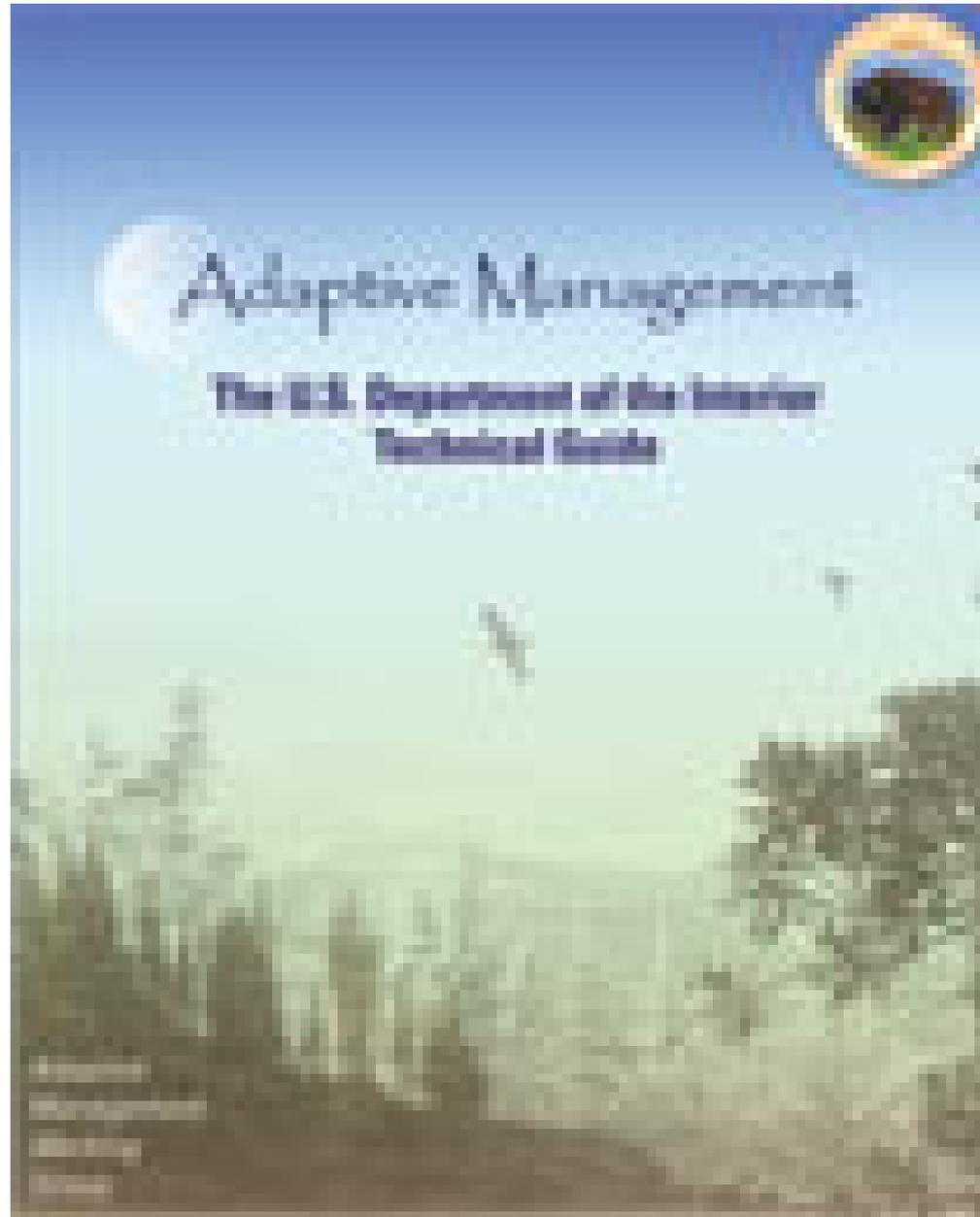
Upper Floodplain Reach - (Pools 1-13) First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	52	\$8.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$100.0
Floodplain Restoration (Pools 1-13)	10	\$18.8
Floodplain Restoration (Rest of UMR-IWW)^a	-	-
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	3	\$19.1
Backwater Restoration (Dredging)	12	\$52.9
Side Channel Restoration	4	\$11.3
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	72	\$399.9

Lower Floodplain Reach - (Pools 14-26) First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	5	\$1.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$109.0
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	3	\$60.0
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	2	\$12.8
Backwater Restoration (Dredging)	10	\$44.1
Side Channel Restoration	7	\$19.7
Wing Dam/Dike Alteration	7	\$10.5
Island Protection	7	\$6.6
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$34.0
Total	67	\$464.5

Middle Mississippi River - First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	3	\$1.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	5	\$32.8
Fish Passage		
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	2	\$40.0
Water Level Management - Pool	-	-
Water Level Management - Backwater	-	-
Backwater Restoration (Dredging)	3	\$13.2
Side Channel Restoration	11	\$30.1
Wing Dam/Dike Alteration	8	\$12.0
Island Protection	2	\$1.9
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	44	\$225.6

Illinois River - First increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	18	\$3.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	2	\$13.1
Fish Passage	-	-
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	2	\$40.0
Water Level Management - Pool	1	\$4.9
Water Level Management - Backwater	-	\$6.4
Backwater Restoration (Dredging)	8	\$35.3
Side Channel Restoration	7	\$19.7
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity		
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	44	\$226.8

<http://www.doi.gov/initiatives/AdaptiveManagement/index.html>



UMRS Goals and Objectives

Ecological Conservation Goals:

- Maintain viable populations of native species in situ
- Represent all native ecosystem types across their natural range of variation
- Restore and maintain evolutionary and ecological processes
- Integrate human use and occupancy within these efforts

UMRCC Management Goals

- Improve water quality for all uses
- Reduce erosion and sediment impacts
- Restore natural floodplain
- Restore natural hydrology
- Increase backwater connectivity with the main channel
- Increase side channel, island, shoal, and sand bar habitat
- Minimize or eliminate dredging impacts
- Sever pathways for exotic species introductions/dispersal
- Improve native fish passage at dams

NESP Science Panel System-Wide Ecosystem Objective

Conserve, restore, and maintain the ecological structure and function of the Upper Mississippi River System to achieve the vision of the Navigation and Ecosystem Sustainability Program

<http://www2.mvr.usace.army.mil/UMRS/NESP/Projects/NESPPProjects/default.cfm?cat=np&sec=documents&tid=3>

BOX 3 – Elements of Ecosystems

(adapted from Society for Ecological Restoration 2004)

***Process* refers to rates of essential ecosystem functions, such as population growth, photosynthetic rate, decomposition rate, dispersal rate.** (e.g., effects of a 2-foot early-summer drawdown on production of annual moist-soil plants)

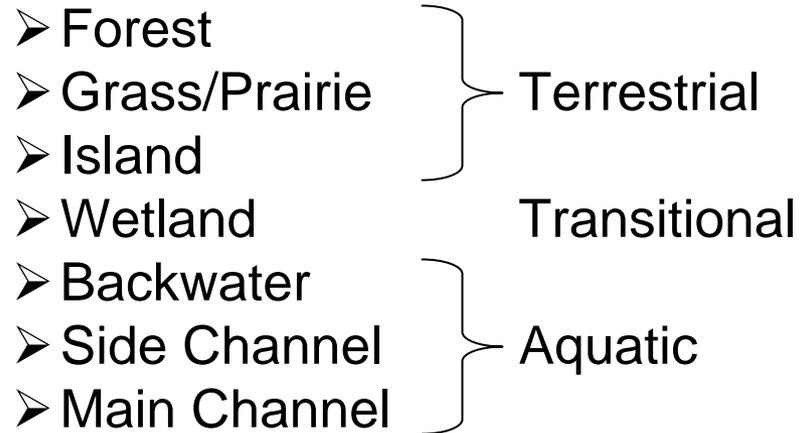
***Function* defines the dynamic attributes of ecosystems, including density organisms, interactions among organisms, and interactions between organisms and their environment.** (e.g., effects of changes in winter dissolved oxygen levels on density of overwintering white crappie)

***Structure* refers to the parts of the whole or the architecture of a community.** It includes the pattern of habitats, the frequency distribution of species-populations, and the sizes and life forms of the organisms that compose communities. (e.g., size-frequency distribution of largemouth bass in Pool 11)

Landscape Objectives

UMRS Landscape Objectives:

Objectives categorized into 7 landscape classes

- Forest
 - Grass/Prairie
 - Island
 - Wetland
 - Backwater
 - Side Channel
 - Main Channel
- Terrestrial
- Transitional
- Aquatic
- 

Geomorphic Reach Workshops

- Preparation meeting
- January 9-10 SGO Workshop in Moline, IL
- Reach meetings Beginning in April (Pool 5?)

UMRS Environmental Objectives

Water Quality

- contaminant loadings
- contaminants in rivers
- mobilization of contaminants
- achieve TMDLs
- sediment loadings
- nutrient loading
- nutrient export
- DO concentrations
- water clarity

Geomorphology

- channel geomorphic diversity
- tributary rivers
- sand bars
- mud flats
- gravel bars
- islands
- rock and gravel riffles/substrate
- topographic diversity
- delta areas
- channel-backwater exchange
- channel-floodplain exchange
- contiguous backwaters
- isolated floodplain lakes

Hydrology/River Hydraulics

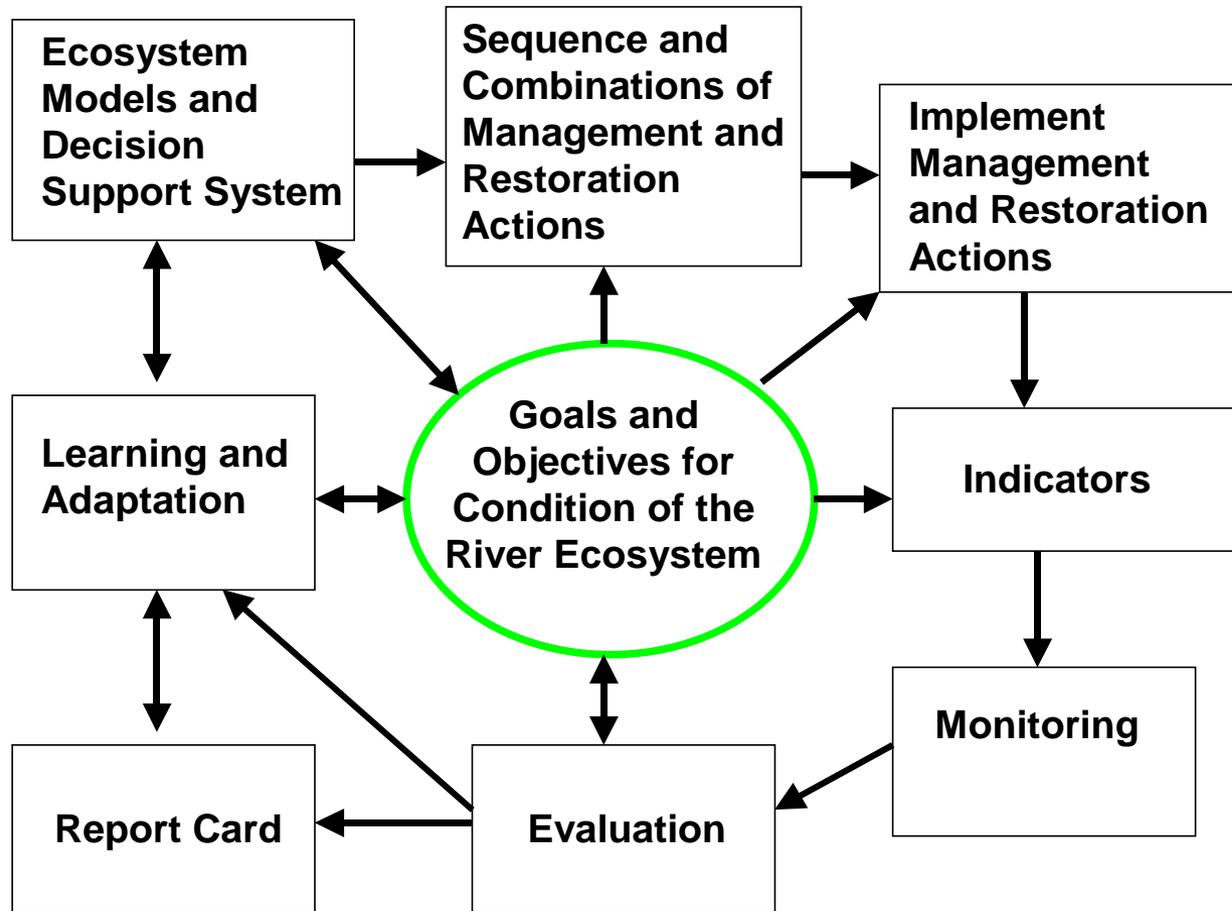
- hydrologic regime
- stage and discharge fluctuations
- hydrologic regime in pools
- hydrologic regime in floodplain
- hydrologic regime of tributaries
- water on the floodplain
- wind fetch

