

## Appendix E

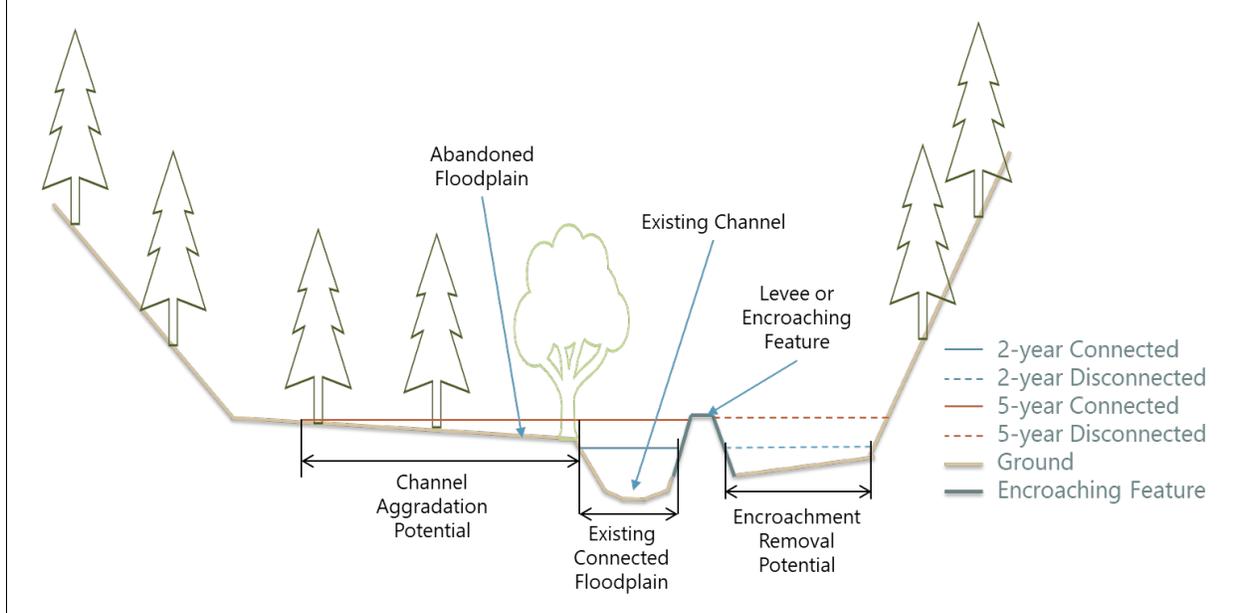
### Floodplain Connectivity Analysis

Floodplain connectivity is an important metric for understanding the state of a riparian area. Connected floodplains provide benefit for nearly all riverine aquatic species in the form of habitat, high flow refugia, nutrient influx, and woody material. Hydraulically connected floodplains are key in developing riparian areas, which provide the material for instream wood, which in turn forces much of the geomorphic processes associated with the functioning river system. Confining features along the banks of the rivers in the Touchet basin and within the floodplain influence hydraulic conditions during large floods, affecting local and reach-scale geomorphic processes such as sediment mobility and channel migration. Confining features may be both natural and influenced by anthropogenic activities. Inspections of aerial photography, Light Detection and Ranging (LiDAR) data, and field reconnaissance were used to identify confining features within the study area. These features include bedrock along the valley wall, alluvial fan deposits, bank armoring (e.g., riprap), levees and pond berms, and road prisms. Additionally, the rivers of the Upper Touchet basin can be disconnected from the floodplain through channel incision and downcutting. Channel incision is often associated with encroaching features such as levees or bedrock valley walls because straightened channels provide more stream power for sediment transport. Channel incision is often the beginning of a cycle of sediment starvation. The following connectivity analysis discusses the potential benefits of reversing this trend of channel incision, as well as the benefit of removing encroaching features and increasing the total area of connected floodplain.

#### 1.1 Analysis Overview

The purpose of this analysis is to describe the floodplain connectivity of a reach in a way that can be compared to the other reaches in the system and help inform potential restoration actions. The analysis focused on three characteristics of the floodplain: 1) the area of floodplain currently accessed and connected at a given flow event; 2) the area that could potentially be accessed given the removal of encroaching features; and 3) the area that could be accessed given sediment deposition and reversal of channel incision. Figure E-1 provides a conceptual valley cross section showing these three floodplain characteristics. The existing floodplain and potential floodplains are represented as lengths in this cross section but will be discussed as 2D (areas) for this assessment as the concept in Figure E-1 is applied along the length of the valley for each assessment reach.

**Figure E-1**  
**Conceptual Cross Section of Floodplain and Floodplain Potential**



Removal of encroaching features and channel bed aggradation (or reversing channel incision) were chosen as potential restoration actions because they are common restoration techniques and are recommended in the main report. They are also two metrics that are directly related to floodplain connectivity, making representations of these actions easily computed using these data and analysis. It should be noted that these restoration actions, particularly channel bed aggradation, may be treating symptoms of other underlying problems with the geomorphic processes of the reach. When performing any restoration action, it is essential to consider the underlying drivers behind the current state of the reach in question, and address those as well. The restoration actions discussed here are recommended simply as a measure of potential in the floodplain. The main report explores additional restoration actions, measures, or considerations that may need to be taken to ensure the success of either of the above restoration actions.

To assess how much area could potentially be inundated at the 2-year flow event with minimal investment, the analysis examined the 5-year event as a representation of floodplain inundation potential at the 2-year event given positive outcomes from restoration activities. Figure E-1 shows how these flow events relate to the three conceptual floodplain characteristics discussed previously, and Table E-1 describes in more detail how these areas are used in this assessment.

The first step in evaluating the availability and potential for floodplain connectivity was to create relative elevation models (REMs) based on the water surface elevations from the hydraulic 1D model. The REMs were then projected onto the terrain to determine estimated extents of inundation at the

2-year and 5-year flow events. This method allows all areas to be counted in the floodplain below the water surface elevation at a given point along the thalweg. This has the advantage of counting areas that are not hydraulically connected and that would not otherwise be counted using only the hydraulic model results. However, it should be noted that because these results are based only on the elevations and data from the LiDAR, they may not exactly match the conditions seen at this time in reality. For example, a side channel that is currently inundated because a large log jam has caused a backwater and forced flow down the channel has the possibility of appearing as not connected in these results if that side channel is actually higher in elevation than the water surface would be without the log jam. Therefore, this analysis should be seen as an assessment of how the elevations and channel geometries would be inundated without more temporary features such as log jams. Because these temporary features that could cause these minor inconsistencies may not exist after several high-flow events, this analysis represents a longer-term assessment of the topography and geomorphology of the basin and is appropriate for an analysis of events that occur less frequently.

