PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
Responses to Findings in the *Final 2009 Independent Scientific Advisory Committee (ISAC) Report to the Governance Committee*

What is this document?
This document provides official Program responses to the main findings of the ISAC in their 2009 Final Report to the Governance Committee (GC), dated September 10, 2009. Responses were drafted by the Program's Executive Director Office (ED Office) with input from the Program's Technical Advisory Committee (TAC).

Format for Program Responses to ISAC Findings:
Responses are grouped according to the major categories of ISAC findings:

1) Conceptual Ecological Models (CEMs) and Priority Hypotheses
2) Experimental Design
3) Modeling
4) Data Analysis, Synthesis, and Reporting
5) Invasive Species
6) Adaptive Management Plan (AMP) Management Objectives
7) Recommended Sequence of Activities for Addressing ISAC Recommendations

For each of the categories above, this document summarizes specific findings, includes the Program response, and provides detail on staffing, timeline, and budget implications. In the 2009 ISAC report, some findings under each category are simply ISAC statements and do not pose questions to the Program or otherwise suggest course corrections. For the purpose of continuity, the numbering sequence for findings contained in the 2009 ISAC report is retained in this document, though ISAC findings that do not require a Program response are not listed. In addition, some findings under certain categories are grouped together in this document under one Program response because some 2009 ISAC findings are interrelated within a single topic.

Sample response format:

ISAC Findings Category

a) ISAC Finding
(Specific comment from 2009 ISAC Report to which the response applies.)
b) Program Response
(Explanation of Program response and how actions or priorities are anticipated to change.)
c) Program Staffing Implications and Timeline
(Personnel and time required to implement ISAC finding.)
d) Program Budget Implications
(How actions related to ISAC finding are captured in FY 2010 Program Budget. Program staff last names and estimates of FY 2010 time percentages noted where appropriate.)
e) Questions to/Clarifications from ISAC on Finding (if necessary)
(Additional information from ISAC required to understand finding and respond appropriately.)

2.1 Conceptual Ecological Models (CEMs) and Priority Hypotheses

Findings 2.1.2, 2.1.3, and 2.1.7 (CEMs)

a) ISAC Findings

2. The Program needs to understand enough of the whole system (including factors outside of its control) to explain what happened during the management experiment. See examples for the Trinity River (Figure 1) and whooping cranes (Figures 2) below (**inserted into this document**).
3. It is essential to add human actions & external "driving forces" to Program CEMs (even if outside Program control) because they potentially affect the effectiveness of actions within Program control, e.g.:

- Water withdrawals / diversions or land-use change within the contributing Platte River watershed or outside of it
- Climate variability and trends
- External influences on abundance/condition of birds arriving in Platte

7. To keep the CEM format understandable we recommend using a modular or nesting approach (e.g. a simple overall CEM for each species, with components expanded on separate pages).