Habitat

- hydraulic conditions
- pathways for animals
- plant communities
- submersed aquatic plants
- emergent aquatic plants
- large patches of plants
- backwater habitat for fishes
- channels habitat for fishes
- habitat corridors
- riparian buffers in the floodplain
- woody debris

Biota

- populations of species
- diversity and extent of communities
- invasive species

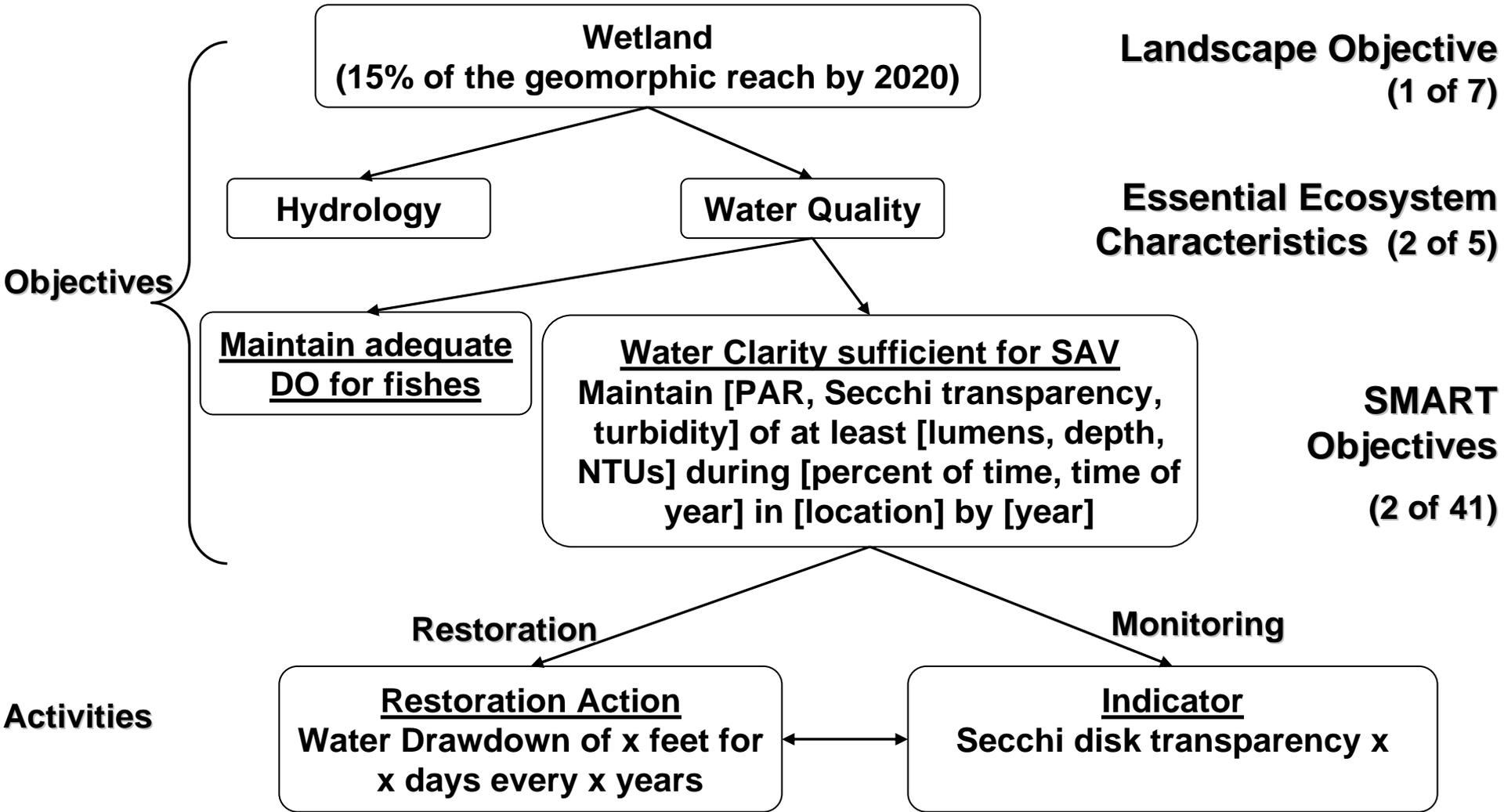


Landscape Objectives

UMRS Landscape Objectives:

- Defined in 12 geomorphic reaches
- Identify specific characteristics of processes, habitats and species
- Linked to 5 NESP Science Panel EECs and 41 SMART objective criteria
- Informed by current carrying capacity of the system

Application of UMRS Goals and Objectives



Evaluation Considerations

Contribution To Learning

Benefits Over Multiple Scales

Sustainability

Critical Habitat Gains

Evaluation Considerations

Contribution To Learning

- Incorporates an experimental approach
- Fits within experimental design/approach
- Incorporates effective monitoring plan
- Likely to result in fundamental knowledge gain
- Likely to result in management innovations

Benefits Over Multiple Scales

- Improves connectivity laterally
- Improves connectivity longitudinally
- Achieve cumulative/synergistic habitat improvements (greater than additive)
- Emulate natural temporal patterns

Sustainability

- Requires minimal on-going intervention to maintain desired future state
- Scale of maintenance activity is small relative to overall project activities.
- Improves stability of project outcomes/services
- Restores natural river processes

Critical Habitat Gains

- Replaces lost habitat (i.e. historical assessments)
- Maintains desirable habitat
- Modifies or improves existing conditions
- Meets the desired future condition

NESP 1st Increment plan Implementing the ecosystem component

Partial working draft Barr 11-12-07

Introduction

The UMR IWW System Navigation Study recommended a 50 year plan with approximately 1000 actions costing \$5.3 billion dollars. The Chief of Engineers in December 2004 recommended the first increment of that plan including approximately 225 projects implemented using adaptive management and costing \$1.4 billion. The components of the first increment plan are presented in Table 14-7 of the Feasibility study. The Chief also recommended small scale and large scale navigation efficiency improvements totaling \$1.9 billion.

To accomplish the Chief's recommendation in the planned 15 years will require \$3.9 Billion (2006 \$) or an average of \$260 million/year. Neither the navigation or ecosystem projects are most effectively accomplished with flat annual funding.. The chart below illustrates the proposed funding stream from the Feasibility report. The Upper (Blue) bar is navigation and the Lower (Green) bar is ecosystem. This is the base funding scenario against which alternative funding strategies will be evaluated. The base funding scenario will also be used as one reference in establishing comparable progress between ecosystem and navigation execution.

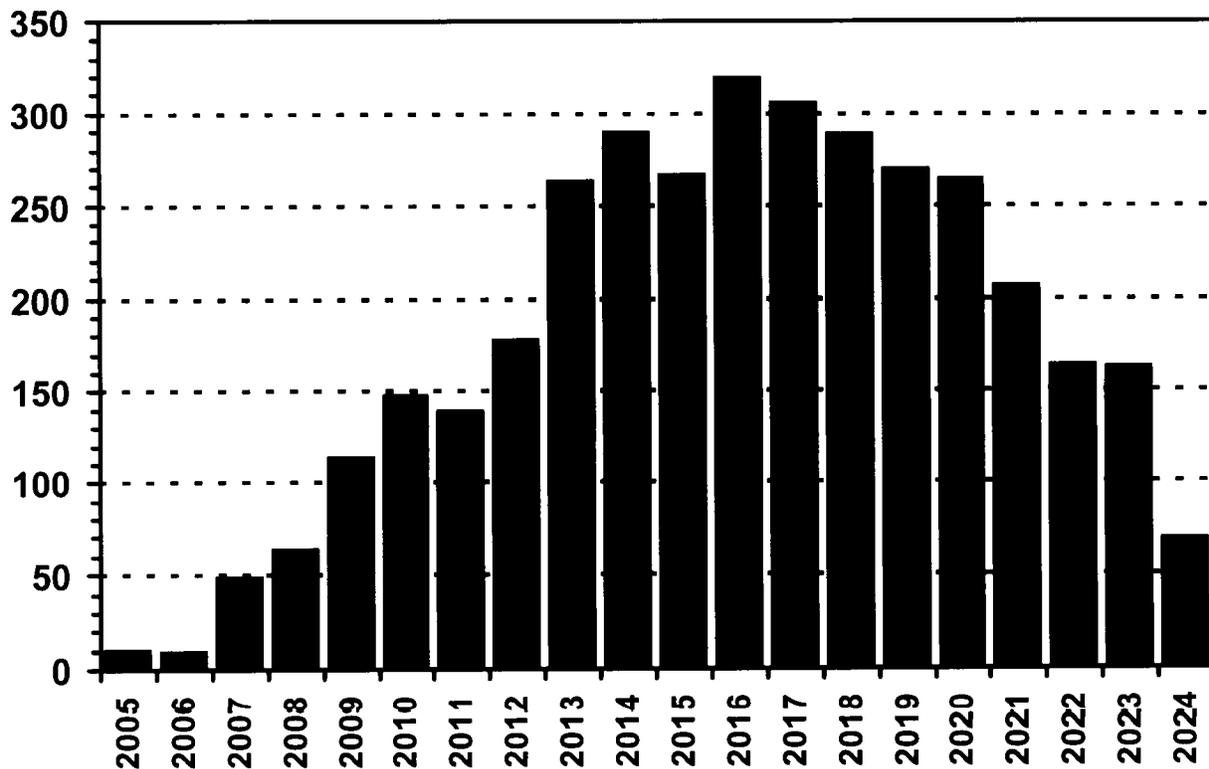


Table 14-7. Description and cost of Management Measures included in the proposed 15-year implementation strategy.

Management Measures	Alternative D*		15-year Implementation Plan			Total by Measure (\$millions)
	Number of Projects	Area of Benefit (acres)	Number of Projects	Area of Benefit (acres)		
Adaptive Management						\$136
Cultural Res. Management & Mitigation						\$26
Forest Management						\$38
Real Estate (35,000 acres in MVR and MVS)						\$146
Ecosystem Management and Restoration Measures	1,010	388,281	225	104,986		\$980
Island Building	91	91,000	23	23,000		\$151
Fish Passage	14		4			\$209
Floodplain Restoration ¹	72	118,756	24	46,056		\$177
Water Level Management ²	15		15			\$87
Backwater Restoration	215	124,800	38	24,800		\$177
Side Channel Restoration	147	14,700	29	2,900		\$82
Wing Dam/Dike Alteration	64	640	19	190		\$29
Shoreline Protection ³	392	38,385	73	8,040		\$68
Restoration Response Monitoring and Evaluation						\$136
Total Program Cost		\$5,323		\$1,462		

1 - Includes large and small-scale floodplain restoration, dam embankment lowering, and topographic diversity

2 - Includes pool-scale drawdowns, changing to dam point control at 2 sites, and reducing water level fluctuations on the Illinois River.

3 - Included bankline and island protection.

Maintaining Comparable Progress

Funding uncertainties require alternative implementation strategies. To facilitate stakeholder discussions the navigation efficiency component of NESP will develop stylized work plans reflecting annual navigation funding scenarios averaging \$100M, and \$150M and base. The scenarios will consider how best to focus design and construction resources in accomplishing the construction of 7 Locks and 5 Mooring Cells. Scenarios for the adaptive implementation of the ecosystem component will be somewhat more dynamic in that approximately 225 projects are proposed across four major floodplain reaches of the system. The \$100 M scenario for Navigation features would extend completion of lock construction by 7 years. The \$150M scenario extends the construction period 3 years. On an annual basis funding distributions to both components will be made in consideration of the base funding scenario above and progress towards completion of the Chief's recommended plan. This will require consideration of both \$ spent to date and progress toward completion of the recommended plan. The balance of this paper will consider strategies for the adaptive implementation of the Ecosystem component in the context of funding uncertainties.

Adaptive implementation by Geomorphic Reach

The Tables below illustrate the number and type of projects and management actions used to construct the Ecosystem first increment plan. Using a number of simplifying assumptions this plan can be broken down into the four major Floodplain Reaches which compose the 1200 mile study area (UFR, LFR, MMR, Ill River). A more detailed 12 geomorphic reach breakdown will be used in accounting for system response and further developing tools for adaptive management. However, the 4 reaches work best for discussing and tracking funding scenario strategies. Similar to the way we can track comparable progress between navigation and the ecosystem, we can use the geomorphic reaches to assure ecosystem restoration on the system is accomplished across the four reaches. Each of the four reaches has unique physical characteristics and restoration requirements.