These results were then trimmed slightly to discount areas that could never reasonably be inundated, such as behind highway prisms, in the Waitsburg wastewater treatment pond, or in the city of Dayton. Additional areas, which are unlikely to be inundated in the foreseeable future but are not impossible, have been labeled as "Unobtainable" and not included in the assessment. However, these areas are still shown on the GIS layers as part of this assessment, for reference.

The final resulting area, shown in Figure E-2, represents the total amount of floodplain that could possibly be available at the given flow event, including areas that are currently disconnected via levees or other non-anthropogenic features. These floodplain areas were then separated into connected and disconnected areas so that the sum of both represents the total available low-lying floodplain (see Equation E-1). The disconnected areas are any parts of the available floodplain that would be inundated during the flow event but are not hydraulically connected to the main channel. These areas can either be completely disconnected or hydraulically disconnected, meaning that, while the area does connect to the floodplain at the downstream end, there is no upstream flow path and the area is unlikely to be inundated through backwater alone. Removing these areas leaves the connected low-lying floodplain (the area that is currently available at a given flood event), as shown in Figure E-3. These areas were evaluated on a project area reach basis and divided by valley length to determine a standardized value.

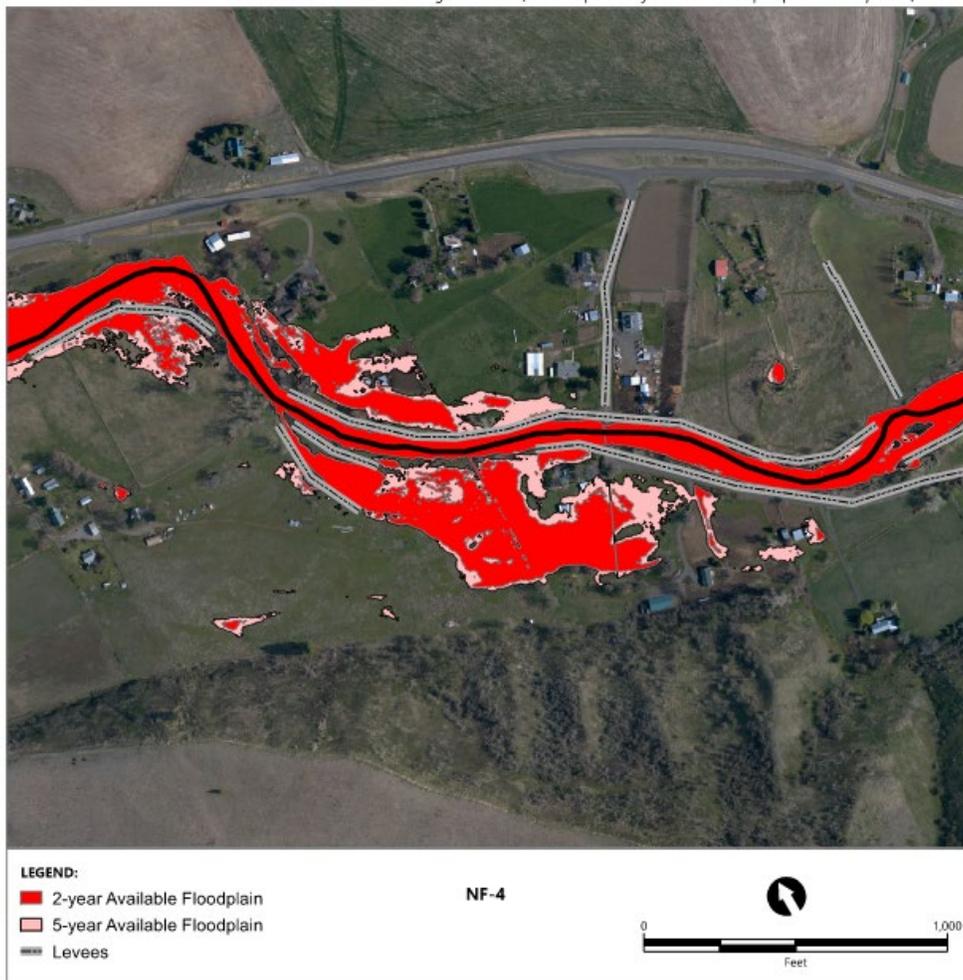
**Equation E-1**

$$C_{yp} + D_{yp} = A_{yp}$$

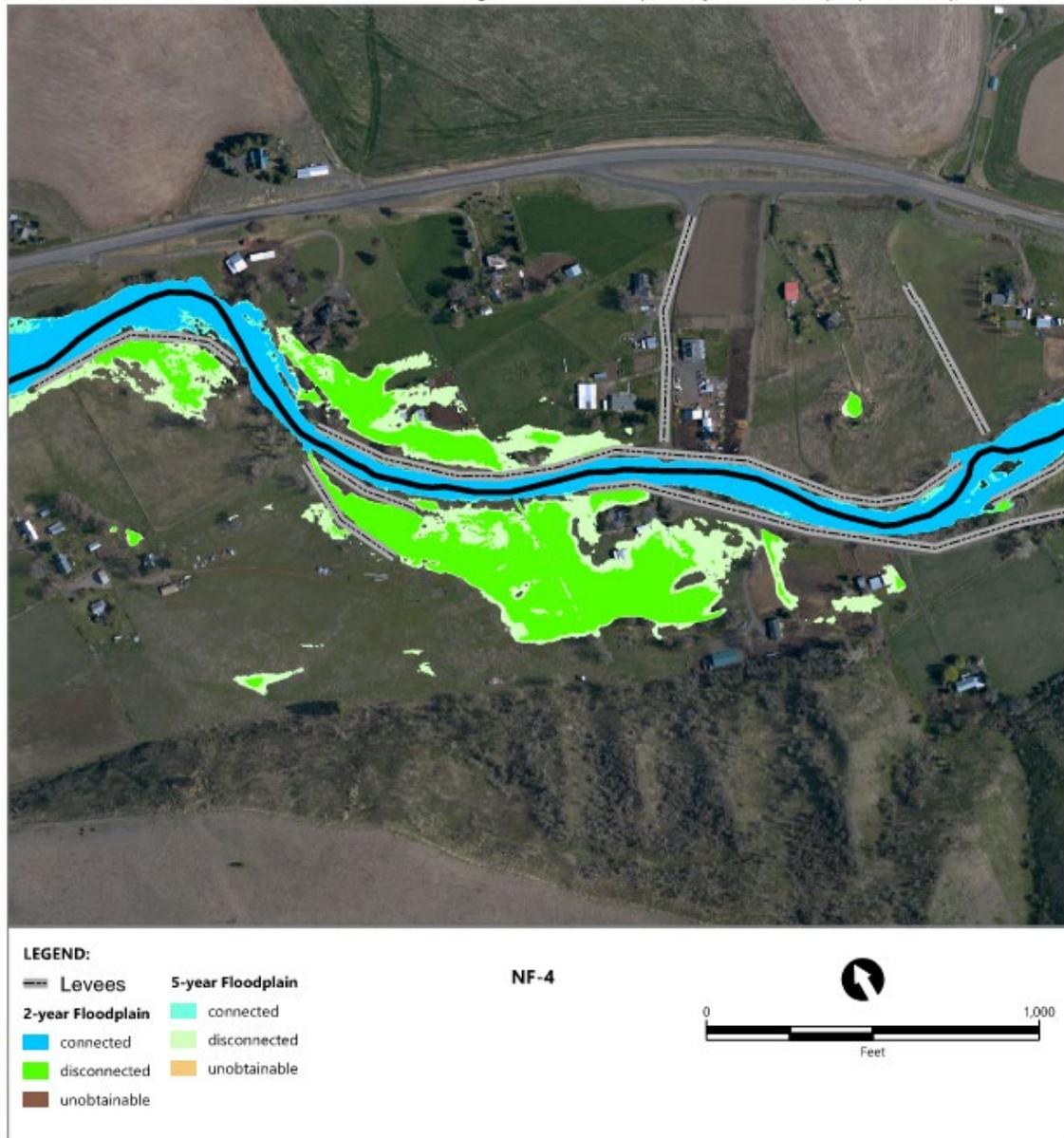
where:

- $A_{yp}$  = Available floodplain per valley length
- $D_{yp}$  = Disconnected floodplain per valley length
- $C_{yp}$  = Connected floodplain per valley length
- Y = Any given flow recurrence interval (2-year or 5-year)
- P = Any given project area

**Figure E-2**  
**Total Available Floodplain for 2-year and 5-year Flow Events**



**Figure E-3**  
**Connected vs. Disconnected Floodplain for the 2-year and 5-year Events**



Based on the assumption that the area inundated at the 5-year flow event represents the maximum possible potential for the 2-year floodplain connection, the different areas of inundated floodplain can be assigned a conceptual significance greater than what they directly represent. These modeled inundated areas and the conceptual areas they represent are explained in Table E-1. This analysis

focuses on four of these areas in particular as a percent of the total potential area that could be inundated (represented by the 5-year available floodplain):