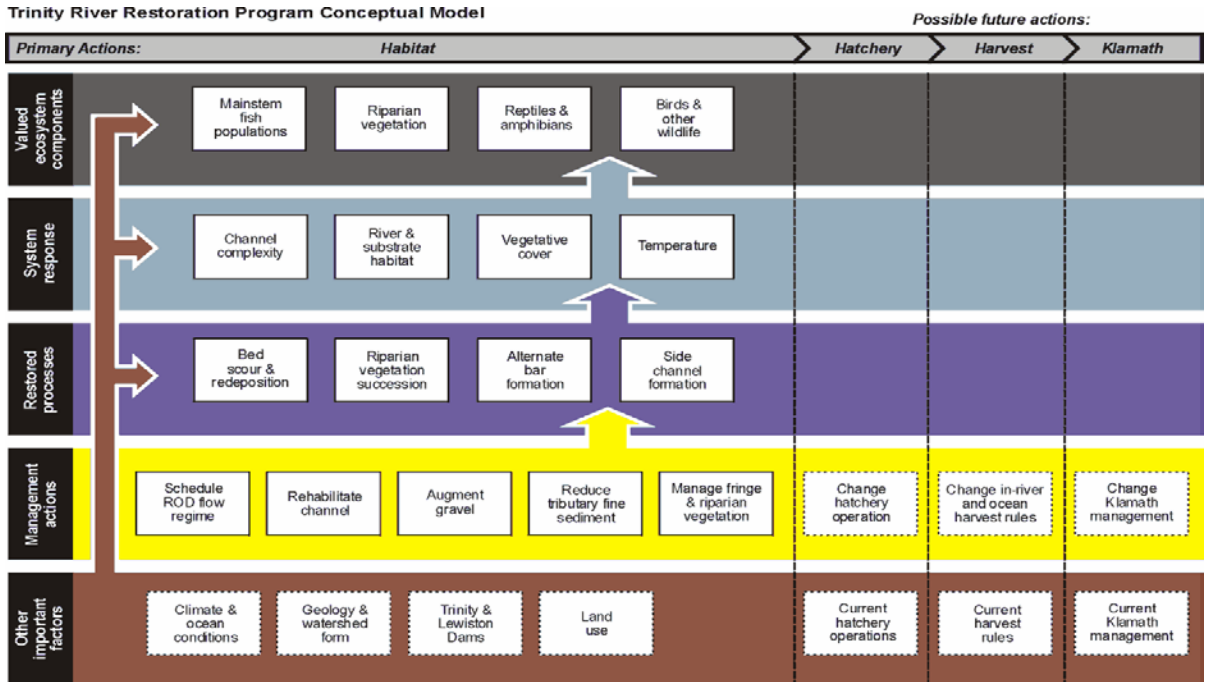

Figure 1. Example of a CEM (from the Trinity River) which recognizes actions outside of Program control. The Trinity River Restoration Program (TRRP) is focused on the five management actions on the left side of the second (yellow) row, and has no management control over the three actions on the right side of this row (hatchery operations, harvest, Klamath River management). However the CEM recognizes potential effects of these external factors on Program outcomes (brown arrows on left side of diagram), which has motivated strategic partnerships to share data and consider these factors in Program assessments. Source: TRRP and ESSA (2008).

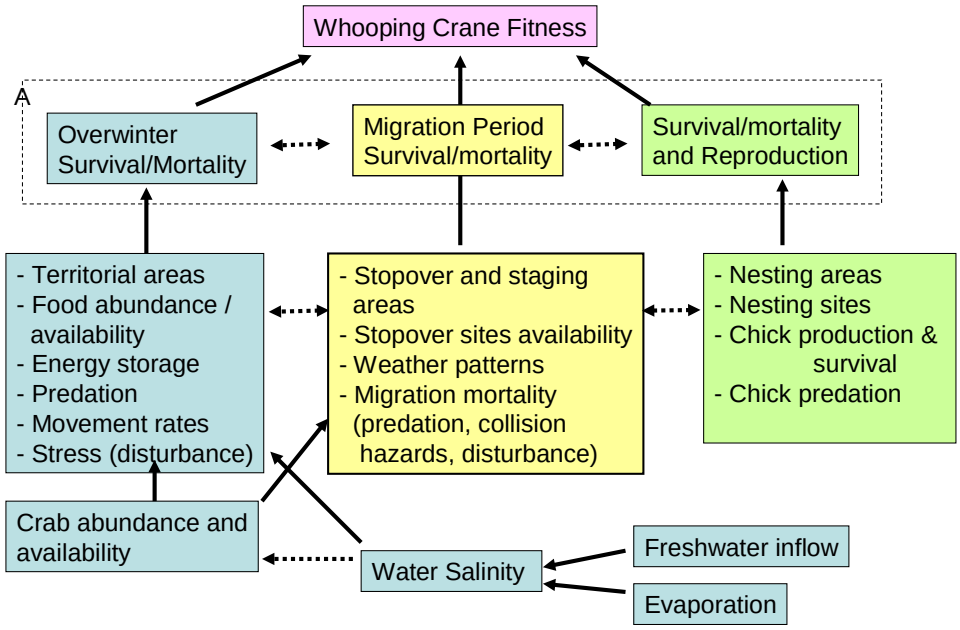

Figure 2. Whooping crane CEM that recognizes actions and events outside of Program control.
Source: Felipe Chavez-Ramirez

b) Program Response

The Program understands the need for CEMs that consider influences not only within the Program area or controlled by Program actions but also wider-scale influences outside Program control. Current CEMs in the AMP do include some of these factors, though the Program was negotiated to focus on a small suite of physical processes and habitat conditions that could be directly manipulated by the Program to determine species response. In 2010, the Program will update the graphic quality of the CEMs in the AMP and consider changes to CEMs where broad ecological system process and driving forces are not currently represented. Addition of broader processes or forces will not be interpreted as the assumption of greater Program scale or scope of influence; rather, broader CEMs will be utilized as an instrument to help measure the effects of Program actions on target species through actions the Program can control and how broader processes or forces the Program cannot control are possibly impacting target species and river processes.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Compilation and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review and approval

Timeline

- Draft CEMs complete in 2010; final approval in first quarter 2011; completed as part of CEM Refinement and Priority Hypotheses Sequencing (see response to Findings 2.4.2, 2.4.3, and 2.4.6)
- Periodic updates and refinement during First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (5%)
- **ISAC-1:** Review time included in this line item

Findings 2.1.2, 2.1.3, 2.1.4, and 2.1.5 (Priority Hypotheses)

a) ISAC Findings

2. Further prioritization/sequencing is warranted, since some priority hypotheses have "low detectability, sensitivity, feasibility" (e.g. WC3, 4, 4a; PS1, 5, 7, 9, 11; SED #1, 4 in AMP Appendix E) (**suggestions reflected in Table 1 – inserted into this document**).