(SEE TABLES Working Draft Ecosystem projects by floodplain Reach (Barr)
11/12/2007)

Navigation Feasibility Study**Working Draft Ecosystem projects by floodplain Reach (Barr)**

11/12/2007 10:50

Total Ecosystem First Increment Plan (15 year)

Ecosystem Measures	Number of Projects	Costs (2003 millions) Measure
Adaptive Management	-	\$136.0
Cultural Stewardship	78	\$13.0
Cultural Mitigation		\$13.0
Forest Management	0	\$37.6
Island Building	23	\$150.9
Fish Passage	4	\$209.0
Floodplain Restoration (Pools 1-13)	10	\$18.0
Floodplain Restoration (Rest of UMR-IWW)	7	\$140.0
Water Level Management - Pool	13	\$61.7
Water Level Management - Backwater	5	\$38.3
Backwater Restoration (Dredging)	33	\$145.5
Side Channel Restoration	29	\$80.8
Wing Dam/Dike Alteration	19	\$28.5
Island Protection	33	\$31.1
Shoreline Protection	40	\$37.6
Topographic Diversity	9	\$13.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$136.0
Total	227	\$1,315.8
Real Estate		\$146.0
Grand Total		\$1,461.8

Upper Floodplain Reach - (Pools 1-13) First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	52	\$8.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$100.0
Floodplain Restoration (Pools 1-13)	10	\$18.8
Floodplain Restoration (Rest of UMR-IWW)^a	-	-
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	3	\$19.1
Backwater Restoration (Dredging)	12	\$52.9
Side Channel Restoration	4	\$11.3
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	72	\$399.9

Lower Floodplain Reach - (Pools 14-26) First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	5	\$1.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$109.0
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	3	\$60.0
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	2	\$12.8
Backwater Restoration (Dredging)	10	\$44.1
Side Channel Restoration	7	\$19.7
Wing Dam/Dike Alteration	7	\$10.5
Island Protection	7	\$6.6
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$34.0
Total	67	\$464.5

Middle Mississippi River - First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions) Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	3	\$1.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	5	\$32.8
Fish Passage		
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	2	\$40.0
Water Level Management - Pool	-	-
Water Level Management - Backwater	-	-
Backwater Restoration (Dredging)	3	\$13.2
Side Channel Restoration	11	\$30.1
Wing Dam/Dike Alteration	8	\$12.0
Island Protection	2	\$1.9
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	44	\$225.6

Illinois River - First increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	18	\$3.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	2	\$13.1
Fish Passage	-	-
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	2	\$40.0
Water Level Management - Pool	1	\$4.9
Water Level Management - Backwater	-	\$6.4
Backwater Restoration (Dredging)	8	\$35.3
Side Channel Restoration	7	\$19.7
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity		
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	44	\$226.8

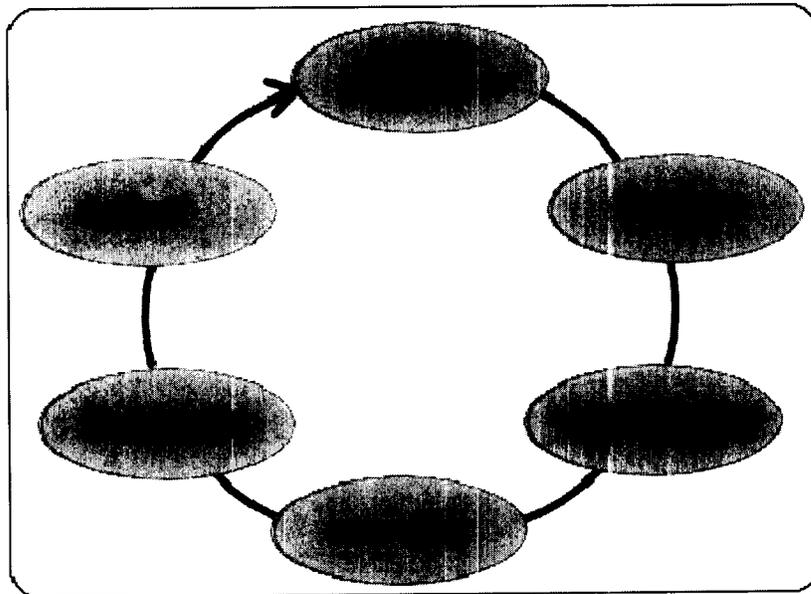
What is Adaptive Management?

Adaptive management focuses on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems.

Adaptive management:

*helps science managers maintain **FLEXIBILITY** in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction will improve **UNDERSTANDING** of ecological systems to achieve management objectives*

*is about taking **ACTION** to improve progress towards desired outcomes.*



Williams, B. K., R. C. Szaro, and C. D. Shapiro. 2007. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC. <http://www.doi.gov/initiatives/AdaptiveManagement/index.html>

Nearly 19 % of the First increment costs are identified to support The Adaptive management and Restoration response monitoring and evaluation. For illustration purposes these cost have been split evenly between the four Geomorphic reaches in the Table above. In practice some funds will be spent at the total system level supporting Program management and implementation at the scale of the system. Other funds will be spent on adaptive learning at the reach and project scale.

Coordination

Adaptive management is a structured approach to decision making that emphasizes accountability and explicitness in decision making (1 pg 4)

Key to successful adaptive management is a strong agreed upon structure for development, coordination and documentation of the adaptive management process. Clear documentation of decisions is essential to adaptive management and learning. Key points for stakeholder involvement are presented below from the DOI publication.

Step 1- Key Points

A strong effort must be made to identify and engage the appropriate stakeholders.

All phases of the adaptive management process must be open, transparent, and accessible to stakeholders.

Stakeholders must strive for agreement on scope, objectives, and management alternatives for the adaptive management application.

Stakeholders must commit to a process for adjusting management strategy over time, based on resource status and learning.

Stakeholder organizations must be encouraged to commit time and energy to adaptively manage the resource over the agreed-upon timeframe.

Stakeholders must commit resources for monitoring and assessment, in addition to decision making.

(Williams, B. K., R. C. Szaro, and C. D. Shapiro. 2007. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC.)

The Navigation Environmental Coordinating Committee (NECC) will continue be used to address overall system issues and annual work plans. The NECC has been meeting quarterly in conjunction with the EMPCC and UMRBA. The NECC was a cornerstone in developing the recommended plan and has continued to be a productive forum for initiating adaptive management during the Design (PED) phase of NESP. Active participation of NGO's and various publics in addition to the State and Federal members has been critical to the development and acceptance of good science in the program. It is anticipated that the focused development of formal rules of operation and shared learning opportunities will require additional time outside the quarterly meeting cycles to assure a successful start for the implementation phase. This will include consideration of a River Council to help coordinate and integrate management action on the system.

The River Resource Teams will function as the main coordinating body in consideration of objectives and actions for each of the 4 Distinct Floodplain Reaches. The River Resources Teams and their associated Technical working groups are uniquely positioned to serve as a focal point for reach activities in support of the NESP program. The responsibility to coordinate and integrate specific activities for the sustainable

management of each reach rests with the River Teams and their member agencies. Plans for projects and actions developed by the Reach Teams will be considered in developing annual work plans for the system. The NECC will review annual work plans to facilitate discussion of comparable progress between geomorphic reaches and between the navigation and ecosystem components of NESP.

Current Considerations for the River Resource Teams include:

Assure participation from NGOs and interested publics
Geomorphic Reaches overlap District and River Team boundaries special attention is needed to assure compatibility between adjacent teams.
Establishment of an Illinois River Working Group to integrate with the RRCT and RRAT.
Share lessoned learned between River Resource Teams.

Objectives

Identify clear, measurable and agreed-upon management objectives to guide decision making and evaluate management effectiveness over time (1 pg 24).

Step 2- Key Points

Objectives substantively influence decisions and management strategies.

Objectives should incorporate the social, economic and/or ecological values of stakeholders, and reflect the value of learning over time.

To be useful as guides for decision making and evaluation, objectives should be specific and unambiguous, measurable with the appropriate field data, achievable but challenging, results-oriented, and applicable over the timeframe of the enterprise. (1 pg 25)

Establishing Ecosystem objectives was a major focus of the UMR-IWW Navigation Study from 2000 to 2004 and resulted in the identification of Ecosystem goals and 2,600 spatially explicit objectives. These objectives, in addition to considerable stake holder involvement, led to the identification of the recommended plan.

(Insert fig 6.2 here)

System objectives were further refined in the Environmental Science panel Report: Implementing Adaptive Management (August 2006) and most recently in the Environmental Science Panel Report: Establishing System-wide Goals and Objectives for the Upper Mississippi River System (November 2007). This latest effort to address system objectives focuses on process, function and structure defined below:

BOX 3 – Elements of Ecosystems

(adapted from Society for Ecological Restoration 2004)

Process refers to rates of essential ecosystem functions, such as population growth, photosynthetic rate, decomposition rate, dispersal rate. (e.g., effects of a 2-foot early-summer drawdown on production of annual moist-soil plants)

Function defines the dynamic attributes of ecosystems, including density organisms, interactions among organisms, and interactions between organisms and their environment. (e.g., effects of changes in winter dissolved oxygen levels on density of overwintering white crappie)

Structure refers to the parts of the whole or the architecture of a community. It includes the pattern of habitats, the frequency distribution of species-populations, and the sizes and life forms of the organisms that compose communities. (e.g., size-frequency distribution of largemouth bass in Pool 11)

The Corps looks forward to a dialog with the stakeholder on this latest document. A workshop is being scheduled with the NECC for Jan 2008 to discuss system objectives in the context of structured decision making as applied by the Systems Evaluation Team (SET)

Vision Statement

"To seek long-term sustainability of the economic uses and ecological integrity of the Upper Mississippi River System."

Study Goal

Outline an integrated dual-purpose plan to ensure the economic and environmental sustainability of the UMRS.

Study Planning Objective

OBJECTIVE 2. Recommend measures to address the cumulative impacts including ongoing effects of the operation and maintenance of the UMR-IWW Navigation System.

Systemic Ecosystem Goals

(Grumbine: *What is Ecosystem Management?*)

1. Maintain viable populations of native species in situ
2. Represent all native ecosystem types across their natural range of variation
3. Restore and maintain evolutionary and ecological processes
4. Integrate human use and occupancy within these constraints

(UMRCC: *A River that Works and a Working River*)

1. Improve water quality for all uses
2. Reduce erosion and sediment impacts
3. Restore natural floodplain
4. Restore natural hydrology
5. Increase backwater connectivity with main channel
6. Increase side channel, island, shoal, and sand bar habitat
7. Minimize or eliminate dredging impacts
8. Sever pathways for exotic species introductions/dispersal
9. Improve native fish passage at dams

Site-Specific Ecosystem Objectives

UMRS Environmental Objectives Database containing 2,600 spatially explicit objectives.

Database Objective Category Structure

<u>Functional</u>	<u>Structural</u>
<ul style="list-style-type: none"> • Water Quality <ul style="list-style-type: none"> ○ Water Clarity • Geomorphology <ul style="list-style-type: none"> ○ Backwater Depth ○ Water Level ○ Connectivity 	<ul style="list-style-type: none"> • Pattern of Habitats <ul style="list-style-type: none"> ○ Aquatic Areas ○ Terrestrial Areas ○ Land Cover/Use • Plants and Animals <ul style="list-style-type: none"> ○ Plants ○ Fish ○ Birds

Database Spatial Structure

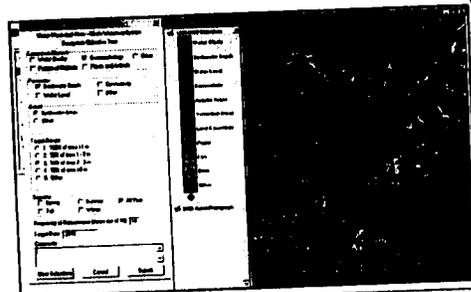


Figure 6-2. Navigation Study ecosystem goals and objectives structure.

NESP 1st Increment plan Implementing the ecosystem component

Partial working draft Barr 11-12-07

Introduction

The UMR IWW System Navigation Study recommended a 50 year plan with approximately 1000 actions costing \$5.3 billion dollars. The Chief of Engineers in December 2004 recommended the first increment of that plan including approximately 225 projects implemented using adaptive management and costing \$1.4 billion. The components of the first increment plan are presented in Table 14-7 of the Feasibility study. The Chief also recommended small scale and large scale navigation efficiency improvements totaling \$1.9 billion.

To accomplish the Chief's recommendation in the planned 15 years will require \$3.9 Billion (2006 \$) or an average of \$260 million/year. Neither the navigation or ecosystem projects are most effectively accomplished with flat annual funding.. The chart below illustrates the proposed funding stream from the Feasibility report. The Upper (Blue) bar is navigation and the Lower (Green) bar is ecosystem. This is the base funding scenario against which alternative funding strategies will be evaluated. The base funding scenario will also be used as one reference in establishing comparable progress between ecosystem and navigation execution.