- The area currently inundated at the 2-year flow, shown in Figure E-1 as the “Existing Floodplain”
- The additional area that could be inundated given channel bed aggradation, shown in Figure E-1 as the “Channel Aggradation Potential”
- The additional area that could be inundated given removal of encroaching features, shown in Figure E-1 as the “Encroachment Removal Potential”
- The additional area that could be inundated given both channel bed aggradation and removal of encroaching features, shown in Figure E-1 as both the “Encroachment Removal Potential” and “Channel Aggradation Potential” combined

**Table E-1**  
**Modeled Floodplain Areas and Conceptual Significance**

Floodplain Area	Description	Conceptual Significance	Final Analysis Result
2C	2-year connected floodplain	The currently connected floodplain at the 2-year event.	None
2D	2-year disconnected floodplain	The floodplain disconnected by levee or other encroaching feature at the 2-year event.	None
2A	2-year available floodplain	The total floodplain area with elevation low enough to be accessed by the 2-year event, connected or not.	None
5C	5-year connected floodplain	The area of floodplain that could potentially be connected at the 2-year event with sufficient channel bed aggradation or other rise in water surface elevation.	None
5D	5-year disconnected floodplain	Not used. <sup>1</sup>	None
5A	5-year available floodplain	The total area potentially connected at the 2-year event given channel bed aggradation and removal of encroaching features.	None
$\frac{2C}{5A}$	2-year connected divided by 5-year available floodplain	The percent of the potentially available area that is <u>currently inundated at the 2-year flow</u> . Used as an analysis result for connectivity (Figures E-4 and E-5).	Existing Connected Floodplain
$\frac{(5C - 2C)}{5A}$	5-year connected minus 2-year connected divided by 5-year available floodplain	The percent of the potentially available area <u>gained via channel bed aggradation</u> . Used as an analysis result for connectivity (Figure E-6).	Channel Aggradation Potential

Floodplain Area	Description	Conceptual Significance	Final Analysis Result
$\frac{2D}{5A}$	2-year disconnected divided by 5-year available floodplain	The percent of the potentially available area <u>gained via removal of encroaching features</u> . Used as an analysis result for connectivity (Figure E-7).	Encroachment Removal Potential
$\frac{(5A - 2C)}{5A}$	5-year available minus 2-year connected divided by 5-year available floodplain	The percent of the potentially available area <u>gained via simultaneous removal of encroaching features and channel bed aggradation</u> . <sup>2</sup> Used as an analysis result for connectivity (Figure E-8).	Total Floodplain Potential