3. For these challenging hypothesis tests, the Program should proceed in sequential manner, with clear decision rules, applying the principles of good project management (i.e. critical path, sequencing). Example decision rules would be:

- **IF** through research, the feasibility of testing a "low feasibility hypothesis" is improved to a level where effects of interest are detectable, **THEN** continue to monitor.
- **IF** a ***primary hypothesis*** test shows a triggering result (e.g. spawning by pallid sturgeon) **AND** management priorities support the next sequenced investigation **THEN** test the next ***contingent hypothesis*** (e.g. larval recruitment).

4. Prioritize hypotheses according to the following hierarchy: 1) hypotheses directly relating to Program management objectives for T&E species, and mortality sources; 2) hypotheses concerning impacts to the system of habitats that supports these species; and 3) hypotheses that improve the Program's understanding of key processes affecting the outcomes of management actions. The third level (applied understanding of ecosystem processes) is critical both to designing appropriate actions, and to avoiding taking actions based on single species analyses (which could benefit one species at the expense of another).

5. Complete quantitative estimates of the feasibility of testing all hypotheses with a simple model that generates/analyzes mock data (discussed under Section 2.4).

Detectability / Sensitivity / Feasibility*	Hypotheses labeled "High Priority"	ISAC Comments / Questions
Low	WC3, 4, 4a PS1, 5, 7, 9, 11 SED #1, 4	• Is it realistic to test these hypotheses, given their low feasibility? Even if it would be valuable to do so, why bother if it is not feasible? How badly do you need to know the answer to each hypothesis? It may take several years to develop appropriate monitoring and analytical techniques either to perform these hypothesis tests, or to find a proxy indicator. • Sediment balance is fundamental to the restoration strategy, even if it is difficult to assess. Therefore improving methods and data quality is essential for SED #1 and SED #4. • Before testing any PS hypotheses, the Program should first figure out how many sturgeon are in the Platte (e.g., come from Missouri River). This is consistent with the principle of developing the Program incrementally, using good project management methods (e.g., benefit:cost perspectives, critical path, contingent hypothesis evaluations), rather than simultaneously pursuing all hypotheses.
Medium	T2, T2a ; P2 ; TP4d WC1, 5 PS2, 4, 6 SED #2, 3 WM 2, 4	• Do simulation of this set of hypotheses (as part of effort on generating mock report) after doing ones in the row below.
High	T1, P1, TP1, TP5 FLOW #1, 3, 4, 5 MECH #2, 3, 4, 5 WM3, 8a	• Work through a complete simulation of each experiment with a simple model to produce mock reports (Section 2.4) for these hypotheses first (these are the easiest to test).
* Since these attributes have not been quantitatively evaluated, they are probably over-optimistic. If sampling technology improves (e.g. wireless monitoring of whooping cranes) then a hypothesis might move down a row.		

Table 1. Comments on Priority Hypotheses in the AMP.

b) Program Response

The Program understands the difficulty and complexity inherent in attempting to test and resolve 42 Priority Hypotheses during the First Increment and agrees there is a need to provide additional prioritization and sequencing. Appendix E ("Matrices") of the AMP provides an initial evaluation of all 42 Priority Hypotheses, including information about sequencing, decision rules, project management, and sources of information. These matrices will be expanded on as

part of the development of the Mock Report (see comments in Section 2.4 in this document) to provide more detailed decision guidance for further prioritization of the hypotheses.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Compilation and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review and approval

Timeline

- Complete in second or third quarter 2010; completed as part of CEM Refinement and Priority Hypotheses Sequencing (see response to Findings 2.4.2, 2.4.3, and 2.4.6)
- Final approval in last quarter 2010 or first quarter 2011
- Periodic updates and refinement during First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (10%); David Baasch (5%)
- **ISAC-1:** Review time included in this line item

2.2 Experimental Design

Finding 2.2.2

a) ISAC Finding

2. The proposed paired design is better than alternatives, given current understanding of central Platte system. It is important that the Program:

- Recognize that flow will create a gradient of FSM conditions; monitoring should include a suite of potential explanatory variables that reflect this gradient;
- Choose appropriate sample sizes, depending on both the variability of performance measures (PMs) and the amount of change in PMs that leads to different decisions ("critical effect sizes");
- Use existing data on variability in tern/plover performance measures to compute statistical power, and assess the effects of 4 vs. 5 sites with paired FSM and MCM treatments.

b) Program Response

The Program understands these design and statistical considerations and will incorporate all of them into Program experimental design and AMP implementation activities.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Compilation and review
- **TAC –** Review and comment
- **ISAC –** Review and comment