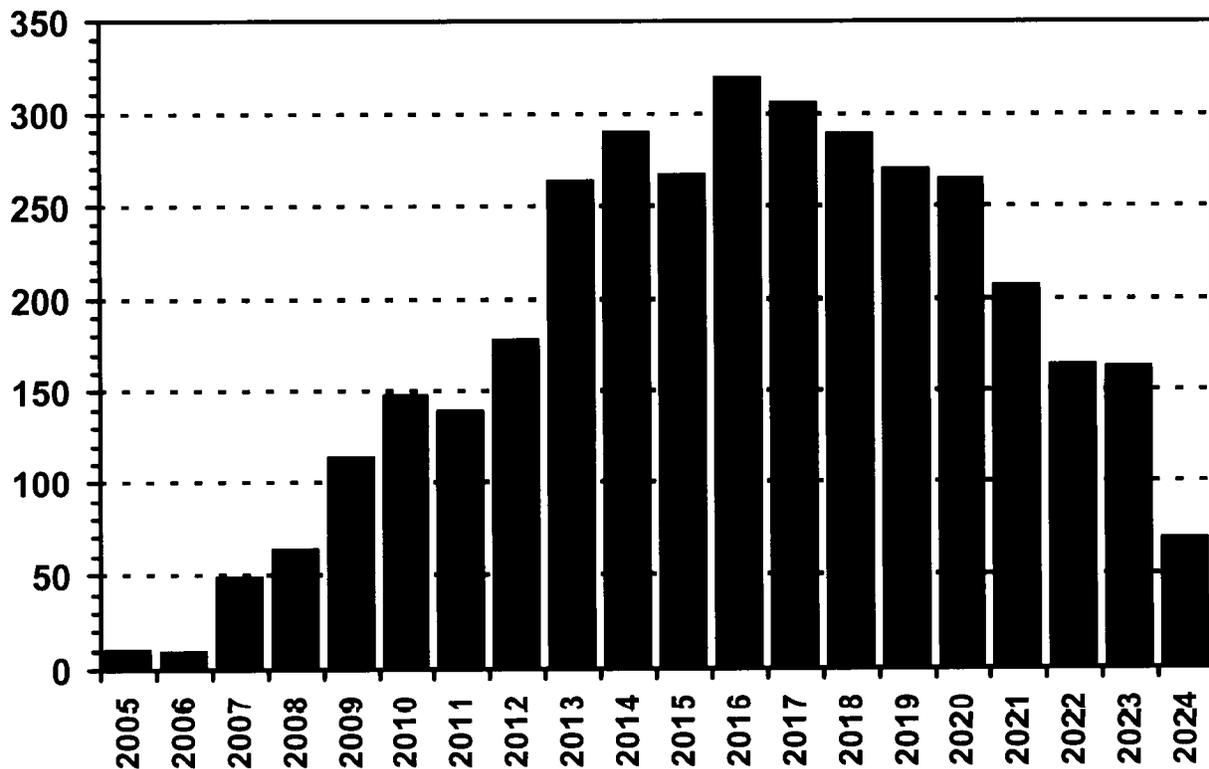


Table 14-7. Description and cost of Management Measures included in the proposed 15-year implementation strategy.

Management Measures	Alternative D*		15-year Implementation Plan			Total by Measure (\$millions)
	Number of Projects	Area of Benefit (acres)	Number of Projects	Area of Benefit (acres)		
Adaptive Management						\$136
Cultural Res. Management & Mitigation						\$26
Forest Management						\$38
Real Estate (35,000 acres in MVR and MVS)						\$146
Ecosystem Management and Restoration Measures	1,010	388,281	225	104,986		\$980
Island Building	91	91,000	23	23,000		\$151
Fish Passage	14		4			\$209
Floodplain Restoration ¹	72	118,756	24	46,056		\$177
Water Level Management ²	15		15			\$87
Backwater Restoration	215	124,800	38	24,800		\$177
Side Channel Restoration	147	14,700	29	2,900		\$82
Wing Dam/Dike Alteration	64	640	19	190		\$29
Shoreline Protection ³	392	38,385	73	8,040		\$68
Restoration Response Monitoring and Evaluation						\$136
Total Program Cost		\$5,323		\$1,462		

1 - Includes large and small-scale floodplain restoration, dam embankment lowering, and topographic diversity

2 - Includes pool-scale drawdowns, changing to dam point control at 2 sites, and reducing water level fluctuations on the Illinois River.

3 - Included bankline and island protection.

Maintaining Comparable Progress

Funding uncertainties require alternative implementation strategies. To facilitate stakeholder discussions the navigation efficiency component of NESP will develop stylized work plans reflecting annual navigation funding scenarios averaging \$100M, and \$150M and base. The scenarios will consider how best to focus design and construction resources in accomplishing the construction of 7 Locks and 5 Mooring Cells. Scenarios for the adaptive implementation of the ecosystem component will be somewhat more dynamic in that approximately 225 projects are proposed across four major floodplain reaches of the system. The \$100 M scenario for Navigation features would extend completion of lock construction by 7 years. The \$150M scenario extends the construction period 3 years. On an annual basis funding distributions to both components will be made in consideration of the base funding scenario above and progress towards completion of the Chief's recommended plan. This will require consideration of both \$ spent to date and progress toward completion of the recommended plan. The balance of this paper will consider strategies for the adaptive implementation of the Ecosystem component in the context of funding uncertainties.

Adaptive implementation by Geomorphic Reach

The Tables below illustrate the number and type of projects and management actions used to construct the Ecosystem first increment plan. Using a number of simplifying assumptions this plan can be broken down into the four major Floodplain Reaches which compose the 1200 mile study area (UFR, LFR, MMR, Ill River). A more detailed 12 geomorphic reach breakdown will be used in accounting for system response and further developing tools for adaptive management. However, the 4 reaches work best for discussing and tracking funding scenario strategies. Similar to the way we can track comparable progress between navigation and the ecosystem, we can use the geomorphic reaches to assure ecosystem restoration on the system is accomplished across the four reaches. Each of the four reaches has unique physical characteristics and restoration requirements.

(SEE TABLES Working Draft Ecosystem projects by floodplain Reach (Barr)
11/12/2007)

Navigation Feasibility Study**Working Draft Ecosystem projects by floodplain Reach (Barr)**

11/12/2007 10:50

Total Ecosystem First Increment Plan (15 year)

Ecosystem Measures	Number of Projects	Costs (2003 millions) Measure
Adaptive Management	-	\$136.0
Cultural Stewardship	78	\$13.0
Cultural Mitigation		\$13.0
Forest Management	0	\$37.6
Island Building	23	\$150.9
Fish Passage	4	\$209.0
Floodplain Restoration (Pools 1-13)	10	\$18.0
Floodplain Restoration (Rest of UMR-IWW)	7	\$140.0
Water Level Management - Pool	13	\$61.7
Water Level Management - Backwater	5	\$38.3
Backwater Restoration (Dredging)	33	\$145.5
Side Channel Restoration	29	\$80.8
Wing Dam/Dike Alteration	19	\$28.5
Island Protection	33	\$31.1
Shoreline Protection	40	\$37.6
Topographic Diversity	9	\$13.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$136.0
Total	227	\$1,315.8
Real Estate		\$146.0
Grand Total		\$1,461.8

Upper Floodplain Reach - (Pools 1-13) First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	52	\$8.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$100.0
Floodplain Restoration (Pools 1-13)	10	\$18.8
Floodplain Restoration (Rest of UMR-IWW)^a	-	-
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	3	\$19.1
Backwater Restoration (Dredging)	12	\$52.9
Side Channel Restoration	4	\$11.3
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	72	\$399.9

Lower Floodplain Reach - (Pools 14-26) First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	5	\$1.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$109.0
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	3	\$60.0
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	2	\$12.8
Backwater Restoration (Dredging)	10	\$44.1
Side Channel Restoration	7	\$19.7
Wing Dam/Dike Alteration	7	\$10.5
Island Protection	7	\$6.6
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$34.0
Total	67	\$464.5

Middle Mississippi River - First Increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions) Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	3	\$1.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	5	\$32.8
Fish Passage		
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	2	\$40.0
Water Level Management - Pool	-	-
Water Level Management - Backwater	-	-
Backwater Restoration (Dredging)	3	\$13.2
Side Channel Restoration	11	\$30.1
Wing Dam/Dike Alteration	8	\$12.0
Island Protection	2	\$1.9
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	44	\$225.6

Illinois River - First increment Plan		
Ecosystem Measures	Number of Projects	Project Costs (Millions)
		Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	18	\$3.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	2	\$13.1
Fish Passage	-	-
Floodplain Restoration (Pools 1-13)	-	-
Floodplain Restoration (Rest of UMR-IWW)	2	\$40.0
Water Level Management - Pool	1	\$4.9
Water Level Management - Backwater	-	\$6.4
Backwater Restoration (Dredging)	8	\$35.3
Side Channel Restoration	7	\$19.7
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity		
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
Total	44	\$226.8

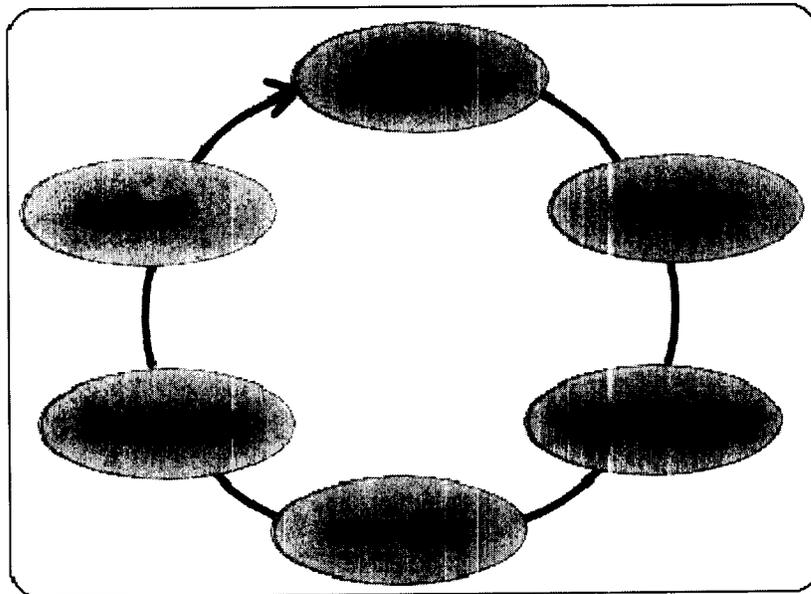
What is Adaptive Management?

Adaptive management focuses on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems.

Adaptive management:

*helps science managers maintain **FLEXIBILITY** in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction will improve **UNDERSTANDING** of ecological systems to achieve management objectives*

*is about taking **ACTION** to improve progress towards desired outcomes.*



Williams, B. K., R. C. Szaro, and C. D. Shapiro. 2007. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC. <http://www.doi.gov/initiatives/AdaptiveManagement/index.html>

Nearly 19 % of the First increment costs are identified to support The Adaptive management and Restoration response monitoring and evaluation. For illustration purposes these cost have been split evenly between the four Geomorphic reaches in the Table above. In practice some funds will be spent at the total system level supporting Program management and implementation at the scale of the system. Other funds will be spent on adaptive learning at the reach and project scale.

Coordination

Adaptive management is a structured approach to decision making that emphasizes accountability and explicitness in decision making (1 pg 4)

Key to successful adaptive management is a strong agreed upon structure for development, coordination and documentation of the adaptive management process. Clear documentation of decisions is essential to adaptive management and learning. Key points for stakeholder involvement are presented below from the DOI publication.

Step 1- Key Points

A strong effort must be made to identify and engage the appropriate stakeholders.

All phases of the adaptive management process must be open, transparent, and accessible to stakeholders.

Stakeholders must strive for agreement on scope, objectives, and management alternatives for the adaptive management application.

Stakeholders must commit to a process for adjusting management strategy over time, based on resource status and learning.

Stakeholder organizations must be encouraged to commit time and energy to adaptively manage the resource over the agreed-upon timeframe.

Stakeholders must commit resources for monitoring and assessment, in addition to decision making.

(Williams, B. K., R. C. Szaro, and C. D. Shapiro. 2007. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC.)

The Navigation Environmental Coordinating Committee (NECC) will continue be used to address overall system issues and annual work plans. The NECC has been meeting quarterly in conjunction with the EMPCC and UMRBA. The NECC was a cornerstone in developing the recommended plan and has continued to be a productive forum for initiating adaptive management during the Design (PED) phase of NESP. Active participation of NGO's and various publics in addition to the State and Federal members has been critical to the development and acceptance of good science in the program. It is anticipated that the focused development of formal rules of operation and shared learning opportunities will require additional time outside the quarterly meeting cycles to assure a successful start for the implementation phase. This will include consideration of a River Council to help coordinate and integrate management action on the system.

