Task 1 of the additional work would involve preparing floodplain mapping and the associated digital elevation models for 10 steady-state water-surface profiles. The existing steady-state models would first need to be executed for the desired profiles, which would require optimization of the various split flow reaches (Task 1a). HEC-Geo RAS would then be used in conjunction with ArcGIS to prepare the preliminary floodplain mapping and DEMs (Tasks 1b-1d). HEC-GeoRAS is not capable of discerning areas along a cross section that are actively flowing from areas that are hydraulically disconnected (i.e., ponded areas). Similar errors in the mapping occur in areas where the water backs-up into a long embayment. HEC-GeoRAS uses the main channel water-surface elevation along the reach at a cross section to determine the water-surface extents in the embayment, which means that the water-surface slopes along the embayment. In reality, the water-surface elevation in these areas should be effectively flat; thus, the HEC-GeoRAS maps over-estimate the inundated area. It is, therefore, necessary to manually adjust the floodplains to eliminate the areas that are hydraulically disconnected from the active channel and reduce the water-surface extents in the embayment zones (Task 1e; **Figure 1**).

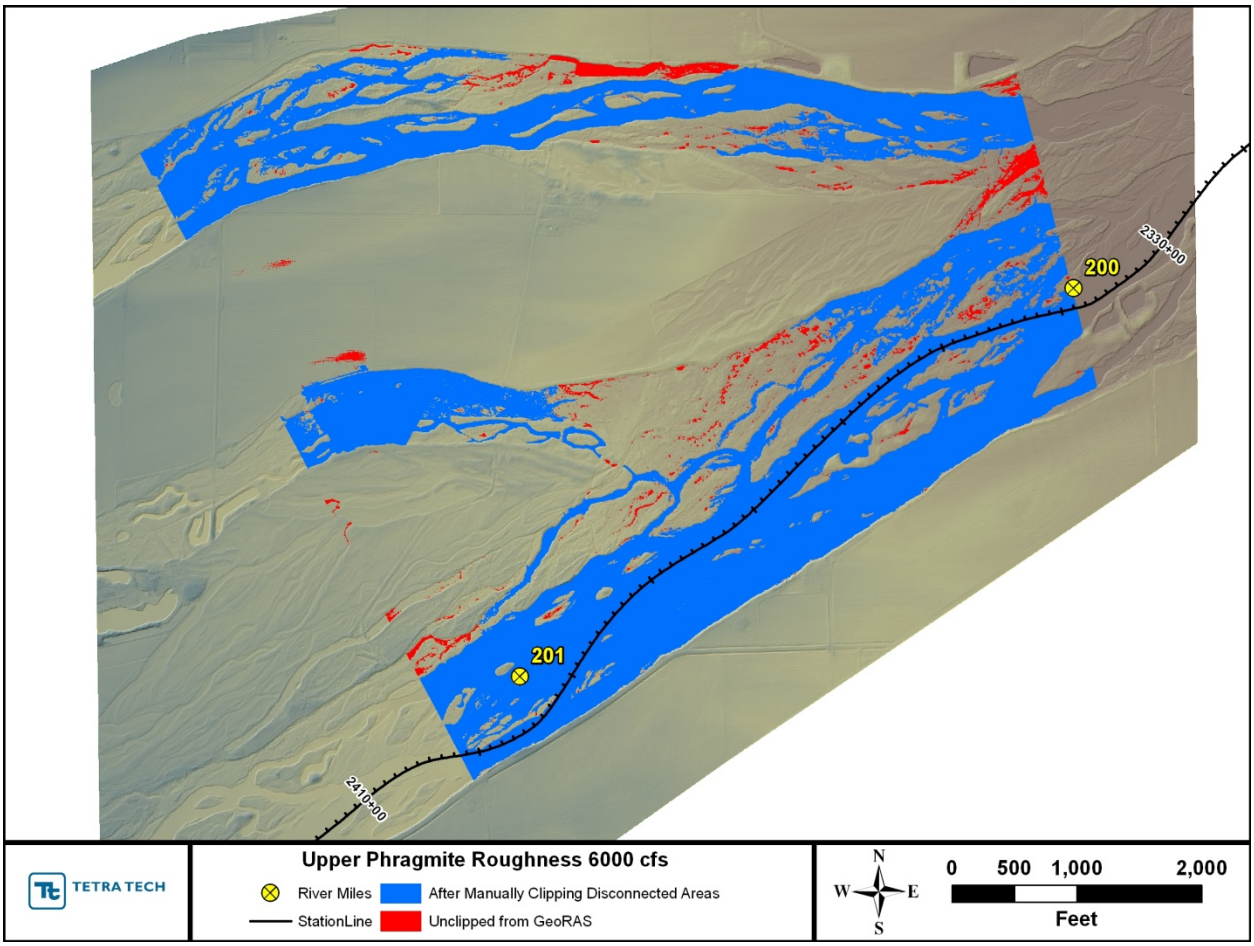

Figure 1. Comparison of the unclipped floodplain mapping that is output by HEC-GeoRAS and the mapping that includes manual adjustments to the hydraulically disconnected areas. The mapping is based on the steady-state model output for a discharge of 6,000 cfs in the vicinity of River Mile 200.

Task 2 involves modifications to the existing, calibrated HEC-6T model that would be necessary to evaluate a range of potential alternatives (i.e., changes to the hydrologic regime or physical changes such as channel dredging or reconnection of historical overbank channels) that could reduce or eliminate aggradation in the "Choke Point" reach of the North Platte River. This task would involve incorporating a suitable hydrologic