Timeline

- Complete in 2010 as part of development of Data Analysis and Synthesis Plan (see response to Findings 2.4.2, 2.4.3, and 2.4.6)

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – see response to Findings 2.4.2, 2.4.3, and 2.4.6
- **ISAC-1:** Review time included in this line item

Finding 2.2.3

a) ISAC Finding

3. Directed research should be applied to the following processes, which are fundamental to the overall habitat restoration strategy:

- Understand vegetation scouring and associated flow effects on island geomorphology that may create diverse, functional habitats;
- Improve sediment budget estimates to refine sediment augmentation actions; this will require improved sediment transport modeling and monitoring.

b) Program Response

The Program will open a RFP for directed vegetation research to improve our understanding of flow and vegetation scour. Evaluation and identification of the current sediment deficit in the central Platte is being conducted by a Program contractor (The Flatwater Group) as part of the ongoing Sediment Augmentation Feasibility Analysis.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination and review
- **Contractors –** Hire vegetation research contractor; sediment augmentation contractor already under contract
- **TAC –** Review and comment

Timeline

- Vegetation Research RFP open to public in first quarter 2010; research results expected by the end of 2010
- Sediment Augmentation Feasibility Analysis complete by end of 2010; implementation beginning in 2011

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (5%)
- **PD-13:** Evaluation of sediment deficit included in FY2009 Unliquidated Obligations ($370,000) related to original Sediment Augmentation Feasibility Analysis contract
- **IMRP-2:** Up to $300,000 approved for directed research related to FSM Test Site, including directed vegetation research

2.3 Modeling

Findings 2.3.1 and 2.3.2

a) ISAC Findings

1. The Program should continue to use coupled hydrology, hydraulics, sediment transport, and vegetation/habitat response models (e.g. models with SEDVEG-like capabilities) to assess management actions.
2. The Program needs to increase the credibility of the above models through:
    - Documented performance assessment (for example, through ability to replicate historical conditions); and
    - Documented sensitivity analyses (to assess which inputs are critical to predictions and to improve parameter estimates).

b) Program Response

The Program will open a RFP in the first quarter of 2010 to hire a contractor to develop and calibrate a 1-D integrated hydraulics and sediment transport model for the central Platte River using the most current version of HEC-RAS and HEC-GeoRAS. Program staff will be trained on model use. Future work for contractors might exist for model application as well potential future 2-D modeling. The model will build on the smaller-scale 1-D model now being developed by a Program contractor (The Flatwater Group) as part of the ongoing Sediment Augmentation Feasibility Analysis.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination, review, and model use
- **Contractors –** Contractor will be hired to develop 1-D model
- **Additional –** AMP Special Advisor review (Anderson and Watson)

Timeline

- Contractor hired in first quarter 2010
- Model complete by the end of 2010; will use throughout First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Steve Smith (10%)
- **PD-12:** Up to $400,000 included in budget for model development and calibration
- **PD-13:** Small-scale 1-D model development included in FY2009 Unliquidated Obligations ($370,000) related to original Feasibility Analysis contract
- **IMRP-3:** Time for Anderson and Watson included in this line item

Finding 2.3.3

a) ISAC Finding

3. The Program should add rapid prototyping models for other system components (e.g. possible water & land scenarios, threatened and endangered species, sampling error), to:

- Increase the Program's ability to understand, visualize, and predict system responses;
- Better coordinate and integrate field studies;
- Simulate design of management experiments (Section 2.4); and
- Enable stakeholders to explore model behavior (even if they are just looking at the stored results of previously run scenarios).

b) Program Response

The Program agreed at the technical level in 2008 to use the Rapid Prototype models (one model for terns and plovers; one model for whooping cranes) developed during the July 2008 Structured Decision Making workshop to help guide AMP management actions and predict and evaluate species response to those management actions. However, those models have not been refined or updated since. The Program will assess the Rapid Prototype models in the first quarter of 2010 and will work with a small group of TAC members to refine, update, and expand those models for future use.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Compilation, review, and model use
- **TAC –** Compilation and review
- **ISAC –** Review and comment

Timeline

- Rapid Prototype models assessed and refined in second quarter 2010; completed as part of development of Data Analysis and Synthesis Plan (see response to Findings 2.4.2, 2.4.3, and 2.4.6)
- Rapid Prototype models complete by last quarter 2010 or first quarter 2011
- Periodic updates and refinement during First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (5%); David Baasch (5%)
- **PD-4:** Up to $10,000 included in budget for workshop-related costs

2.4 Data Analysis, Synthesis, and Reporting

Finding 2.4.1

a) ISAC Finding

1. The reliability of the hypothesis test to assess Flow-Sediment-Mechanical (FSM) vs. Mechanical Creation and Maintenance (MCM) depends on factors inside and outside of Program control. The interaction of these factors needs to be fully explored (Figure 3).