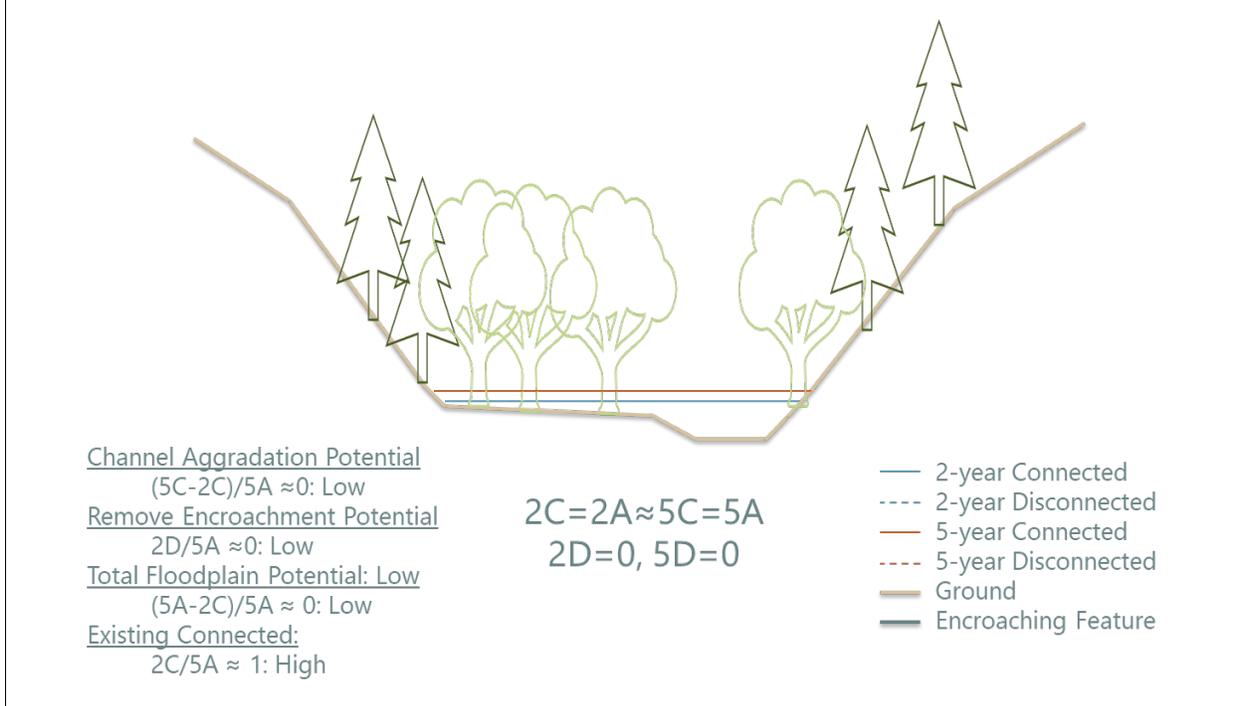
## Notes:

1. The 5-year disconnected area cannot be conceptually accessed without both channel bed aggradation and removal of encroaching features; therefore, modeling just the removal of encroaching features at the 5-year event is not useful for this analysis.
2. This includes removing features that encroach on both the 2-year and 5-year inundation area.

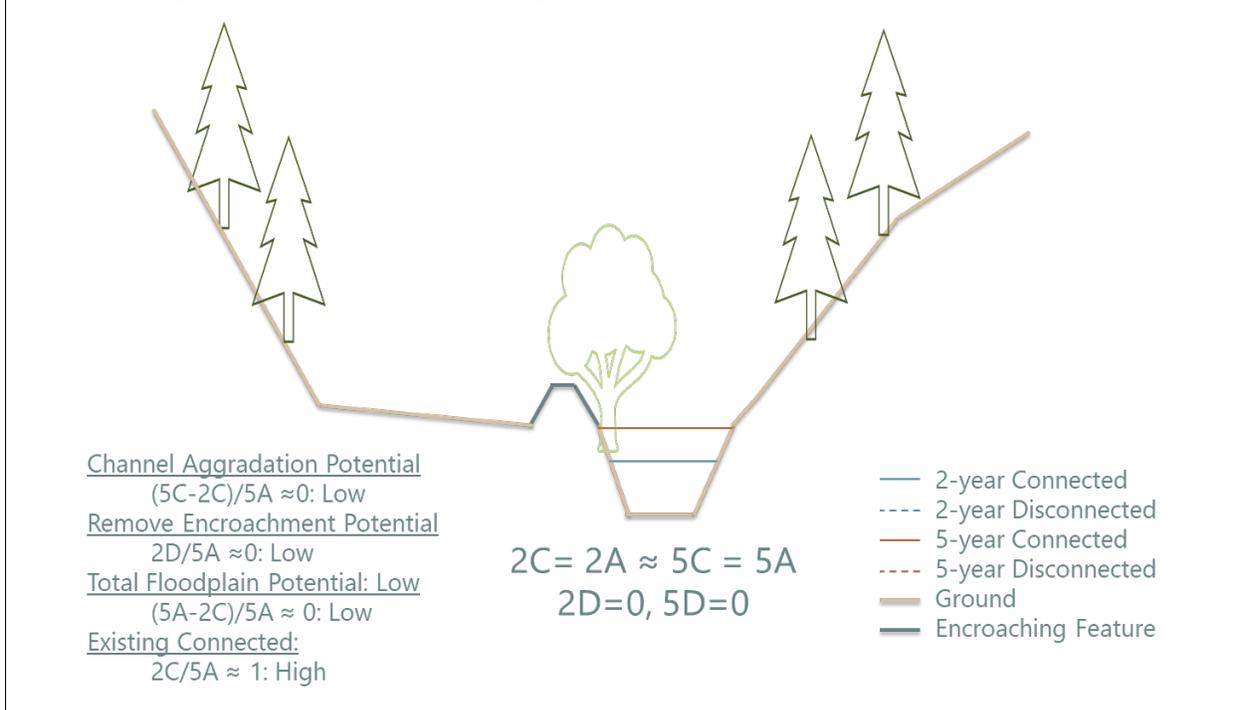
This analysis therefore produces four distinct results: Existing Connected Floodplain, Channel Aggradation Potential, Encroachment Removal Potential, and Total Floodplain Potential. The concepts behind these results are shown in Table E-2. How an individual project area scores in each one of these analysis results can provide insight into what restoration actions will be most effective for that project area. Because all of the analysis results are measured as a percent of the total available floodplain, if a project area scores highly in the Existing Connected Floodplain analysis result it can be due to two different scenarios.

