PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
Scope of Work
Tern and Plover Habitat Synthesis Chapters Peer Review

1) Document Introduction and Background

The Executive Director's Office (EDO) of the Platte River Recovery Implementation Program (Program) prepared this series of five documents (hereafter referred to as "chapters") related to the habitat and related use on the central Platte River in Nebraska by the interior least tern and piping plover. The information and analyses presented herein are focused solely on informing the use of Program land, water, and fiscal resources to achieve one of the Program's management objectives: increasing production of the tern and plover from the Associated Habitat Reach (AHR) along the central Platte River (the Associated Habitat Reach consists of a 90-mile reach of the Platte River in central Nebraska from Lexington to Chapman). The Program spent the last six years implementing an Adaptive Management Plan (AMP) to reduce uncertainties about proposed management strategies and learn about river and species responses to management actions. During that time, the Program implemented management actions, collected a large body of physical and species response data, and developed modeling and analysis tools to aid in data interpretation and synthesis.

Implementation of the Program's AMP proceeded with the understanding that management uncertainties expressed as hypotheses encompass complex physical and ecological responses to limited treatments that occur within a larger ecosystem that cannot be controlled by the Program. The lack of experimental control and complexity of response precludes the sort of controlled experimental setting necessary to cleanly follow the strong inference path of testing alternative hypotheses by devising crucial experiments (Platt 1964). Instead, adaptive management hypothesis testing in the Platte River ecosystem must rely on a combination of monitoring of physical and biological response to management treatments, predictive modeling, and retrospective analyses (Walters 1997). The Program pursued all three of these approaches to produce multiple lines of evidence across a range of spatial and temporal scales.

Several lines of evidence now indicate that implementation of the Program's Flow-Sediment-Mechanical (FSM) management strategy may not achieve the Program's management objective for least terns and piping plovers. Presenting these lines of evidence for broader examination is a primary objective of this publication. As evidence emerged, the Program's Independent Science Advisory Committee (ISAC) and various stakeholders requested the EDO examine the hydrology and physical characteristics of other regional river segments used by these species to glean additional management insights for the central Platte River. Fulfilling these requests is the second objective of this publication.

The publication is formatted as a series of five topical chapters with varied but related objectives and analyses. Chapter 1 provides a brief history of least tern and piping plover occurrence in the central Platte River, changes in river morphology that sparked regulatory intervention through the Endangered Species Act, and the collaborative process that resulted in the Program. Chapter 2 presents progress toward implementing the Program's Flow-Sediment-Mechanical strategy and lack of species response to Program management actions and natural analogs. Chapter 3 provides an analysis of Program geomorphic channel hydraulics data to test the hypothesis that the Program can create suitably high nesting habitat for the species through peak flow releases. Results indicate hypothesized magnitudes are not sufficient.

Following Chapter 3, the objective shifts from adaptive management and hypothesis testing to comparative analyses of the central Platte River with other river segments and systems used by the species. Chapter 4 provides an examination of central and lower Platte River hydrology, hydraulics, and sandbar height to

compare and contrast river segments and reexamines long-standing assumptions about species nesting ecology in relation to Platte River hydrology. Finally, Chapter 5 explores the ability of proposed management actions to meet the recovery objectives developed for the Fish and Wildlife Service and to species use of other regional river segments. The hydrology and physical characteristics of the contemporary central Platte River are then compared to those segments resulting in the identification of potentially intractable physical differences that are likely important for species use and productivity.

After completion of the peer review, the tern and plover habitat synthesis chapters will be utilized by the Program as reference material for developing the annual State of the Platte Report which synthesizes information relative to 11 "Big Questions" that are the focus of investigation through implementation of the AMP. State of the Platte Reports are developed for the Program's Governance Committee and are the key annual summary of Program science used by the Governance Committee to inform Program decision-making. It is imperative that the tern and plover habitat synthesis chapters receive thorough review and related editing, if necessary, to ensure they are the best available science for Program decision-makers.

2) Description of Peer Review

The purpose of this review is to provide a formal, independent, external scientific peer review of the information presented in the five (5) tern and plover habitat synthesis chapters. These chapters rely on synthesis of Program-collected data, data collected by Program entities, data used during negotiation of the Program, historic data, retrospective analyses, and other lines of evidence. Where available, the report relied on peer-reviewed literature to help answer questions of science uncertainty, and also incorporated selected cases of unpublished or grey literature that filled a significant data gap where peer-reviewed sources were not available. **Peer reviewers will review this approach and assess the sufficiency of the report's conclusions regarding outstanding questions of scientific uncertainty.**

NOTE: In all cases (including this scope of work), peer-reviewed and other documents cited in the chapters have been compiled into a zip file that will be made available to all peer reviewers for reference if necessary.

3) Methods and Scientific Standards

Factors to be addressed include the scientific merit of the chapters' technical analyses and conclusions. The peer reviewers must ensure any scientific uncertainties are clearly identified and characterized, and the potential implications of the uncertainties for the technical conclusions drawn are clear. Peer reviewers are advised they are not to provide advice on policy. Rather, they should focus their review on identifying and characterizing scientific uncertainties.

4) Charge to the Panel

Each Peer Review Panel member will be tasked with reviewing all 5 tern and plover habitat synthesis chapters from their particular area of expertise following the PRRIP Peer Review Guidelines for Reports & Studies (attached). Peer reviewers will be asked to submit all comments, questions, and other communication in writing to ensure an appropriate record is built, and generally all communication with peer reviewers will be conducted via e-mail during the course of the review.