b) Program Response

The Program will focus on efforts to address Priority Hypotheses related to implementation of the two management strategies (FSM and MCM) through actions the Program can control, but evaluations of and inferences related to species and physical response will include assessing whether factors outside Program control influenced results (non-Program flow events, climate factors, etc.). Assessment of factors outside Program control will come largely through the updating and evaluation of Program CEMs.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Compilation and review
- **TAC –** Review and comment
- **ISAC –** Review and comment

Timeline

- Initially complete in 2010 in conjunction with development of revised CEMs; ongoing data analysis and synthesis

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – see response to 2.1.2, 2.1.3, and 2.1.7 (CEMs)
- **ISAC-1:** Review time included in this line item

Findings 2.4.2, 2.4.3, and 2.4.6

a) ISAC Finding

2. We recommend that the Program develop a *mock report* based on *mock (simulated) data*, which will help to organize the data analysis plan and reprioritize hypothesis tests (see #6 below).

3. The Program should analyze data quickly (within one season or year of data collection), share syntheses at annual meetings, and adjust priorities based on learning.

6. To improve the ultimate value of information for decisions (Figure 3 – **inserted in this document**), the Program should develop a *mock report* based on *mock data* (i.e. the type of data you expect to acquire over the period of the First Increment). This would involve the following steps, which build upon protocols developed by the US Environmental Protection Agency (EPA 2000) for defining data quality objectives:

a) Define the decisions that you want to make at different times (e.g. assessments of action effectiveness, revisions of actions).
b) Develop alternative land and water scenarios (e.g. number of willing sellers, water use, climate), which reflect the uncertainty in implementing actions (Peterman 2004).
c) Simulate the expected range of contrast in actions under the experimental design.
d) Simulate the effectiveness in producing habitat, given various alternative hypotheses.
e) Simulate species' responses to habitat changes, including confounding factors.
f) Add the expected sampling error in estimating performance measures.
g) Combining steps b to f will generate *mock data*.
h) Analyze the mock data as you would the real data.
i) Write up a mock report & draw conclusions for the key decisions outlined in step a.
j) Gain insight on the feasibility of hypothesis tests and ability to apply new information to management decisions.
k) Revise (as required) the CEMs, experimental design, hypothesis priorities, sampling plan, and data analysis plan.

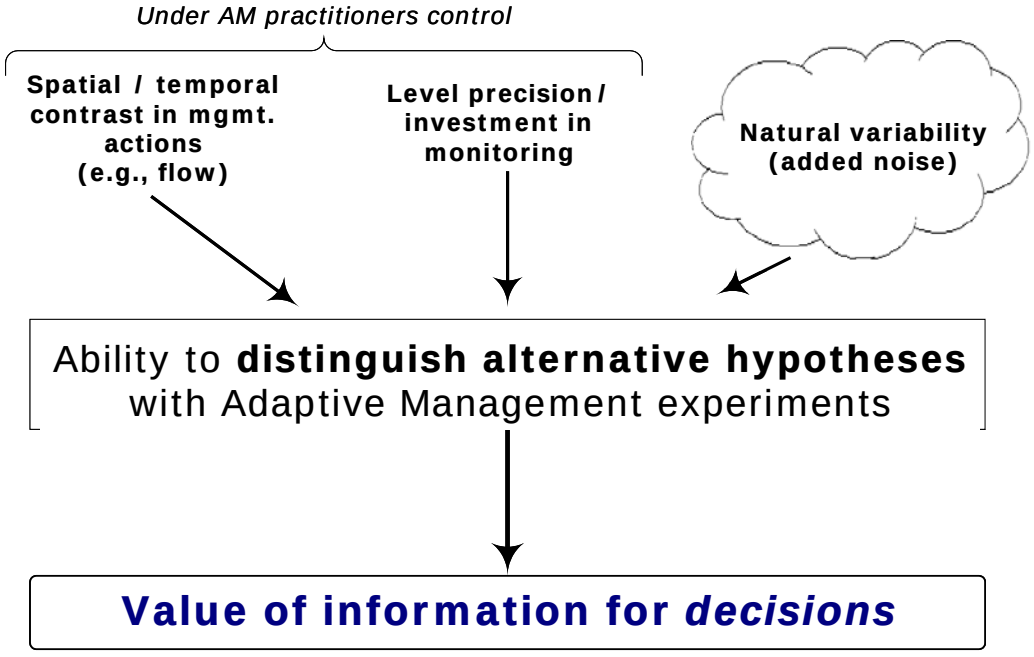

Figure 3. Factors affecting the ability to distinguish alternative hypotheses with adaptive management experiments, and the value of information for decisions. The level of contrast in management actions and the precision of monitoring are within the AM practitioner's control, but natural spatial and temporal variability is not. Source: Murray and Marmorek 2003.