The River Resource Teams will function as the main coordinating body in consideration of objectives and actions for each of the 4 Distinct Floodplain Reaches. The River Resources Teams and their associated Technical working groups are uniquely positioned to serve as a focal point for reach activities in support of the NESP program. The responsibility to coordinate and integrate specific activities for the sustainable

management of each reach rests with the River Teams and their member agencies. Plans for projects and actions developed by the Reach Teams will be considered in developing annual work plans for the system. The NECC will review annual work plans to facilitate discussion of comparable progress between geomorphic reaches and between the navigation and ecosystem components of NESP.

Current Considerations for the River Resource Teams include:

Assure participation from NGOs and interested publics
Geomorphic Reaches overlap District and River Team boundaries special attention is needed to assure compatibility between adjacent teams.
Establishment of an Illinois River Working Group to integrate with the RRCT and RRAT.
Share lessoned learned between River Resource Teams.

Objectives

Identify clear, measurable and agreed-upon management objectives to guide decision making and evaluate management effectiveness over time (1 pg 24).

Step 2- Key Points

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Database Spatial Structure

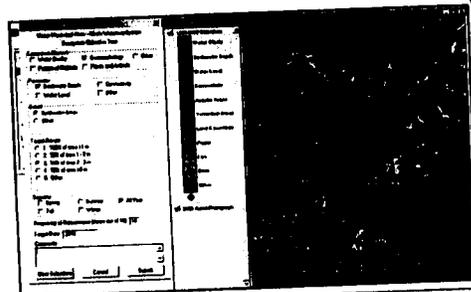


Figure 6-2. Navigation Study ecosystem goals and objectives structure.



SYSTEMIC FOREST MANAGEMENT ON THE UPPER MISSISSIPPI RIVER SYSTEM

Presentation for the

NECC / ECC

by

Randy Urich, Forester, St. Paul District

representing

The NESP Forest Management Product Delivery Team

November 14, 2007



Outline



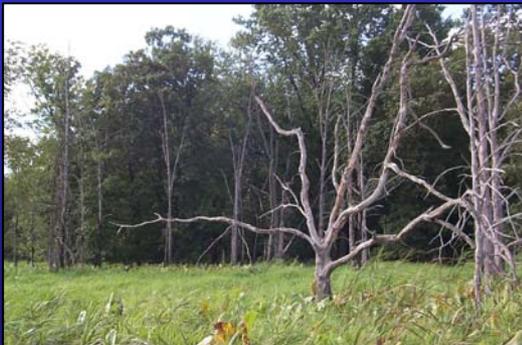
- **General overview of initiative**
- **Reno Bottoms Forest Restoration Project**
- **Hydrogeomorphic method (HGM)**



Systemic Forest Management



- Forests and grasslands of the UMRS floodplain are very important wildlife habitat.
- Modification of the river and floodplain have had significant effect on the habitat.
- Important ecological processes for plant growth and survival have become artificial and are much harsher than pre-settlement conditions.
- Coordinated management at a system level is needed to ensure sustainability.



Location:	Entire UMRS
Acreage:	2,768,629
Est. Cost:	\$44.7M
Start PED:	2005
Start Const:	2009
Complete:	2023+

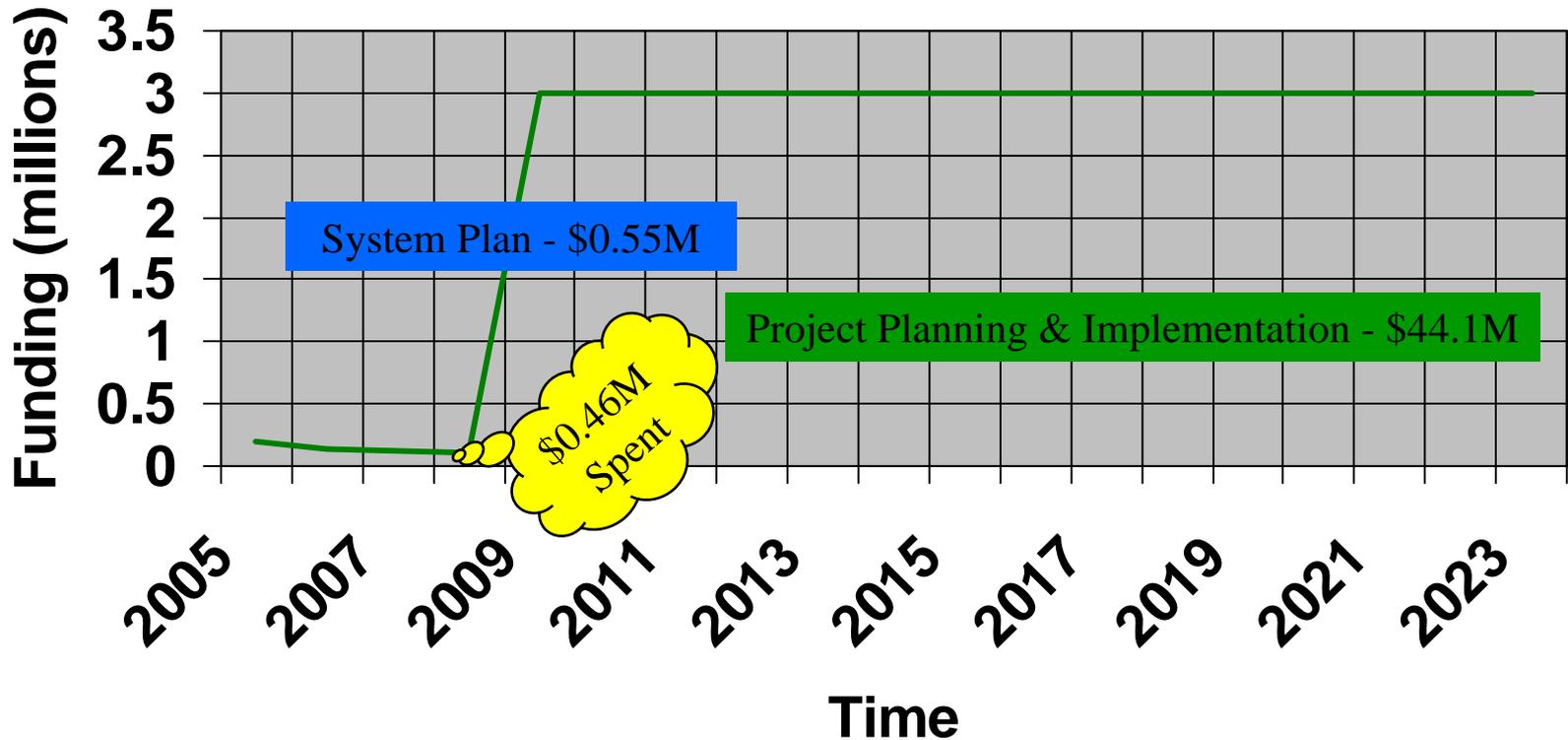




Systemic Forest Management



Project Status

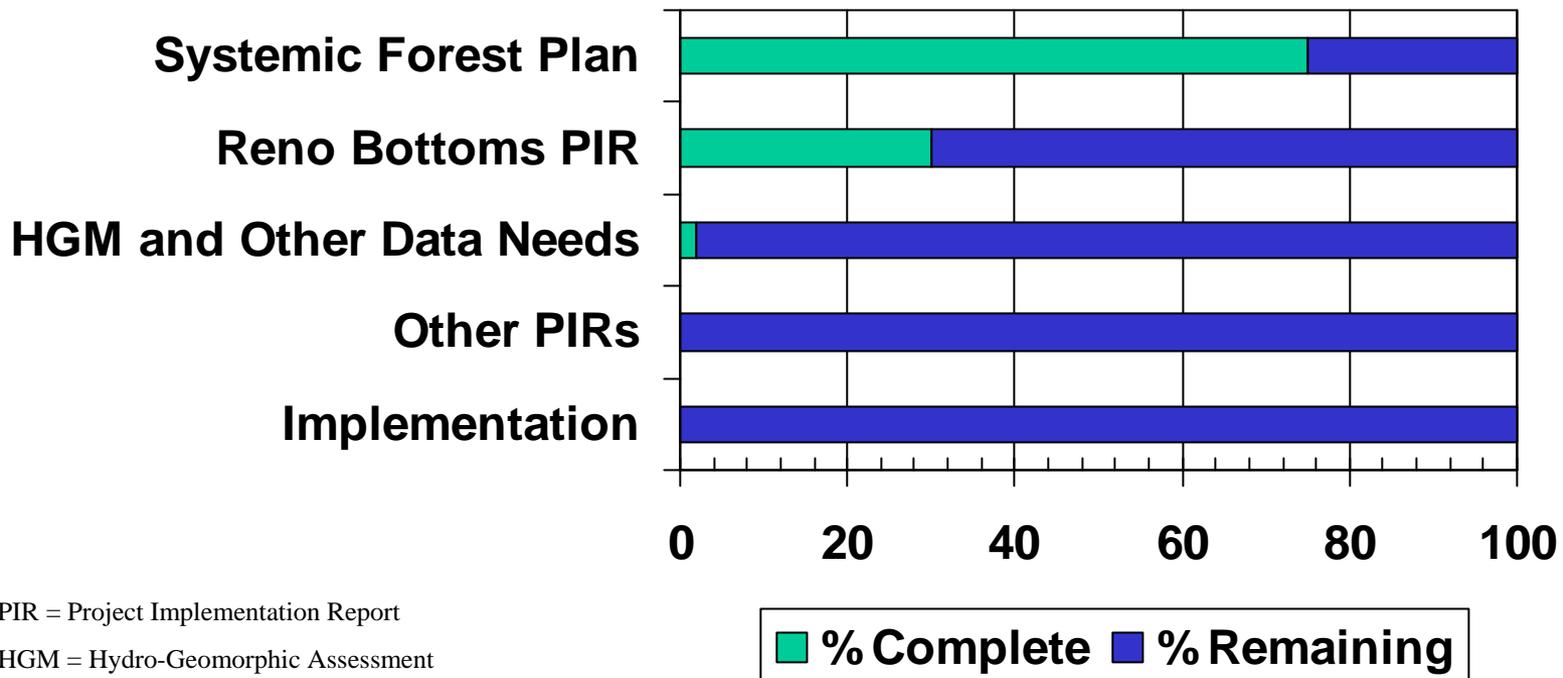




Systemic Forest Management



Project Status



\$0.55M – Total Estimated cost of PED Work

\$0.45M – FY05-07 PED Expenditures on Plan, PIR, HGM

One Team: Relevant, Ready, Responsive and Reliable



Reno Bottoms Forest Restoration Project





Reno Bottoms Forest Restoration Project



- **Create topographic diversity by backwater dredging and placement of material**
- **Plant hard mast and other forest species (forest age and species diversity)**
- **Control invasive species**
- **Potential fisheries benefits**



Hydrogeomorphic (HGM) Modeling and Analysis



HGM is a process to evaluate ecosystem restoration options. It relies heavily on eight types of data:

- soils
- geomorphology
- topography/elevation
- hydrology/flood frequency
- aerial photographs and cartography maps
- land cover and vegetation communities
- presence and distribution of key plant and animal species
- physical anthropogenic features

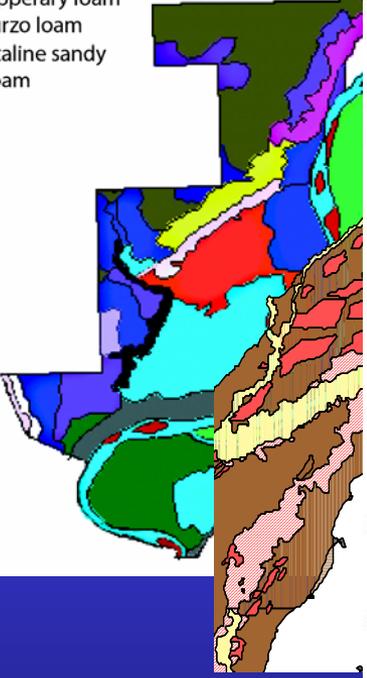
- Badland- Rock Outcrop
- Blackston loam
- Water
- Green River loam
- Green River loam
- Greybull-Utaline Badland Complex
- Jenrid sandy loam
- Nakoy loam fine sand
- Ohtog-Parohtog Complex
- Riverwash
- Shotnick loamy sand & Walkup
- Stygee clay/silty clay
- Tipperary loam
- Turzo loam
- Utaline sandy loam

Table 5. Hydrogeomorphic (HGM) matrix of historic distribution of major vegetation communities/habitat types in the Illinois-Mississippi River confluence area near Calhoun and Gilbert Lake Divisions, Two Rivers National Wildlife Refuge in relationship to elevation, geomorphic surface, and soil type. Relationships were determined from land cover maps prepared by the Illinois Natural History Survey from General Land Office survey notes, taken in the early 1800s, the Mississippi River Commission in 1890, early soil maps for Jersey and Calhoun counties in Illinois, geomorphology maps prepared by Hajic (2000a,b), and various naturalist/botanical accounts and publications from the late 1800s and early 1900s.