In addition to following the Program's Peer Review Guidelines for Reports & Studies, the peer reviewers must consider and respond to the questions listed below, at a minimum, in their reviews:

General Questions

1. Does the combined set of tern and plover habitat synthesis chapters project adequately address the overall objective of the chapters, which is to present lines of evidence for broader examination of

the conclusion that implementation of the Program's Flow-Sediment-Mechanical (FSM) management strategy may not achieve the Program's management objective for least terns and piping plovers?

2. Do the authors of the tern and plover habitat synthesis chapters draw the correct conclusions, and are they supported by the material presented? If not, please identify those that are not and the specifics of each situation.

3. Do the authors of the tern and plover habitat synthesis chapters draw reasonable and scientifically sound conclusions from the scientific information presented? Are there instances in the report where a different but equally reasonable and sound scientific conclusion might be drawn that differs from the conclusion drawn by the authors and is supported by data in the literature? If any instances are found where that is the case, please provide the specifics of that situation.

4. Do the authors of the tern and plover habitat synthesis chapters base their interpretations, analyses, and conclusions upon the best available science? If any instances are found where the best available science was not used, please provide the specifics of each situation.

5. Are there any seminal peer-reviewed scientific papers that the tern and plover habitat synthesis chapters omit from consideration that would contribute to alternate conclusions that are scientifically sound? Please identify any such papers.

6. Is the relationship between management actions, riverine processes, species habitat, and species response clearly described, and do Program monitoring, research, and referenced materials help to verify and/or validate this relationship?

7. Are potential biases, errors, or uncertainties appropriately considered within the methods sections of these chapters and then discussed in the results and conclusion sections?

Review of the tern and plover habitat synthesis chapters should also address more general comments and questions as outlined in the PRRIP Peer Review Guidelines for Reports & Studies. Please refer to the attachment for information regarding these guidelines.

Chapter-Specific Questions

CHAPTER 3

8. Are the methods used to measure sandbar heights in the AHR appropriate? Do the results appear to be reasonable?

9. Is it reasonable to use distributions of observed sandbar height and area relative to peak stage along with reach stage-discharge relationships to infer the Program's ability to use the FSM management strategy to increase sandbar area and height to support sufficient use and reproductive success resulting in increases in the populations of terns and plovers within the AHR?

CHAPTER 4

10. Are the methods used to predict the frequency of inundation for sandbars in this chapter appropriate?

11. Is it appropriate to use the MOVE.1 method to infer flow at Overton for the period of 1895-1916 and treat this as representative conditions for the Associated Habitat Reach?

12. Is the relationship of sandbar height (relative to peak flow stage) decreasing as sediment size decreases appropriate for the central Platte River based on observed sandbar heights in the central and lower Platte River and the available body of scientific literature?

13. Does the approach used to infer sandbar heights in the historical central Platte River appear to be reasonable? The historical river analysis period extended from 1895-1938.

14. On pages 19 and 25, piping plover/least tern nest initiation period is assumed to be the same historically as it is today. Is this a reasonable assumption?

CHAPTER 5

15. Is the conclusion that "implementation of FSM…will likely not create or maintain least tern and piping plover nesting habitat" appropriate and supported by the evidence presented?

16. Is the finding that indicates it is unlikely the Program has the ability to manage flow and sediment to create habitat conditions that could support sufficient use and reproductive success and result in tern and plover population growth within the AHR supported by the data and information presented in these chapters?

Reviewers must protect information and ensure that services consist of unbiased assessments. Until it is made public, no information from the tern and plover habitat synthesis chapters may be released without express written permission from the EDO. Additionally, all peer review-related inquiries from outside sources must be forwarded to the Louis Berger project manager; reviewers should not communicate with those inquiring about the review.

5) Peer Review Rating & Recommendation

In addition to providing written comments on the chapters, each reviewer will provide a comprehensive rating and recommendation for the combined chapters utilizing the following format:

RATING

Please score each aspect of this set of chapters using the following rating system:
1 = Excellent; 2 = Very Good; 3 = Good; 4 = Fair; 5 = Poor

Category	**Rating**
Scientific soundness	_____
Degree to which conclusions are supported by the data	_____
Organization and clarity	_____
Cohesiveness of conclusions	_____
Conciseness	_____
Important to objectives of the Program	_____

RECOMMENDATION	**(Check One)**
Accept	_____
Accept with revisions	_____
Unacceptable	_____

PLEASE NOTE: *If a peer reviewer checks "Accept with revisions" or "Unacceptable", the peer reviewer* ***must explicitly state*** *what changes would be required to change the recommendation to "Accept". This is a critical step in ensuring the Program understands potential fatal flaws or major areas of revision that must be addressed before finalizing these chapters and moving them on to the Governance Committee for approval.*

6) Available Documentation

Peer reviewers will be provided with the following information:

- This Scope of Work for the peer review
- PRRIP Peer Review Guidelines for Reports & Studies (PRRIP)
- All five tern and plover habitat synthesis chapters
- Access to all references cited in the synthesis chapters
- 2012 State of the Platte Report
- 2013 State of the Platte Report
- Adaptive Management Plan
- Additional information as requested by Peer Review Panel members – if a document is requested by one member, it will be transmitted to all members simultaneously

References

Platt, J. R. 1964. Strong inference. *Science*, *146*(3642), 347-353.

Walters, C. 1997. Challenges in adaptive management of riparian and coastal ecosystems. Conservation ecology, 1(2), 1.