b) Program Response

The Program agrees the Mock Report is a good idea to help organize the application of Program science and apply decision analysis tools for assessing Priority Hypotheses and progress toward AMP management objectives. In 2010, the ED Office will take the lead in developing three documents related to AMP Implementation, with substantial input from the TAC, AMP Special Advisors, and the ISAC:

1. Strategic Science Plan (framed as an update to the AMP; will require GC approval)

- Refined CEMs and Management Objectives

- Priority Hypotheses sequencing
  a) Identify Priority Hypotheses to be tested / evaluated in each portion of the experimental design – What are the key questions we are asking, and how will answers to those questions affect management decisions?
  b) Identify key Program decisions and plan for making assessments of information to influence those decisions
  c) Identify data needs for each Priority Hypothesis
  d) Develop prioritization/sequencing matrix for Priority Hypotheses

- Data collection metrics and methods
  a) Program minimum habitat criteria
  b) Tern/plover nest- and brood site-selection and survival research
  c) Update whooping crane monitoring protocol
  d) Whooping crane telemetry tracking
  e) Additional whooping crane research
  f) Monitoring protocol for Elm Creek FSM Test Site

- Data Analysis and Syntheses Plan
  a) Rapid Prototype models – revise, update, refine; plan for model use and maintenance
  b) 1-D integrated sediment and hydraulics model – plan for model use and maintenance
  c) Other model needs
  d) Address issues of sample size, statistical power, etc.
  e) Plan for assessing data – annual, short term (2011-2016), long term (First Increment)

- Experimental Design components:
  a) **Bird Response** (terns & plovers, whooping cranes)
     - Opportunistic island building at several Program complexes and habitat sites for tern/plover research
     - Channel and unobstructed width for whooping cranes
     - Intensive data collection and monitoring – nest and habitat selection; survival
     - Data for Rapid Prototype models
  b) **"Paired Design"** – River Nesting versus Off-Channel Sand & Water (OCSW) Nesting
     - Tern and plover productivity comparison between river and OCSW nests

- Data for rapid prototype model

c) Flow-Sediment-Mechanical (FSM) "Proof of Concept"

- FSM Test Site at Elm Creek Complex
- Clear and level area where flow is currently consolidated
- Determine impact of Short-Duration High Flows (SDHF) and sediment augmentation
- Intensive research, such as vegetation scour and bar creation/maintenance/movement

d) Conservation Monitoring and Directed Research

- System-level monitoring: terns/plovers, whooping cranes, geomorphology/in channel vegetation monitoring, water quality
- Directed research to answer specific questions: lower Platte River stage change study, tern/plover foraging habits study, whooping crane telemetry tracking, vegetation scour research, tern/plover nest- and brood site-selection and survival research, other projects as identified

- Specific design aspects:
  a) Program complexes/land (Overton West, Cottonwood Ranch, Elm Creek, Ft. Kearny) – island building, channel width, unobstructed width, vegetation management, predator management, etc.
  b) Potential non-Program habitat sites (Dippel, Uridil, Mormon Island) – island building, channel width, unobstructed width, vegetation management, predator management, etc.
  c) Clearing and leveling plan for Elm Creek FSM Test Site
  d) Release plan for SDHF
  e) Sediment augmentation plan
  f) Design for OCSW at Cottonwood Ranch
  g) Conceptual design of flow consolidation at Cottonwood Ranch

- Schedule of implementation activities

2) Mock Report – Data and Predictions

- Define Program decisions
- Scenarios and contrast
- Potential response of "habitat", target species
- Generate and analyze mock data
- Report and conclusions

3) Annual "State of the Platte" Report

- Summary of monitoring and research activities – What did we learn this year?
- One-pager for each project with what was learned and graphics
- Basis for annual communication with GC and AMP Reporting Session

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination, compilation, and review

- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review, comment, and approval
- **Additional –** AMP Special Advisor review (Tyre); assistance from graduate student (McFadden) with ecological model refinement and use

Timeline

- Portions of draft Strategic Science Plan and Mock Report completed and evaluated by ISAC in summer 2010
- Second draft with revisions in third quarter 2010
- Drafts presented to GC in fourth quarter 2010
- Final Strategic Science Plan and Mock Report in first quarter 2011
- Annual reporting, updates, and revisions throughout First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (60%); David Baasch (10%)
- **IMRP-3:** Time for Tyre and McFadden included in this line item
- **ISAC-1:** Review time included in this line item

Findings 2.4.4 and 2.4.5

a) ISAC Findings

4. The Program should not duplicate agency databases (e.g. USGS, USFWS, BoR), but rather skim key variables & metadata into centralized PRRIP database, while ensuring strong data quality procedures and consistent spatial / temporal references.
5. Reviewed data and reports should be made available to all in the spirit of transparency. If participating agencies or institutions do not freely distribute published reports to the public, the Program should make such reports available to stakeholders through an online library system.

b) Program Response

A Program contractor (Riverside Technology, Inc.) is developing a comprehensive Database Management System (DBMS) and web site for all Program data and information. DBMS capabilities will include skimming key variables and metadata. All Program information, once vetted through proper QA/QC procedures and committee approval processes, will be fully available to the public through the online library system of the Program's web site.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination, review, and data management
- **Contractors –** Contractor now working on DBMS and web site project

Timeline

- DBMS and web site complete and running by the end of 2010
- Annual maintenance and updates throughout First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Jason Farnsworth (10%)
- **PD-8:** Ongoing DBMS and web site development through FY 2009 Unliquidated obligations for original contract with Riverside Technology, Inc.