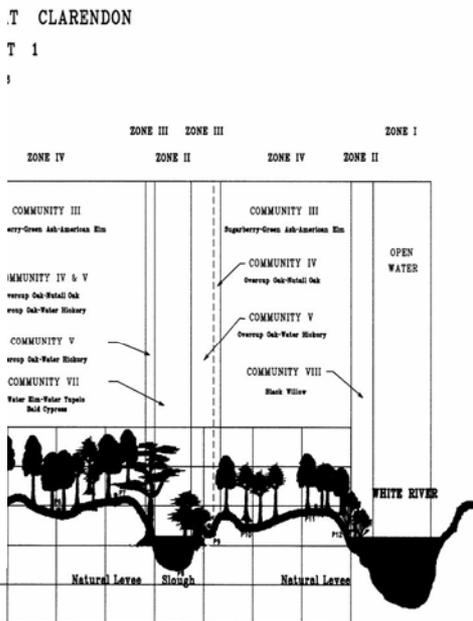
Habitat type	Elevation	Primary Soil types	Geomorphic Surface
Open water	410-412	Beaucoup and Quiver silt loam	Abandoned channel
Seasonal herbaceous/emergent wetland	412-414	Beaucoup silty clay loam; Quiver silt loam	Abandoned channel, Type B floodplain, point-bar swales
Shrub/scrub	413-415	Beaucoup silty clay loam; Blyton silt loam	Abandoned channel, Type B,C floodplain, point-bar swale
Bottomland forest	414-421 ¹	Beaucoup silty clay loam; Wakeland, Quiver, and Blyton silt loam	Type B,C floodplain, natural levees
Bottomland prairie	417-422 ²	Tice, Worthen, and Littleton silt loam	Type B,C floodplain, point-bar ridges
Savanna	417-422	Beaucoup silty clay Loam; Worthen, Littleton, and Tice silt loam	Type B,C floodplain, beach and point-bar ridges
Mesic prairie	422-435	Tice, Worthen, Littleton silt loams; Oakville sandy loam	Floodplain terrace and beach ridge
Upland forest	> 435	Okaw silt loam	Loess hill, bluffs, terrace ridges

¹Bottomland forest appears to have ranged 414-419 feet amsl in the Swan Lake floodplain area and 417- 421 feet amsl in the Gilbert Lake floodplain area.

²Bottomland prairie appears to have ranged 417-422 feet amsl in the Swan Lake floodplain area and 419-422 feet amsl in the Gilbert Lake floodplain area.



30





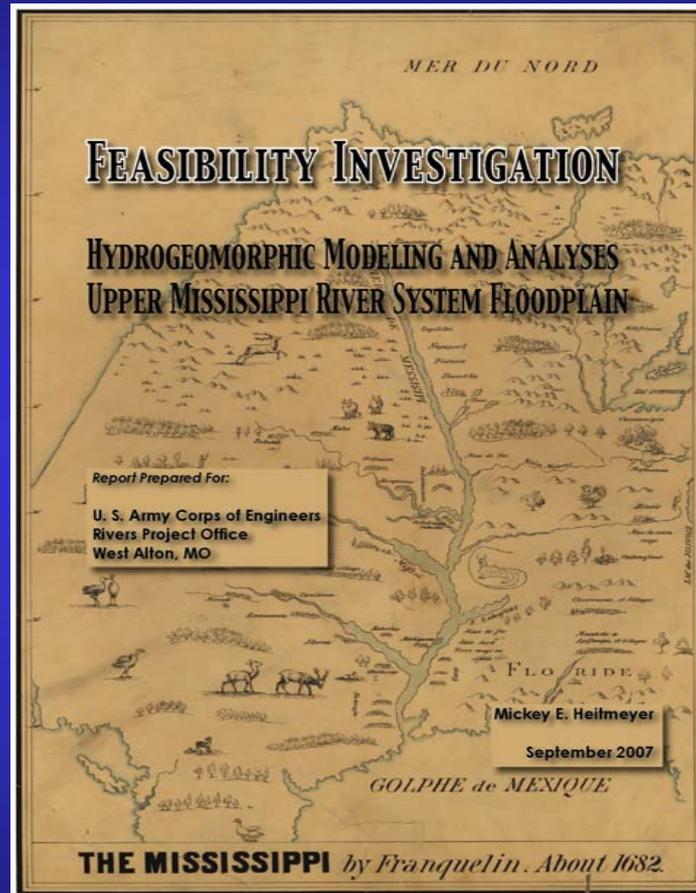
Hydrogeomorphic (HGM) Modeling and Analysis



- A “true” biological plan that:
 - identifies restoration and management options for various resource objectives
 - serves as a basis for decisions about development, modification, and operation of infrastructure
- A “GIS” approach that includes reference areas for the combination of:
 - geomorphological surface
 - topography and slope
 - soils
 - flood frequency zone



Hydrogeomorphic (HGM) Modeling and Analysis



Report available at <http://www2.mvr.usace.army.mil/UMRS/NESP/>

Look for “Latest News”

One Team: Relevant, Ready, Responsive and Reliable



Thank You



Questions ?

**NESP Project M1, Forest Management
Systemic HGM for the UMRS
November 2007**

The hydrogeomorphic method (HGM) is a process to evaluate ecosystem restoration and management options. HGM relies heavily on eight types of data, most of which require geospatial digital information usable in an ArcGIS/ArcMAP format. These data include historic and current information about:

- 1) soils
- 2) geomorphology
- 3) topography/elevation
- 4) hydrology/flood frequency
- 5) aerial photographs and cartography maps
- 6) land cover and vegetation communities
- 7) presence and distribution of key plant and animal species
- 8) physical anthropogenic features

In the process of developing a systemic forest management plan for the UMRS, the NESP Forestry PDT has identified the need for a terrestrial vegetation model that would be used by managers to identify areas of greatest potential for forest and grassland habitat restoration and management. This information would help maximize effectiveness by focusing limited resources in those areas where the likelihood of success is highest.

The St. Louis District of the Corps and the U.S. Fish and Wildlife Service are among a growing number of agencies who have already adopted the HGM approach to evaluate options and direct strategies for floodplain habitat restoration along the Middle Mississippi River. A continuation of HGM assessment upstream for the UMRS would compliment current efforts and provide the terrestrial vegetation model needed to successfully plan and implement restoration and management projects under the NESP Systemic Forest Management Plan. In addition, a system-wide HGM assessment would significantly benefit other NESP ecosystem PDTs and could serve as the terrestrial vegetation model component of the NESP Decision Support System (DSS).

In FY07, the NESP Forestry PDT contracted for a report to assess the feasibility of conducting a HGM evaluation for the entire UMRS. Objectives of the report were to identify availability of data, technology and expertise to develop the evaluations. The report concludes that an HGM evaluation for the UMRS is possible with existing geospatial and ecological data sets, and could potentially be completed in 3-5 years. The NESP Forestry PDT recommends immediate implementation of system-wide HGM upon authorization of NESP appropriations.



**US Army Corps
of Engineers**
Rock Island District

Information Paper

PROJECT M.

Upper Mississippi River System - Navigation and Ecosystem Sustainability Program

Systemic Forestry Management

Upper Mississippi River
Minnesota, Wisconsin, Iowa,
Illinois and Missouri

Contact

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Location/Description

The Upper Mississippi River System (UMRS) is a vital part of our national economy and an irreplaceable ecological treasure. Extending from Minneapolis, Minnesota to the confluence of the Ohio River, this multi-use resource supports an extensive navigation system (made up of 1200 miles of 9 foot channel and 37 lock and dam sites), a diverse ecosystem (2.7 million acres of habitat supporting hundreds of fish and wildlife species), floodplain agriculture, recreation and tourism. Based on the recommendation of the recently completed UMR-IWW System Navigation Feasibility Study that examined system needs over the next 50 years, the Navigation and Ecosystem Sustainability Program (NESP) was implemented to achieve the dual purposes of UMRS ecosystem restoration and navigation improvements. Systemic Forest Management is one of 23 initial NESP ecological component projects being implemented under this new UMRS program.

RESOURCE PROBLEM:

The forest and grassland components of the UMRS floodplain are very important habitat for migratory and nesting birds as well as other wildlife. These habitats have been significantly affected by man's use and manmade modifications of the rivers and their floodplains. While the existing forests and grasslands may appear to casual observers to be natural and pristine, some of the important processes that determine their growth and survival have become artificial and are much harsher than pre-settlement conditions. Coordinated management at a system level is needed to ensure long-term sustainability of these resources.

PROJECT FEATURES:

The project is development of a regional management plan, which will establish a foundation for the Corps, partner agencies and stakeholders to more effectively collaborate on and implement environmental stewardship activities within UMRS forests.



Current Status

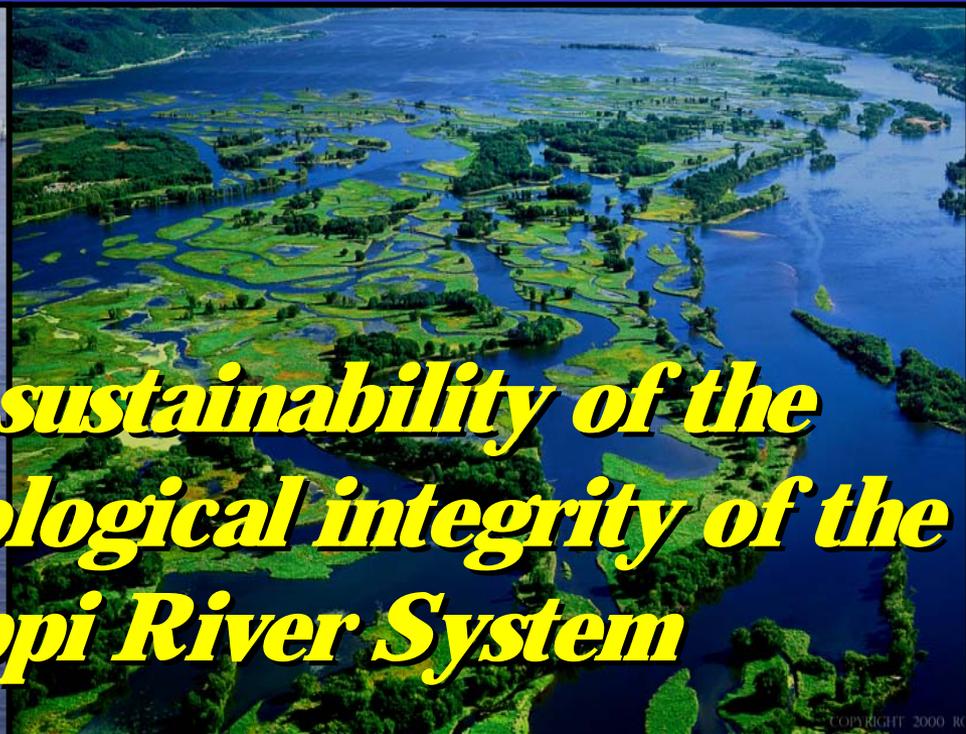
In fiscal year (FY) 2005, the project team began writing a draft systemic forest management plan, with several reviews by partner agencies and groups. Three additional projects were implemented including a forest inventory, a survey of sediment depth, and classification of more than 620,000 acres of vegetation on the Upper Mississippi and Illinois River floodplains. In FY06, the team is scheduled to complete the draft plan and present for Science Panel and public review. In addition, plans are underway to work with the Science Panel to develop a floodplain vegetation succession model, which will help significantly in future forest management decisions.