In the ideal scenario represented in Figure E-4, the existing connected floodplain (2C), is similar to the potential connected floodplain (5C) in that both are already well-connected floodplains and therefore do not have a large amount of potential for restoration. However, the scenario represented in Figure E-5 would also score very similarly to the scenario in Figure E-4, but in this case the channel is so incised or confined that the potentially available floodplain, as defined for this assessment, is not much larger than the existing connected floodplain. Even though both score highly in the Existing Connected Floodplain analysis result, the two are at the opposite ends of the spectrum for floodplain connection. While this may seem like a drawback to this method, it is actually very useful for prioritization and conceptual restoration. For prioritizing restoration work, reaches with a high amount of potential area available to be reconnected via restoration actions are desirable for restoration work and should be prioritized highly, whereas project areas with a small amount of potential area are not desirable for restoration work and should not be prioritized. The scenarios in Figures E-4 and E-5 are at opposite ends of the connected floodplain spectrum, but both represent scenarios where there is little potential floodplain area to be gained from restoration work. Therefore, project areas similar to these scenarios with high scores in the Existing Connected Floodplain analysis result can be sorted to the bottom of a prioritization.

**Figure E-4**  
**High Existing Connected Floodplain: Ideal Scenario**

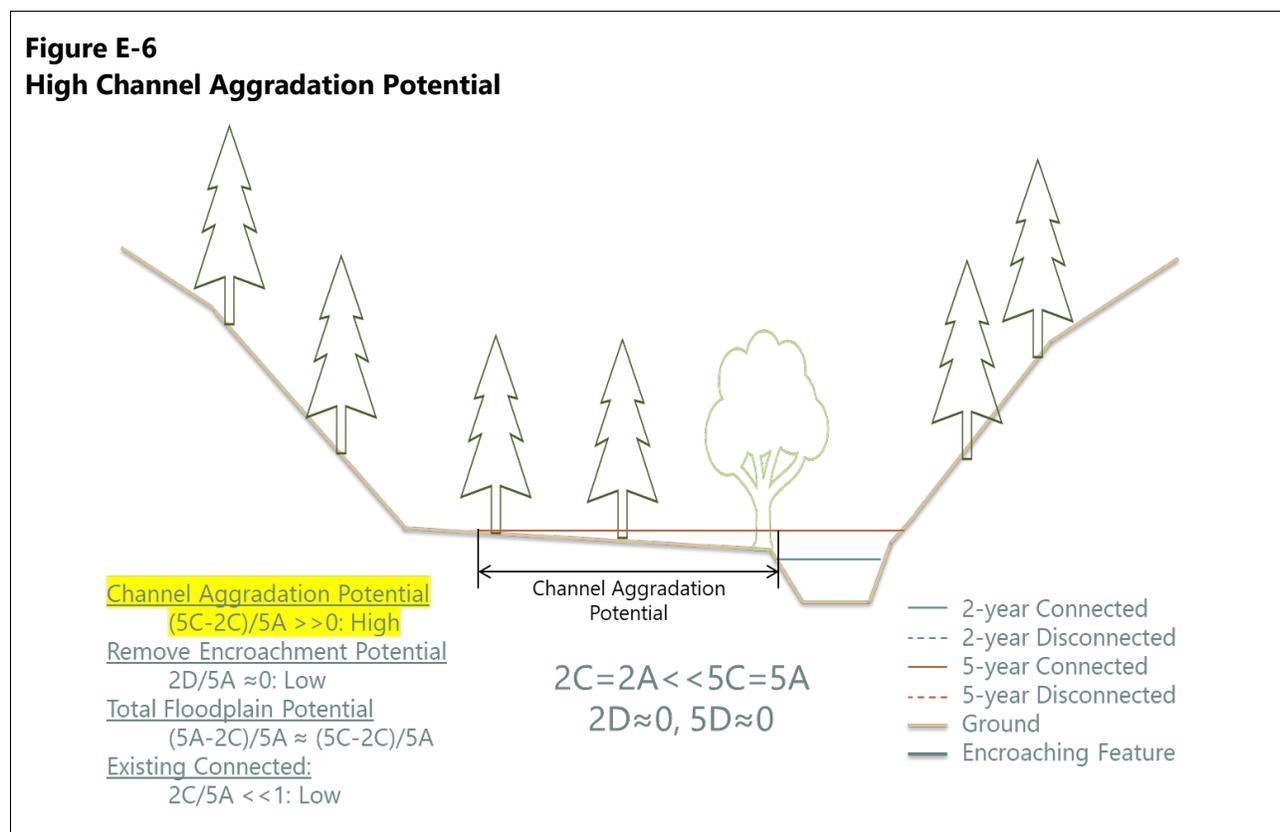


**Figure E-5**  
**High Existing Connected Floodplain: Highly Confined Scenario**



Several scenarios related to the analysis results indicate that these reaches have floodplain area that is not currently connected but could potentially be connected with restoration work. Figure E-6 shows a scenario where the 2-year connected floodplain connection area is low, but if the channel bed were to aggrade and the water surface elevation raise to a level similar to the current 5-year connected floodplain, a significantly larger area would be connected. This scenario represents a reach that would score highly in the Channel Aggradation Potential analysis result. Project areas that score highly in this analysis result will be ranked highly in the prioritization, and the recommended restoration strategies would be designed to help aggrade the channel bed and reconnect some of this potential area.

Figure E-7 shows a scenario where the 2-year connected floodplain connection area is low, but if an encroachment such as a levee, high bank, or structure were removed a significantly larger area would be connected. This scenario represents a reach that would score highly in the Encroachment Removal Potential analysis result. Project areas that score highly in this analysis result will be ranked highly in the prioritization, and the recommended restoration strategies would be designed to reconnect disconnected floodplain.