2.5 Invasive Species

Findings 2.5.3, 2.5.4, and 2.5.5

a) ISAC Findings (<u>all relate to Phragmites only</u>)

3. Questions to be answered:
   - What factors control expansion?
   - What are effective management measures? (Identify based on literature review and experimentation.)
   - Will spreading be accelerated by AMP experiments?
   - What shear stresses are required to scour infestations?
4. Mapping spatial extent in Central Platte over time
   - Document effectiveness of management measures
   - Forecast rate and locations of spreading
5. Identification and execution of effective measures early in the program avoids foreclosure of future options and increases the likelihood of achieving intended Program outcomes.

b) Program Response

The Program understands the significance of identifying the impacts of the dramatic expansion of common reed (Phragmites) in the channel of the central Platte River on the success of Program implementation. Common reed is a primary species of concern to be addressed in the Program's directed vegetation research project, and the Program is collaborating with other organizations in the central Platte valley to address management and range expansion issues.

c) Program Staffing Implications and Timeline

<u>Staff</u>

- **ED Office –** Coordination and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **Additional –** AMP Special Advisor review (Anderson, Watson)

<u>Timeline</u>

- Vegetation Research RFP open to public in first quarter 2010; research results expected by the end of 2010
- Annual Phragmites management throughout First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Jason Farnsworth (5%); Tim Tunnell (5%)
- **WP-1(a):** $50,000 to complete North Platte choke point work
- **WP-1(b):** $400,000 in FY 2010 for cost share to help clear biomass (Phragmites) from channel from CNPPID diversion to Grand island
- **IMRP-3:** Time for Anderson and Watson included in this line item
- **ISAC-1:** Review time included in this line item

2.6 AMP Management Objectives

Finding 2.6.2

a) ISAC Finding(s)

2. The following two management objectives should be added:
   - **Objective 5:** Gain an understanding of whooping crane, least tern and piping plover population dynamics outside the Program area, using a meta-population dynamics approach.
   - **Objective 6:** Develop strategic partnerships to address impacts and opportunities outside Program area, based on a nested set of CEMs including both system and species levels.

b) Program Response

The Program understands the need think broadly in terms of meta-population (spatially separated populations of the same species that interact at some level) dynamics for whooping cranes, terns, and plovers in order to put Program actions and impacts in the proper ecological context. Program staff continues to stay engaged in larger-scale efforts to assess the population of all three birds, as well as stay in touch with those working on tern and plover issues on river systems like the Missouri and Niobrara. Results of the whooping crane Conservation Action Planning process should prove instructive for future actions related to whooping crane use of the central Platte, and the Program's investment in the whooping crane telemetry project will provide important data to help assess the success of Program actions on whooping crane use of the central Platte. All of these actions involve developing strategic partnerships with others engaged in conservation actions related to Program target species.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination and review
- **TAC –** Review and comment

Timeline

- Coordination throughout 2010 and entire First Increment

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (2%)

Findings 2.6.3 and 2.6.4

a) ISAC Findings

3. Change management objective 2 (*Improve survival of whooping cranes during migration)* to *Contribute to improved whooping crane survival during migration.* This reflects what is realistic

and reduces the Program scope. Many factors external to the Program (e.g. power line mortality in north Texas, forage quality at other stopovers) affect migration mortality of whooping cranes. The whooping crane CEM should be revised to reflect these factors.
4. The existing whooping crane performance measures are appropriate (e.g., increase WC use days), but others should be added (e.g. weight gain while at Platte, time budgets (% of time spent feeding, resting, preening, defending, moving)).

b) Program Response
A specific request from a GC member to evaluate the wording of Management Objective #2 led to this question. As per this ISAC finding, the Program will update the whooping crane CEM and the wording of the management objective accordingly and will consider including additional performance measures in both the CEM and the management objective. This process will have to follow procedures for changing the AMP as outlined in the text of the AMP (Section I.F.2).

c) Program Staffing Implications and Timeline
Staff
- **ED Office –** Compilation, coordination, and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review and approval