Fiscal (FY05-07)

Phase	Product	Est. Cost	Est. Completion
I	<i>DRAFT Systemic Forest Mgt. Plan</i>	\$114,200	Sept. 30, 2005
IA	<i>Data Collection</i>	82,000	Sept. 30, 2005
II	<i>Final Systemic Forest Mgt. Plan</i>	150,000	Dec. 31, 2006
III	<i>Initial Forest Mgt. Projects</i>	900,000	Oct. 1, 2007
IV	<i>Annual Implementation</i>	3,000,000	After Oct. 1, 2007



Upper Mississippi River System Navigation & Ecosystem Sustainability Program (NESP)



*To seek long-term sustainability of the
economic uses and ecological integrity of the
Upper Mississippi River System*



NESP WORKPLAN TOPICS



- **FY05-07 Expenditures (Handout)**
- **Potential FY08 Workplans – (Handout)**
 - ✓ **\$2.2 M – Full Stop by 30 Dec, 8-12mo recovery**
 - ✓ **\$10M - Stabilized**
 - ✓ **\$12M – Stabilized +**
 - ✓ **\$14M - Progressive**
- **Funding Capability FY09-13 (Handout)**
- **FY09 Construction Capability**
- **FY08 Issues and Concerns**



NESP EXPENDITURES FY05-07



Projects Activities	ACTUAL EXPENDITURES			
	2005	2006	2007	TOTALS
PROGRAMMATIC PROJECTS				
SUBTOTALS	\$1,120,642.78	\$664,029.38	\$749,875.44	\$2,534,547.60
ECONOMIC RE-EVALUATION				
SUBTOTALS	\$415,946.13	\$618,559.85	\$2,466,655.11	\$3,501,161.09
NAVIGATION EFFICIENCY PROJECTS				
SUBTOTALS	\$4,480,489.56	\$4,041,588.26	\$4,581,568.01	\$13,103,645.83
ECOSYSTEM RESTORATION PROJECTS				
SUBTOTALS	\$4,290,224.05	\$3,856,484.67	\$4,483,093.07	\$12,629,801.79
TOTALS	\$10,307,302.52	\$9,180,662.16	\$12,281,191.63	\$31,769,156.31



NESP FY08 WORKPLANS



	\$2.2M	\$10M	\$12M	\$14M
Projects Activities				
PROGRAMMATIC PROJECTS				
SUBTOTALS	\$240,000.00	\$615,000.00	\$720,000.00	\$825,000.00
ECONOMIC RE-EVALUATION				
SUBTOTALS	\$200,000.00	\$405,000.00	\$750,000.00	\$1,000,000.00
NAVIGATION EFFICIENCY PROJECTS				
SUBTOTALS	\$880,000.00	\$4,490,000.00	\$5,265,000.00	\$6,088,000.00
ECOSYSTEM RESTORATION PROJECTS				
SUBTOTALS	\$880,000.00	\$4,490,000.00	\$5,265,000.00	\$6,087,000.00
TOTALS	\$2,200,000.00	\$10,000,000.00	\$12,000,000.00	\$14,000,000.00



POTENTIAL FY08 WORKPLANS

PGRM & ECON

	\$2.2M	\$10M	\$12M	\$14M	
Projects Activities					LEAD
PROGRAMMATIC PROJECTS					
A. Program Management	\$210,000.00	\$500,000.00	\$565,000.00	\$625,000.00	MVR
B. Institutional Arrangements (PED)	\$5,000.00	\$15,000.00	\$20,000.00	\$25,000.00	MVP
C. Systemic Public Involvement	\$25,000.00	\$100,000.00	\$135,000.00	\$175,000.00	MVP
SUBTOTALS	\$240,000.00	\$615,000.00	\$720,000.00	\$825,000.00	
ECONOMIC RE-EVALUATION					
D. Navigation Adaptive Management	\$200,000.00	\$405,000.00	\$750,000.00	\$1,000,000.00	MVS
SUBTOTALS	\$200,000.00	\$405,000.00	\$750,000.00	\$1,000,000.00	



POTENTIAL FY08 WORKPLANS

Navigation Efficiency

	\$2.2M	\$10M	\$12M	\$14M	
Projects Activities					LEAD
NAVIGATION EFFICIENCY PROJECTS					
E. Systemic Env. Mitigation	\$100,000.00	\$400,000.00	\$500,000.00	\$600,000.00	MVR
F. Traffic Management Concepts	\$25,000.00	\$100,000.00	\$100,000.00	\$100,000.00	MVR
G. Mooring Cells and Buoys	\$50,000.00	\$80,000.00	\$80,000.00	\$80,000.00	
G1. L&D 14	\$25,000.00	\$45,000.00	\$45,000.00	\$45,000.00	MVR
G2. L&D 24	\$0.00	\$10,000.00	\$10,000.00	\$10,000.00	MVS
G3. L&D LaGrange	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	MVR
H. Switchboat	\$50,000.00	\$100,000.00	\$100,000.00	\$100,000.00	MVS
I. NEW 1200' Locks	\$655,000.00	\$3,810,000.00	\$4,485,000.00	\$5,208,000.00	
I1. Lock 22	\$265,000.00	\$1,595,000.00	\$1,915,000.00	\$2,167,000.00	MVR
I2. Lock 25	\$315,000.00	\$2,040,000.00	\$2,320,000.00	\$2,686,000.00	MVS
I3. Lock La Grange	\$75,000.00	\$175,000.00	\$250,000.00	\$355,000.00	MVR
SUBTOTALS	\$880,000.00	\$4,490,000.00	\$5,265,000.00	\$6,088,000.00	



POTENTIAL FY08 WORKPLANS

Ecosystem Restoration



	\$2.2M	\$10M	\$12M	\$14M	
Projects Activities					LEAD
ECOSYSTEM RESTORATION PROJECTS					
J. UMRS Ecosystem Rest. Plan	\$40,000.00	\$225,000.00	\$325,000.00	\$400,000.00	MVR
K. Ecosystem Adaptive Management	\$275,000.00	\$1,000,000.00	\$1,050,000.00	\$1,200,000.00	MVR
L. System Cultural Stewardship	\$25,000.00	\$200,000.00	\$240,000.00	\$300,000.00	MVR
M. Forest Management	\$45,000.00	\$150,000.00	\$225,000.00	\$300,000.00	
M1. Forest Mgmt. - Reno Bottoms	\$30,000.00	\$100,000.00	\$150,000.00	\$200,000.00	MVP
M2. Forest Mgmt. - Emiquon West	\$15,000.00	\$50,000.00	\$75,000.00	\$100,000.00	MVR
N. Fleeting Plan	\$10,000.00	\$80,000.00	\$110,000.00	\$110,000.00	MVR
P. Fish Passage	\$240,000.00	\$1,235,000.00	\$1,450,000.00	\$1,500,000.00	
P1. Fish Passage - L&D 26	\$105,000.00	\$505,000.00	\$600,000.00	\$600,000.00	MVS
P2. Fish Passage - L&D 22	\$135,000.00	\$730,000.00	\$850,000.00	\$900,000.00	MVR
R. Pool Water Level Management	\$70,000.00	\$300,000.00	\$325,000.00	\$350,000.00	
R1. Pool 5	\$25,000.00	\$100,000.00	\$100,000.00	\$100,000.00	MVP
R2. Pool 9	\$0.00	\$0.00	\$25,000.00	\$50,000.00	MVP
R3. Pool 18	\$45,000.00	\$200,000.00	\$200,000.00	\$200,000.00	MVR
S. Backwater Restoration - IWW Peoria Reach	\$10,000.00	\$200,000.00	\$225,000.00	\$250,000.00	MVR
U. Side Channel Restoration -	\$25,000.00	\$300,000.00	\$350,000.00	\$400,000.00	
U1. Buffalo Chute	\$25,000.00	\$280,000.00	\$330,000.00	\$380,000.00	MVS
U2. Scheniman Chute	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	MVS

One Team: Relevant, Ready, Responsive and Reliable



POTENTIAL FY08 WORKPLANS

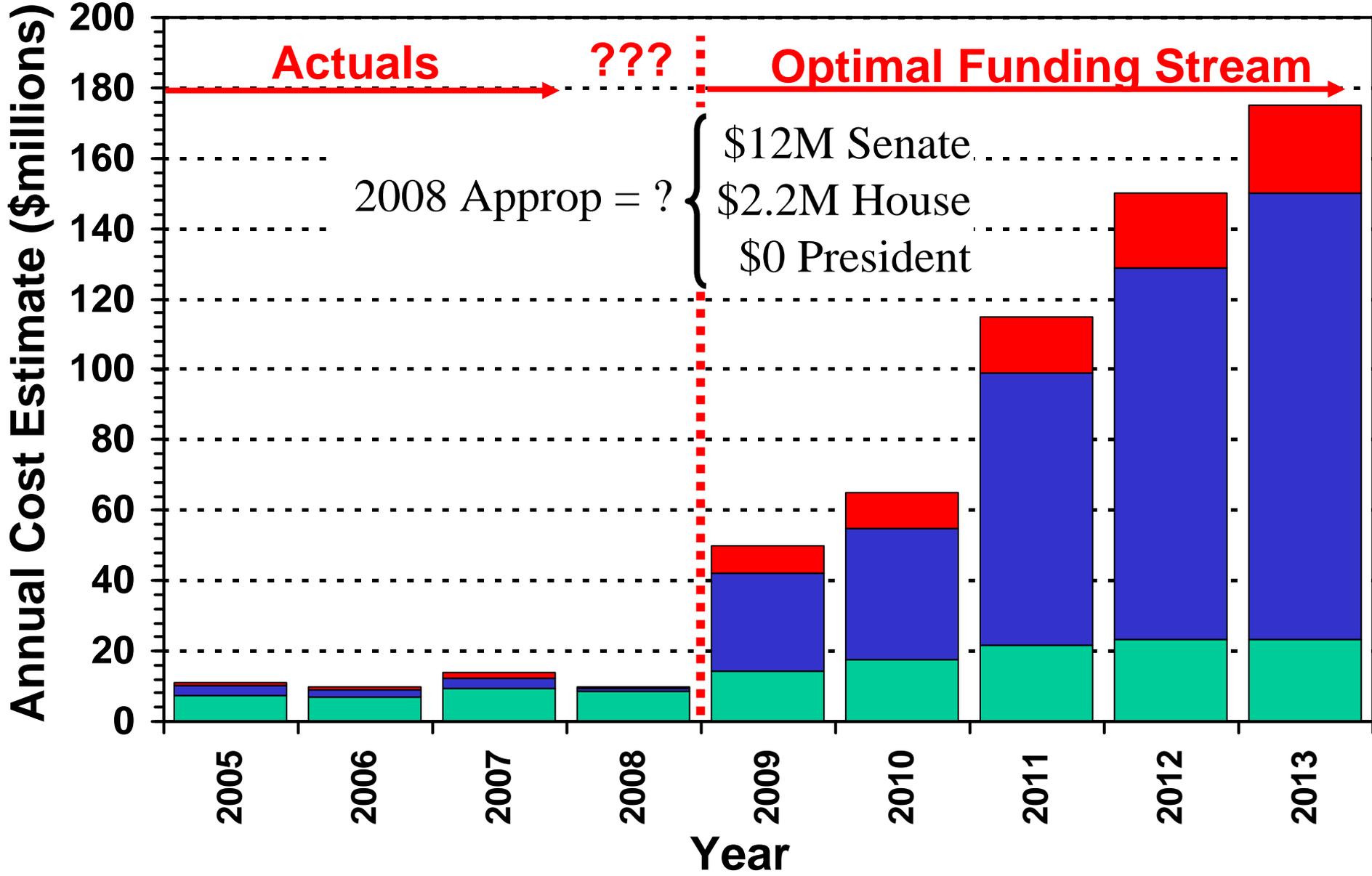
Ecosystem Restoration



	\$2.2M	\$10M	\$12M	\$14M	
Projects Activities					LEAD
ECOSYSTEM RESTORATION PROJECTS					
V. Wing Dam/Dike Alteration	\$65,000.00	\$250,000.00	\$265,000.00	\$285,000.00	
V1. Herculaneum	\$55,000.00	\$230,000.00	\$245,000.00	\$265,000.00	MVS
V2. Pool 2	\$10,000.00	\$20,000.00	\$20,000.00	\$20,000.00	MVP
W. Island Shoreline Protection	\$25,000.00	\$150,000.00	\$200,000.00	\$250,000.00	MVR
X. Dam Point Control - L&D 25	\$45,000.00	\$200,000.00	\$250,000.00	\$300,000.00	MVS
Y. Dam Embankment Lowering	\$5,000.00	\$200,000.00	\$175,000.00	\$200,000.00	
Y1. L&D 8	\$5,000.00	\$200,000.00	\$175,000.00	\$200,000.00	MVP
???. NEW STARTS	\$0.00	\$0.00	\$75,000.00	\$242,000.00	
SUBTOTALS	\$880,000.00	\$4,490,000.00	\$5,265,000.00	\$6,087,000.00	

NESP FY09-13 Optimal Funding Stream

■ Corps Labor
 ■ Private Sect. Contracts
 ■ Other Fed Agencies





Construction Capability

(\$16+ Million)



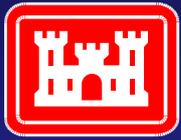
- **Switchboats Stage 1**
- **Mooring Cells at Locks 14 & La Grange**
- **Traffic Management Field Trials**
- **Lock 22 – US Channel Alignment Dredging**
- **Cultural - Erosion Protection – 2 Sites**
- **Forest – Reno Bottoms & Emiquon West**
- **Water Level Management – Pool 5**
- **Water Level Management – Pool 18**
- **Side Channel Restoration – Buffalo Island**
- **Side Channel Restoration – Scheniman Chute**
- **Wing Dam Alteration – Herculaneum**
- **Wing Dam Alteration – Pool 2**
- **Bank Protection – Twin Island (IWW)**



PRIMARY ISSUES AND CONCERNS FY08



- ✓ **Economic Re-evaluation**
- ✓ **CRA & FY08 Appropriations**
- ✓ **Authorization Guidance**
- ✓ **First Increment Plans**
- ✓ **Project Implementation Schedules**



UMRS NAVIGATION & ECOSYSTEM SUSTAINABILITY PROGRAM (NESP)



