Platte SDM GC2 Pre-read: Supplementary Information for Round 2 Alternatives

Contents

1 Off-channel Habitat Options and Costs

Currently, creating off-channel habitat can occur via any of three methods:

1. **Rehabilitated Sandpits.** The Program can buy abandoned mine sites and rehabilitate them to produce suitable nesting habitat;
2. **Mine-Operation Agreements.** The Program can work with existing sand mine operations to conduct their operations in a way that leaves suitable tern and plover nesting habitat as the mine progresses; and
3. **Newly Constructed Habitat.** The Program can build new nesting habitat.

Table 1 summarizes the key differences in cost and rate of creation for constructing the three types of off-channel habitat. Regardless of how off-channel habitat is constructed, off-channel habitat is assumed to have equal annual maintenance costs and equal reproductive success rates.

Table 1. Alternative sources of off-channel habitat.

	Mine-Operation Agreements	Rehabilitated Sandpits	Newly Constructed Habitat
Habitat Construction Cost *$/acre*	**No Cost[1]**	**$7,500[2]**	**$20,000[2]**
Rate of Creation *acres/week/contractor*	**0.04 – 0.06**	**3 - 7**	**1.5 – 2.5**

2 On-Channel Habitat: Moving Complexes Approach (MCA)

At this point in the process, two distinct ways of mechanically creating habitat are being considered: (1) the current approach taken by PRRIP and (2) an alternative approach that we've termed the moving complexes approach. The differences between these approaches are summarized briefly in**Table** 2.

Two ways of creating habitat that fall under the moving complexes concept are:

1. **De-vegetate permanent islands** (which often have mature/woody vegetation)
2. **Treat naturally-formed sandbars** that meet the Program's minimum habitat criteria to maintain them in a de-vegetated state[1].

The islands/sandbars are then allowed to erode and not reconstructed in the same location. Tern and plover habitat availability by this approach is therefore temporary in any given location.

Relative to the conventional habitat construction approach, the MCA approach is assumed to perform better with respect to management cost, whooping crane suitability, and sediment supply, but worse with respect to tern and plover reproductive success and implementation effort. For more detailed rationale regarding how specific alternatives involving the MCA approach were scored for these objectives, see the Results section of the PM Info Sheets.

In addition to benefits for terns and plovers, hypothesized co-benefits of the moving complexes approach include (a) increasing sediment abundance (the conversion of permanently vegetated islands to bare sand may locally increase sediment supply/transport as the nesting islands erode), and (b) increasing whooping crane habitat suitability (the conversion of permanently vegetated islands may locally increase unobstructed channel width during the period between erosion of nesting habitat and establishment of in-channel vegetation).

There are challenges associated with the moving complex approach. Because habitat would be constructed on private, non-Program lands, landowner cooperation/permissions would be a prerequisite in all cases, and a new USACE Section 404 permit would be required each year or in most years when permanently vegetated islands are being cleared. In addition, tern and plover fledge ratios are likely to be lower than on conventional nesting islands because of the greater risk of inundation.

For the purposes of this round of alternatives, the moving complex alternative has been modeled using a target of 10 acres of habitat per year for the amount of habitat that could be gained through de-vegetating permanent islands. This magnitude was selected as it is felt to be the upper limit of what might be practical to achieve on a long-term basis.

[1] Program studies have estimated that flows of 11,000 to 15,000 cfs are necessary to increase sandbar height to the minimum habitat selection criterion in 750 – 1,200 ft channels (PRRIP Tern & Plover Habitat Synthesis Chapters – Chapter 3).

Table 2: On-channel Habitat Creation and Maintenance Approaches – Current vs. Moving Complexes

Habitat Element	Current Approach	Moving Complexes Approach (MCA)
Location	The following locations owned by PRRIP would be considered within this approach for creating and maintaining habitat: • Elm Creek Complex • Shoemaker Island Complex[2] • Plum Creek Complex* • Cottonwood Ranch Island* • Pawnee Complex* • Fort Kearney Complex* *indicates that a permit would be needed to build habitat at this location (a permitting process takes about a year and costs ~$100,000)	Any location in the AHR where there is an opportunity to de-vegetate an island or benefit from a naturally-formed sandbar and where landowners agree to Program actions.
Elevation of nesting islands	Floodplain elevation, limiting inundation to discharges greater than 8,000 cfs.	De-vegetated permanent islands are left at their natural elevation, but are surfaced with clean sand. Naturally-formed sandbars are treated as long as they meet the minimum habitat selection criteria.
Island area	2-5 acres and will be as large as possible given local site conditions	Area of permanent island or naturally-formed sandbar – i.e. no alterations to area are made.
De-vegetation technique	Spraying prior to and following nesting season	Mechanical removal (if necessary), spraying prior to and following nesting season
Predator Control	Trapping	Trapping will likely not be possible on private land.