**Figure E-7**  
**High Encroachment Removal Potential**

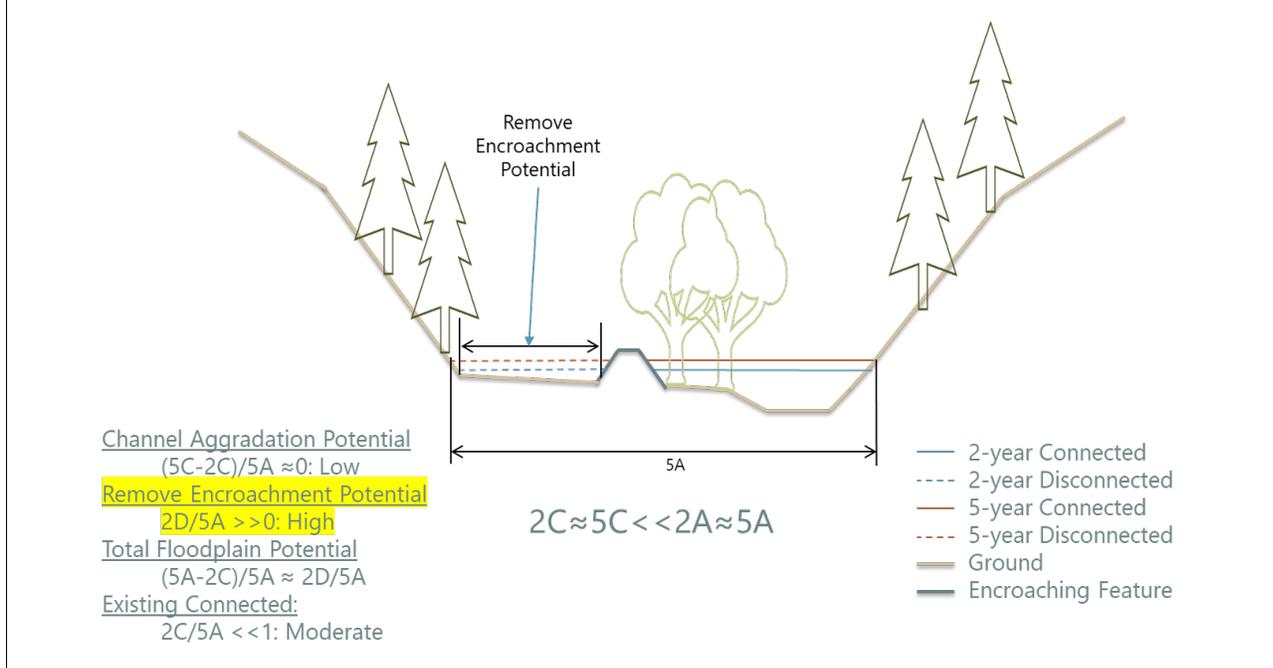
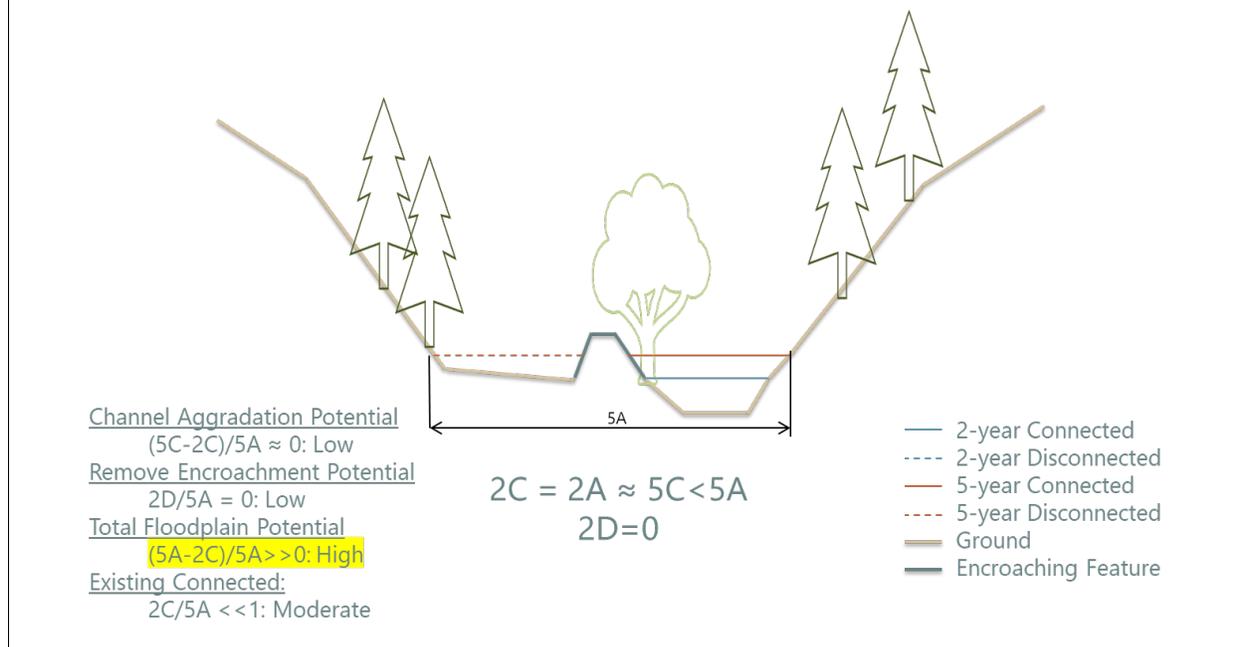


Figure E-8 shows a scenario where there is some area that could potentially be connected at a 2-year event but is not currently connected, and neither encroachment removal nor channel aggradation on their own would be enough to connect these areas. In this scenario, not much area would be gained by either removing the encroachment or by raising the channel bed elevation. However, if both restoration actions were to occur, a large amount of floodplain area could be connected at the 2-year event. This scenario is represented by the Total Floodplain Potential analysis result, and these project areas will be ranked more moderately in the prioritization because they have potential but more effort is required to connect it.

All of these scenarios represent an idealized condition; in reality, most, if not all, project areas will have some combination of the above scenarios and will be more similar to the scenario shown in Figure E-1.

**Figure E-8**  
**Total Floodplain Potential: Both Channel Aggradation and Encroachment Removal are Necessary**



## 1.2 Connectivity Trends and Patterns

This section briefly describes some of the basin-wide trends that result from the connectivity analysis. A more detailed breakdown of how this analysis applies to individual reaches is discussed in Appendix I, Prioritized Reaches. This section references figures and tables that are provided at the end of this appendix and also heavily references terms defined and explained in the previous section. Tables E-5, E-6, and E-7 provide the data used to perform the connectivity analysis as well as more in-depth information about the 2- and 5-year inundation. Table E-5 provides the area of available, connected, disconnected, and unavailable inundated floodplain at the 2- and 5-year events. Table E-6 provides the Connectivity metrics discussed previously in acres per river mile but without standardizing by the total available floodplain. Finally, Table E-7 provides the floodplain connectivity potential of the Encroachment Removal, Channel Aggradation, and Total Floodplain Potential analysis results as a factor of the total available floodplain. This table contains the values used for the Connectivity metric in prioritization and the total scores for Connectivity, using the weightings described in the “Scoring for Prioritization” section of this appendix.