Points of Contact

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UMRS NESP Website

<http://www2.mvr.usace.army.mil/nesp/>

NESP EXPENDITURES 2005-07

LAST UPDATE 10-11-07

P2 Code	Projects Activities	ACTUAL EXPENDITURES			TOTALS	LEAD
		2005	2006	2007		
PROGRAMMATIC PROJECTS						
121643	A. Program Management	\$625,957.77	\$496,837.36	\$506,589.70	\$1,629,384.83	MVR
121825	B. Institutional Arrangements (PED)	\$238,221.18	\$60,981.02	\$19,567.84	\$318,770.04	MVP
121823	C. Systemic Public Involvement	\$256,463.83	\$106,211.00	\$223,717.90	\$586,392.73	MVP
	SUBTOTALS	\$1,120,642.78	\$664,029.38	\$749,875.44	\$2,534,547.60	
ECONOMIC RE-EVALUATION						
121673	D. Navigation Adaptive Management	\$415,946.13	\$618,559.85	\$2,466,655.11	\$3,501,161.09	MVS
	SUBTOTALS	\$415,946.13	\$618,559.85	\$2,466,655.11	\$3,501,161.09	
NAVIGATION EFFICIENCY PROJECTS						
121827	E. Systemic Env. Mitigation	\$343,101.25	\$283,764.71	\$245,419.04	\$872,285.00	MVR
121828	F. Traffic Management Concepts	\$40,393.99	\$34,191.11	\$6,583.57	\$81,168.67	MVR
	G. Mooring Cells and Buoys	\$170,361.82	\$62,350.12	\$237,545.97	\$470,257.91	
121850	G1. L&D 14			\$51,769.33	\$51,769.33	MVR
141195	G2. L&D 24			\$28,742.33	\$28,742.33	MVS
141200	G3. L&D LaGrange			\$157,034.31	\$157,034.31	MVR
121846	H. Switchboat	\$88,599.04	\$34,503.17	\$87,643.88	\$210,746.09	MVS
	I. NEW 1200' Locks	\$3,838,033.46	\$3,626,779.15	\$4,004,375.55	\$11,469,188.16	
121847	I1. Lock 22	\$1,868,004.43	\$1,693,614.92	\$1,537,530.72	\$5,099,150.07	MVR
121848	I2. Lock 25	\$1,726,537.14	\$1,643,478.98	\$1,946,151.72	\$5,316,167.84	MVS
121824	I3. Lock La Grange	\$243,491.89	\$289,685.25	\$520,693.11	\$1,053,870.25	MVR
	SUBTOTALS	\$4,480,489.56	\$4,041,588.26	\$4,581,568.01	\$13,103,645.83	
ECOSYSTEM RESTORATION PROJECTS						
122280	J. UMRS Ecosystem Rest. Plan	\$330,638.70	\$363,739.27	\$522,043.91	\$1,216,421.88	MVR
121677	K. Ecosystem Adaptive Management	\$1,083,208.44	\$966,816.12	\$972,879.36	\$3,022,903.92	MVR
121679	L. System Cultural Stewardship	\$434,456.93	\$150,776.05	\$214,368.43	\$799,601.41	MVR
	M. Forest Management	\$211,048.07	\$194,124.95	\$217,975.63	\$623,148.65	
121826	M1. Forest Mgmt. - Reno Bottoms	\$197,096.74	\$132,782.40	\$124,472.47	\$454,351.61	MVP
129945	M2. Forest Mgmt. - Emiquon West	\$13,951.33	\$61,342.55	\$93,503.16	\$168,797.04	MVR
121680	N. Fleeting Plan	\$80,380.34	\$67,748.40	\$66,546.34	\$214,675.08	MVR
	O. Island Building	\$144,283.16	\$79,681.78	\$4,052.54	\$228,017.48	
125627	O1. Island Building - Pool 11	\$144,283.16	\$79,681.78	\$4,052.54	\$228,017.48	MVR
	P. Fish Passage	\$444,642.23	\$826,545.06	\$999,522.96	\$2,270,710.25	
125620	P1. Fish Passage - L&D 26	\$134,182.60	\$196,727.99	\$338,064.81	\$668,975.40	MVS
125617	P2. Fish Passage - L&D 22	\$310,459.63	\$629,817.07	\$661,458.15	\$1,601,734.85	MVR
	Q. Floodplain Restoration	\$53,007.41	\$18,784.58	\$0.00	\$71,791.99	
	Q1. Floodplain Restoration - Emiquon East, IL	\$44,859.76	\$0.00	\$0.00	\$44,859.76	MVR
129911	Q2. Floodplain Restoration - Root River, MN	\$4,328.77	\$11,251.14	\$0.00	\$15,579.91	MVP
129922	Q3. Floodplain Restoration - Pierce County, WI	\$3,818.88	\$7,533.44	\$0.00	\$11,352.32	MVP
	R. Pool Water Level Management	\$450,133.26	\$428,930.02	\$543,172.69	\$1,422,235.97	
131873	R1. Pool 5	\$230,186.79	\$161,988.15	\$144,786.80	\$536,961.74	MVP
131874	R2. Pool 9	\$87,383.43	\$75,957.04	\$13,733.65	\$177,074.12	MVP
131876	R3. Pool 18	\$132,563.04	\$190,984.83	\$384,652.24	\$708,200.11	MVR
125647	S. Backwater Restoration - IWW Peoria Reach	\$50,022.09	\$75,335.19	\$124,601.47	\$249,958.75	MVR
	U. Side Channel Restoration -	\$212,780.86	\$132,753.94	\$83,675.43	\$429,210.23	
125658	U1. Buffalo Chute	\$212,437.00	\$132,753.94	\$82,969.94	\$428,160.88	MVS
125644	U2. Scheniman Chute	\$343.86	\$0.00	\$705.49	\$1,049.35	MVS
	V. Wing Dam/Dike Alteration	\$280,494.40	\$176,612.41	\$264,834.51	\$721,941.32	
125643	V1. Herculaneum	\$185,085.61	\$173,949.92	\$227,713.52	\$586,749.05	MVS
125642	V2. Pool 2	\$95,408.79	\$2,662.49	\$37,120.99	\$135,192.27	MVP
125640	W. Island Shoreline Protection	\$74,083.26	\$60,107.04	\$146,148.53	\$280,338.83	MVR
125639	X. Dam Point Control - L&D 25	\$223,383.32	\$179,880.70	\$181,881.13	\$585,145.15	MVS
	Y. Dam Embankment Lowering	\$109,728.32	\$122,667.76	\$141,390.14	\$373,786.22	
125614	Y1. L&D 8	\$109,728.32	\$122,667.76	\$114,540.75	\$346,936.83	MVP
	Y2. L&D 3	\$0.00	\$0.00	\$26,849.39	\$26,849.39	MVP
125638	Z. Reduce Water Level Fluctuation - IWW	\$107,933.26	\$11,981.40	\$0.00	\$119,914.66	MVR
	SUBTOTALS	\$4,290,224.05	\$3,856,484.67	\$4,483,093.07	\$12,629,801.79	
	TOTALS	\$10,307,302.52	\$9,180,662.16	\$12,281,191.63	\$31,769,156.31	

NESP POTENTIAL FY08 WORKPLANS - \$2.2-10-12-14M

LAST UPDATE 10-11-07

2008 - GI PED ONLY

Projects Activities	\$2.2M	\$10M	\$12M	\$14M	LEAD
PROGRAMMATIC PROJECTS					
A. Program Management	\$210,000.00	\$500,000.00	\$565,000.00	\$625,000.00	MVR
B. Institutional Arrangements (PED)	\$5,000.00	\$15,000.00	\$20,000.00	\$25,000.00	MVP
C. Systemic Public Involvement	\$25,000.00	\$100,000.00	\$135,000.00	\$175,000.00	MVP
SUBTOTALS	\$240,000.00	\$615,000.00	\$720,000.00	\$825,000.00	
ECONOMIC RE-EVALUATION					
D. Navigation Adaptive Management	\$200,000.00	\$405,000.00	\$750,000.00	\$1,000,000.00	MVS
SUBTOTALS	\$200,000.00	\$405,000.00	\$750,000.00	\$1,000,000.00	
NAVIGATION EFFICIENCY PROJECTS					
E. Systemic Env. Mitigation	\$100,000.00	\$400,000.00	\$500,000.00	\$600,000.00	MVR
F. Traffic Management Concepts	\$25,000.00	\$100,000.00	\$100,000.00	\$100,000.00	MVR
G. Mooring Cells and Buoys	\$50,000.00	\$80,000.00	\$80,000.00	\$80,000.00	MVR
G1. L&D 14	\$25,000.00	\$45,000.00	\$45,000.00	\$45,000.00	MVR
G2. L&D 24	\$0.00	\$10,000.00	\$10,000.00	\$10,000.00	MVS
G3. L&D LaGrange	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	MVR
H. Switchboat	\$50,000.00	\$100,000.00	\$100,000.00	\$100,000.00	MVS
I. NEW 1200' Locks	\$655,000.00	\$3,810,000.00	\$4,485,000.00	\$5,208,000.00	MVR
I1. Lock 22	\$265,000.00	\$1,595,000.00	\$1,915,000.00	\$2,167,000.00	MVR
I2. Lock 25	\$315,000.00	\$2,040,000.00	\$2,320,000.00	\$2,686,000.00	MVS
I3. Lock La Grange	\$75,000.00	\$175,000.00	\$250,000.00	\$355,000.00	MVR
SUBTOTALS	\$880,000.00	\$4,490,000.00	\$5,265,000.00	\$6,088,000.00	
ECOSYSTEM RESTORATION PROJECTS					
J. UMRS Ecosystem Rest. Plan	\$40,000.00	\$225,000.00	\$325,000.00	\$400,000.00	MVR
K. Ecosystem Adaptive Management	\$275,000.00	\$1,000,000.00	\$1,050,000.00	\$1,200,000.00	MVR
L. System Cultural Stewardship	\$25,000.00	\$200,000.00	\$240,000.00	\$300,000.00	MVR
M. Forest Management	\$45,000.00	\$150,000.00	\$225,000.00	\$300,000.00	MVR
M1. Forest Mgmt. - Reno Bottoms	\$30,000.00	\$100,000.00	\$150,000.00	\$200,000.00	MVP
M2. Forest Mgmt. - Emiquon West	\$15,000.00	\$50,000.00	\$75,000.00	\$100,000.00	MVR
N. Fleeting Plan	\$10,000.00	\$80,000.00	\$110,000.00	\$110,000.00	MVR
P. Fish Passage	\$240,000.00	\$1,235,000.00	\$1,450,000.00	\$1,500,000.00	MVR
P1. Fish Passage - L&D 26	\$105,000.00	\$505,000.00	\$600,000.00	\$600,000.00	MVS
P2. Fish Passage - L&D 22	\$135,000.00	\$730,000.00	\$850,000.00	\$900,000.00	MVR
R. Pool Water Level Management	\$70,000.00	\$300,000.00	\$325,000.00	\$350,000.00	MVR
R1. Pool 5	\$25,000.00	\$100,000.00	\$100,000.00	\$100,000.00	MVP
R2. Pool 9	\$0.00	\$0.00	\$25,000.00	\$50,000.00	MVP
R3. Pool 18	\$45,000.00	\$200,000.00	\$200,000.00	\$200,000.00	MVR
R4. New Start TBD (Pool 3?)	\$0.00	\$0.00	\$0.00	\$0.00	MVP
S. Backwater Restoration - IWW Peoria Reach	\$10,000.00	\$200,000.00	\$225,000.00	\$250,000.00	MVR
U. Side Channel Restoration -	\$25,000.00	\$300,000.00	\$350,000.00	\$400,000.00	MVR
U1. Buffalo Chute	\$25,000.00	\$280,000.00	\$330,000.00	\$380,000.00	MVS
U2. Scheniman Chute	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	MVS
V. Wing Dam/Dike Alteration	\$65,000.00	\$250,000.00	\$265,000.00	\$285,000.00	MVR
V1. Herculeum	\$55,000.00	\$230,000.00	\$245,000.00	\$265,000.00	MVS
V2. Pool 2	\$10,000.00	\$20,000.00	\$20,000.00	\$20,000.00	MVP
W. Island Shoreline Protection	\$25,000.00	\$150,000.00	\$200,000.00	\$250,000.00	MVR
X. Dam Point Control - L&D 25	\$45,000.00	\$200,000.00	\$250,000.00	\$300,000.00	MVS
Y. Dam Embankment Lowering	\$5,000.00	\$200,000.00	\$200,000.00	\$200,000.00	MVR
Y1. L&D 8	\$5,000.00	\$200,000.00	\$200,000.00	\$200,000.00	MVP
?? NEW STARTS	\$0.00	\$0.00	\$50,000.00	\$242,000.00	
SUBTOTALS	\$880,000.00	\$4,490,000.00	\$5,265,000.00	\$6,087,000.00	
TOTALS	\$2,200,000.00	\$10,000,000.00	\$12,000,000.00	\$14,000,000.00	