[2] There may be legal barriers to rebuilding habitat at the Shoemaker Complex because neighboring landowners assert these actions contribute to ice jams.

3 Stay the Course

Alternative Name: Stay the Course	
Overview	
In the "Stay the Course" alternative, the Program continues to build and maintain current levels of permitted on-channel and off-channel habitat for the remainder of the First increment (2017 to 2019) and for the rest of the 50-year simulation period. No changes are made to the mechanical habitat creation and maintenance methods. No additional flow actions for terns and plovers are included. Other Program activities (channel widening, sediment augmentation, Water Plan-Land Plan-AMP implementation) continue at the level described in the 2016 PRRIP Work Plan. Non-program off-channel habitat are assumed to continue at the same level over the whole simulation period.	
Detailed Description	
On-channel Tern and Plover Habitat	Continue to build and maintain a target of 42 acres of on-channel habitat at permitted habitat complexes owned by the Program (25 acres at Shoemaker Island Complex[3] and 17 acres at Elm Creek Complex). Reaching this target prior to the nesting season is dependent on hydrologic conditions that allow for contractor access to the site. Even if this target is reached, high spring flows may reduce the amount of habitat prior to the nesting season. The methods for building and maintaining on-channel habitat in the 2016 to 2019 period are assumed to be the same as those used in the 2012 to 2014 period.[4] These methods involve using bulldozers to regrade existing sandbars and/or push sand from the channel bed into new nesting islands. Nesting islands will be built to the floodplain elevation, limiting inundation to discharges greater than 8,000 cfs. Island area will be based on existing topography but will generally range from 2 to 5 acres in size and will be as large as is practical given local site conditions. Maintenance of on-channel habitat will include spraying prior to and following the nesting season to manage vegetation and predator trapping.

[3] There may be legal barriers to rebuilding habitat at the Shoemaker Complex because neighboring landowners assert these actions contribute to ice jams.

[4] These methods are described in a PRRIP-EDO Memorandum to the TAC, "Tern and Plover Mechanical Habitat Resource Allocation Investigation", January 26, 2015.

Alternative Name: Stay the Course	
Off-channel Tern and Plover Habitat	Continue to maintain the 87 acres of Program-owned off-channel habitat and create an additional 15 acres over time at actively mined sites. Assume that the 48 acres of NPPD owned off-channel habitat is maintained. Maintenance of off-channel habitat includes spraying prior to and following the nesting season to manage vegetation, and installation and maintenance of predator fences around the habitat and predator trapping.
Channel Widening	Continue channel widening actions for the benefit of whooping crane roosting habitat. Channel widening efforts continue at the same rate as described in the 2016 PRRIP Work Plan. Channel widening methods include tree clearing, channel disking, and herbicide application.
Sediment Augmentation	Continue sediment augmentation according to the Adaptive Management Plan. The current approach involves mechanical placement and augmentation of 60,000 to 80,000 tons/year at the Plum Creek Complex to offset channel degradation in the south channel along Jeffrey Island.
Acquiring Water	Continue to implement the Water Action Plan as described in the 2016 PRRIP Work Plan. This includes expenditures of approximately $43 million during the 2016 to 2019 period for the J2 Regulating Reservoir, and approximately $9 million per year on average for other water actions (e.g. groundwater recharge projects, water leasing).
Using Water	Continue to use water available to the Program to reduce shortages to target flows.
Monitoring & Research	Continue with monitoring and research activities according to the Adaptive Management Plan to inform Big Questions #1 to #11.
Budget	The EDO estimates (roughly) that a "Stay the Course" alternative as defined here would result in an *unallocated indexed PRRIP budget* amount of $8-9 million (2014$) for the 2016-2019 period. This figure was estimated by indexing PRRIP's original budget in 2005$ to 2014$, and subtracting past expenditures and *future planned expenditures* in the 2016-2019 period. The *future planned expenditures* are an assumed *base level* of activity that will occur regardless of the SDM process in the following categories: channel widening, sediment augmentation, Water Plan-Land Plan-AMP implementation. Any additional activity beyond the base level defined above would draw from the $8-9 million of unallocated indexed PRRIP budget. Land acquisition costs would draw from the land purchase budget, of which $1.5 million is unallocated.

References

PRRIP EDO (2015). PRRIP Tern & Plover Habitat Synthesis Chapters – Chapter 3. February 25, 2015.

PRRIP EDO Memorandum (2015). Tern and Plover Mechanical Habitat Resource Allocation Investigation. January 26, 2015.