Figure E-9 shows the final Connectivity score for all project areas in the prioritization (the city reaches are excluded). Because of the differences in size of the different reaches in the prioritization, it is difficult to isolate trends in connectivity over the whole basin. However, in general areas lower in the

basin tend to have more potential for floodplain connection, particularly in the Mainstem Touchet and, to some degree, the Lower North Fork. The forks that occupy the upper parts of the basin generally show less potential for additional floodplain connectivity. The primary drivers of this trend likely fall into three general categories, which may drive floodplain restoration in the basin:

- The Mainstem Touchet and North Fork are more leveed than the upper reaches of the basin.
- The upper basin generally has steeper slopes and larger material size than the lower part of the basin.
- The upper basin has narrower and deeper valleys and less floodplain in general.

Figures E-10 through E-15 break down the total Connectivity score into the three areas of floodplain connection potential. The numbers on these figures represent the actual acres per river mile because using only the percentages can occasionally be deceiving:

- **Channel Aggradation Potential:** The area of disconnected floodplain that could be reconnected with restoration actions targeting raising the water surface elevation of the reach.
- **Encroachment Removal Potential:** The area of disconnected floodplain that could be reconnected with restoration actions targeting removing encroaching features such as levees.
- **Total Floodplain Potential:** The area of disconnected floodplain that could be reconnected with restoration actions targeting both channel aggradation and encroachment removal at the same time.

These metrics are explained in more detail in Section 8 of the main report. It should be noted that the Total Floodplain Potential may be more or less than the combination of the individual Channel Aggradation Potential and Encroachment Removal Potential analysis results, due to the fact that to achieve the Total Floodplain Potential both restoration actions need to be implemented. This concept is shown graphically in a representative cross section in Figure E-8. Additionally, Equation E-2 shows how this difference in area is conceptually expressed as the difference in disconnected area between the 2-year and 5-year (which may be either positive or negative).

**Equation E-2**

$$100\% = C_2 + P_{RL} + P_{RB} + (D_5 - D_2)$$

and

$$P_T = P_{RL} + P_{RB} + (D_5 - D_2)$$

where:

$C_2$	=	Currently connected area at 2-year, as a percentage of the total available
$P_{RL}$	=	Potential area by removal of encroaching features restoration action, as a percent
$P_{RB}$	=	Potential area by channel bed aggradation restoration action, as a percent
$D_5$	=	Disconnected area at 5-year, as a percentage of the total available
$D_2$	=	Disconnected area at 2-year, as a percentage of the total available
$P_T$	=	Total potential area by doing both restoration actions together

Several useful trends can be observed when viewing the restoration actions individually and on a reach- or river-scale basis. Figure E-10 shows these restoration potentials for the Mainstem Touchet. In general, the floodplain connection potential in the Lower Mainstem Touchet is driven by the Channel Aggradation Potential, whereas the floodplain connection potential in the Upper Mainstem Touchet is driven mostly by the Encroachment Removal Potential. This indicates that the Lower Touchet has fewer levees and is more incised with floodplain available to reconnect with channel aggradation, while the Upper Mainstem Touchet is more heavily leveed with more infrastructure. Field observations confirm these concepts to be generally true. It should be noted that Figure E-10 shows the Connectivity metrics for the Waitsburg and Dayton city reaches, which are not included in the prioritization.

Figure E-11 breaks down the restoration actions for floodplain connection for Coppei Creek, including both the Coppei Waitsburg reach, which is not included in the prioritization, and the rest of Coppei Creek, which is included. Most of the restoration potential in Coppei Creek comes from the Channel Aggradation Potential, indicating much of the channel is highly incised. The exception is project area C-3, which has a levee with a large, low-lying area that has flooded in the past.

Figure E-12 shows the restoration actions for both the Upper North Fork and Lower North Fork reaches. The primary trend in the North Fork is that most of the project areas would most benefit from encroachment removal restoration actions. During levee digitization the North Fork was noted as having the most leveed sections in the study area, so removing these encroachments could

provide a large benefit to floodplain connection. Figure E-13 shows a similar trend in the Wolf Fork, with encroachment removal providing most of the benefit. Field observations noted several levees in the Wolf Fork but likely less than in the North Fork. Many of these may also be old overgrown levees or large armored material blocking sections of floodplain.

Finally, Figures E-14 and E-15 show the restoration potential of Robinson Fork and South Fork. Both of these reaches show a relatively even split between Channel Aggradation Potential and Encroachment Removal Potential, and restoration actions should be considered on an individual project area basis.

### 1.3 Scoring for Prioritization

In order to combine the analysis results of Channel Aggradation Potential, Encroachment Removal Potential, and Total Floodplain Potential into one Connectivity value to be used as a metric in the prioritization, weights were assigned to each connectivity analysis result, which were then summed to produce the final metric value. Table E-2 provides the weights chosen to combine these results. The Channel Aggradation Potential and Encroachment Removal Potential are favored in the weighting over the Total Floodplain Potential. The Total Floodplain Potential represents the areas where benefit can be gained only by performing both floodplain connection restoration actions; while these areas still have value, they would require more restoration effort for similar benefits and therefore are weighted lower.

**Table E-2**  
**Connectivity Analysis Results Weighting**

Analysis Result	Percent Weight
Channel Aggradation Potential	40%
Encroachment Removal Potential	40%
Total Floodplain Potential	20%

The next step in the prioritization process is to rank, classify, and score each project area in each of the three metrics (Complexity, Connectivity, and Excess Transport Capacity). Project areas are ranked in the Connectivity metric from best to worst by the scores determined using the weightings described in Table E-2. Each project area then has a rank for the Connectivity prioritization metric and can be classified and scored according to the classification and scoring systems outlined in Table E-3.

The connectivity analysis results, and therefore the prioritization metric of Connectivity, already inherently measure the potential of the project areas to reconnect the floodplain at the 2-year event. Therefore, the project areas that would gain the most benefits from reconnecting floodplain with the

least amount of effort will already be ranked at the top and receive the highest scores. It should be noted that the floodplain connectivity metric reflects the potential for each project area as they currently stand. The restoration potential of a project area could change drastically due to events such as channel bed aggradation that opens more floodplain potential, or land ownership changes that create available floodplain area that was previously designated as “unobtainable.” Table E-3 describes the concepts behind the classifications and scoring for Connectivity.