Timeline
- Draft complete in second or third quarter 2010 as part of Strategic Science Plan (see response to Findings 2.4.2, 2.4.3, and 2.4.6)
- Final approval in fourth quarter 2010

d) Program FY 2010 Budget Implications
- **ED-1:** ED Office staff time – Chad Smith (2%)
- **ISAC-1:** Review time included in this line item

Finding 2.6.5

a) ISAC Finding
5. Use a contingent, incremental approach for the sturgeon objective, only progressing to studies that are more detailed once initial questions have been answered (see **Main Findings on Prioritizing Hypotheses** in Section 2.1). The stage sensitivity study will document the hydrologic sensitivity of lower Platte to central Platte flow management. If there is a change in flow that could be significant to sturgeon, then the next logical step would be to use a sparse, stationary telemetry framework to define migrations of sturgeon in/out of the Platte. If the telemetry results suggest that sturgeon are using the Platte for spawning, then consider studies of larval recruitment. One ISAC member has suggested that sparse telemetry studies *could* be done as a first step to determining the level and location of use of the Platte by pallid sturgeon, but to

do such studies as part of the Missouri River Restoration Program (in coordination with the PRRIP).

b) Program Response

The lower Platte River stage change study is complete and a final report and presentation will be delivered to the GC during their March 2010 meeting. The Program needs to engage in further discussion to determine next steps on pallid sturgeon in the lower Platte as it relates to Program actions and commitments.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination, compilation, and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review and approval

Timeline

- Draft process for next steps complete in second quarter 2010 as part of Strategic Science Plan (see response to Findings 2.4.2, 2.4.3, and 2.4.6)
- Final review and approval at June 2010 GC meeting

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (3%)
- **ISAC-1:** Review time included in this line item

e) Questions to/Clarifications from ISAC on Finding (if necessary)

- How should results of stage change study help to guide future actions on pallid sturgeon?
- If parties agree that the Program document indicates a commitment to take positive actions for pallid sturgeon regardless of the results of the stage change study, how should the Program approach prioritizing potential monitoring or research activities?

Finding 2.6.6

a) ISAC Finding

6. Design forage fish approach based on the terns' perspective, not the fishes' perspective (See Q28 in Section 3.6).

b) Program Response

The current forage fish monitoring protocol implemented by the Program was written before the AMP existed and is not linked to any Priority Hypotheses or key Program questions. Peer reviews of this protocol conducted in 2009 agreed that a disconnect exists between this protocol and Program data needs. Initial analysis of compiled forage fish data indicates a large abundance of potential interior least tern prey at nearly all flow levels. This has led to numerous discussions

within the Program regarding the need to continue implementing the forage fish monitoring protocol and potential next steps for investigating the relationship between target flows, forage fish, and terns.

In January 2010, the TAC recommended that the ED Office move forward with a short compilation of these issues, evaluation of forage fish data, and what this information says about Priority Hypotheses related to terns and fish (primarily T2 and T2a). This compilation will also include a recommendation on whether or not to continue the current protocol and a way forward on identifying questions to be answered through a different monitoring protocol or directed research. This process will be an early example during Program implementation of using data to provide information in regard to Priority Hypotheses.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Compilation and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review and approval

Timeline

- Forage fish draft in second quarter 2010
- Final document and GC approval in third quarter 2010

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – Chad Smith (3%)
- **ISAC-1:** Review time included in this line item

2.7 Recommended Sequence of Activities for Addressing Our Recommendations

Finding 2.7.1

a) ISAC Finding

We would suggest the following sequence:

1) Work on *Mock Report* (Section 2.4), to facilitate
   - More comprehensive CEMs for each species (Section 2.1)
   - Form strategic partnerships as guided by expanded CEMs (Section 2.1)
   - Clear data analysis plan (Section 2.4)
   - Additional rapid prototyping models for other system parts (Section 2.3)
   - Reprioritized hypotheses (Section 2.1)
   - Improved experimental design (Section 2.2), performance measures (Section 2.6) and sampling efforts, as required
2) Update sediment transport assessment (Section 2.2(3) and 2.3), including consideration of *Phragmites* (Section 2.5)
3) Establish ongoing data management, synthesis and reporting procedures (Section 2.4)

b) Program Response

The Program agrees with this sequencing and it is reflected in priority tasks identified earlier in this document.

c) Program Staffing Implications and Timeline

Staff

- **ED Office –** Coordination, compilation, and review
- **TAC –** Review and comment
- **ISAC –** Review and comment
- **GC –** Review and approval
- **Additional –** AMP Special Advisor review (Tyre, Anderson, Watson)

Timeline

- Work largely complete in 2010

d) Program FY 2010 Budget Implications

- **ED-1:** ED Office staff time – reflected in previous Program Responses in this document
- **IMRP-3:** Time for Tyre, Anderson, and Watson included in this line item
- **ISAC-1:** Review time included in this line item