record that would be expected during a target period of suitable length (e.g., 10-years) into the existing baseline model to develop a baseline simulation. Results from this baseline simulation could then be directly compared to the results from the alternative models that would be executed over the same 10-year period to evaluate the associated improvements. Because the alternatives have not been entirely identified, the cost for this task was prepared on a by-alternative basis.

C:\Documents and Settings\Steve Smith\My Documents\PRRIP\Adaptive Manag\Hydraulic Modeling\HEC-RAS Model\Project Management\PRRIP-N Platte Sed Trans Budget_UnitSedTransRuns.xlsx

COST ESTIMATE FOR

Summary
2/10/2011

Task	Description	Principal Engineer/ Geomorphologist	Senior Engineer/ Scientist	Engineer/ Scientist	Junior Engineer/ Scientist	Draftsman/ Technician	Clerical	Labor Cost	Direct Costs*	Total by Task
		$221.50	$111.50	$103.50	$96.50	$66.50	$76.50			
1	**Floodplain Mapping**									
1a	Execute/Optimize Steady State Models and Export Results			8				$ 828	$ 57	$ 885
1b	Convert Terrain to Raster/TIN Format					16		$ 1,064	$ -	$ 1,064
1c	Floodplain Mapping			4		24		$ 2,010	$ 57	$ 2,067
1d	Develop DEMs			4		4		$ 680	$ 57	$ 737
1e	Floodplain Mapping Mods for Backwater and Pond Areas			8		32		$ 2,956	$ 57	$ 3,013
2	**Sediment-transport Modeling: North Platte Choke Point**									
2a	Prepare baseline hydrology & model run		4	2				$ 653	$ 28	$ 681
2b	Adjust model geometry	1	8	4				$ 1,528	$ 28	$ 1,556
2c	Adjust hydrologic input (if necessary)		4	4				$ 860	$ 57	$ 917
2d	Execute model and extract results		4	4				$ 860	$ 57	$ 917
2e	Compare results to baseline model run	1	4	4				$ 1,082	$ 28	$ 1,110
2f	Prepare technical memorandum (per run)	4	8	4		4		$ 2,458	$ 108	$ 2,566
	Total Hours	6	32	46		80				
	TOTAL COST	**$1,329**	**$3,568**	**$4,761**	**$0**	**$5,320**	**$0**	**$ 14,978**	**$ 533**	**$ 15,511**

Task 1a-d: Mapping	$ 4,752
Task 1a-e: Mapping Mods	$ 7,765
Task 1: Unit Cost/Profile	$ 776
Task 2: Unit Cost/Model Run	$ 7,746

*Includes G&A markup (13.46%)