**Table E-3**  
**Floodplain Connectivity Potential Classification and Scoring**

Percentile Rank	Class	Class Score	Metric Score Threshold <sup>1</sup>	Class Conceptualization
75th to Top	1	5	0.21	Project areas in this class have the most floodplain potential, indicating that restoration efforts have the potential to raise the percentage of connected area to the highest potential based on current conditions. These should be the primary target of floodplain reconnection restoration actions.
50th to 75th	2	3	0.16	Project areas in this class score above average for floodplain connection potential and should be a secondary target for floodplain reconnection restoration actions.
25th to 50th	3	1	0.2	Project areas in this class have below average floodplain connection potential and should be the last group of project areas targeted for floodplain reconnection restoration.
Bottom to 25th	4	0	0	Project areas in this class have the least floodplain connection potential. This can either indicate that the project area is not well connected and has little room for improvement, or it is very well connected and there is little else to be connected via restoration efforts. In either case, these should not be targeted for floodplain reconnection actions, based on their current conditions.

Notes:

1. This is the score that defines the lower limit for the corresponding classification for this metric. These data can be used to track progression of project areas and compare to how they would rank according to the levels of this assessment, as new restoration projects are completed and new data become available.

## 1.4 Detailed Instructions for Performing This Analysis

Part of the purpose of this assessment is to define repeatable and data driven methods for assessing project areas and how they have progressed in relation to their goals. This section provides the detailed steps taken to perform the connectivity analysis of the Upper Touchet basin so that these analyses can be repeated in the future for additional analyses and evaluation of progress. Table E-4 provides the data that will need to be collected to reassess the project areas for complexity.

**Table E-4**  
**Raw Data Needed to Perform Connectivity Analysis**

Data Needed	Used For	Source
Topography digital elevation model (DEM)	1D hydraulic modeling	LiDAR, preferably blue/green and 0.5-meter horizontal accuracy or greater
Hydrology	Flows used in hydraulic modeling	Hydrologic gage data <sup>2,3</sup>
Water surface inundation boundaries <sup>1</sup>	Calculation of inundated area	1D hydraulic modeling results
Levees and encroachments	Delineation of disconnected area	Aerials or field data
Relative elevation map	Calculation of inundated area	LiDAR, preferably blue/green and 0.5-meter horizontal accuracy or greater
Project area delineations	Calculation of all metrics per project area	Project area shapefiles from this assessment

## Notes:

1. Water surface boundaries should be for the flows desired for the analysis: in this assessment the 2-year (1,436 cfs), and 5-year (2,530 cfs).
2. See Appendix C for a description of gage locations on the Touchet River, and methods used to interpret those data.
3. Hydrological data have been identified as a data need for more accurate future assessments.

The following steps will assume the user has adequate GIS knowledge and access to the same data sources as those produced in this report:

1. This analysis uses HEC-RAS 1D model results for the 2-year and 5-year flow events as a base layer. See the main report and Appendix D for details on how the modeling was done, and how the hydrologic flow events were determined.
2. Water surface elevation rasters (produced in HEC-RAS) were imported into GIS.
3. An REM was created based on the steps outlined in Ecology 2014 using the water surface elevation rasters as the base digital elevation model (DEM) (as opposed to the terrain raster described in Ecology 2014). The REM was created relative to the river centerline, which was manually digitized.
4. All results from the resulting relative elevation raster with a value of 0 or less will be under the water surface at that flow event. These areas were isolated from the REM and the bounding areas were exported as simple polygons.
5. These polygon shapefiles were then manually edited to delete areas not relevant to this analysis. These areas include areas within lakes or standing bodies of water, areas behind well-established levees or roads, such as in the city of Dayton, and areas on the opposite side of the fluvial valley that are not realistically reconnectable. The resulting polygon shapefiles form the total available floodplain area for the 2-year and 5-year event described in Table E-5.
6. The water surface break line shapefile, obtained as a data file from the LiDAR survey, was imported into GIS. Any areas of the total available polygons not directly connected to the low-winter flow were labeled as "disconnected areas." Additionally, areas that were only connected

on the downstream side or were behind known levees were manually separated and counted as disconnected areas. This produces four distinct floodplain shapefiles: 2-year Available, 2-year Disconnected, 5-year Available, 5-year Disconnected.

7. These four shapefiles were broken up by project area and summed for each project area to produce the disconnected areas and available areas described in Table E-5.
8. The disconnected area was subtracted from the total area to produce the connected area described in Table E-5. Each of these metrics was also differenced between the 2-year and 5-year areas to obtain the available difference, disconnected difference, and connected difference.
9. All nine of these areas shown in Table E-5 were divided by the valley length, which was manually digitized, to obtain the area per valley mile of each of the floodplain areas shown in Table E-6.
10. These values of area per valley mile were used to calculate the restoration actions in Table E-6:
  - a. Raise bed: 5-year connected minus 2-year connected divided by the 5-year available  $(5C-2C)/5A$
  - b. Remove levee: 2-year disconnected divided by 5-year available  $(2D/5A)$
  - c. Doing both: 5-year available minus 2-year connected divided by 5-year available  $(5A-2C)/5A$
  - d. Existing: 2-year connected divided by 5-year available  $(2C/5A)$

## 1.5 References

Ecology (Washington State Department of Ecology), 2014. "A Methodology for Delineating Planning-Level Channel Migration Zones." Pub. No. 14-06-025. Shorelands and Environmental Assistance. Olympia, Washington. Available at: <https://fortress.wa.gov/ecy/publications/SummaryPages/1406025.html>. July 2014

# Tables

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**Table E-5  
Inundation Metrics by Area**

Reach Base Metrics			2-year Inundated Floodplain (ac)				5-year Inundated Floodplain (ac)				2-year to 5-year Increase (ac)			
Reach	Project Area	Length (RM)	Available	Connected	Disconnected	Unobtainable	Available	Connected	Disconnected	Unobtainable	Available	Connected	Disconnected	Unobtainable
Lower Mainstem	MS-1	1.00	30.52	22.37	8.14	0.08	38.43	35.41	3.02	0.20	7.91	13.04	-5.12	0.12
	MS-2	1.53	58.20	56.19	2.01	0.00	72.63	70.82	1.81	0.73	14.43	14.63	-0.20	0.73
	MS-3	1.67	34.46	31.99	2.47	0.34	44.58	39.65	4.93	4.65	10.12	7.66	2.46	4.31
	MS-4	2.90	74.89	62.78	12.11	0.00	109.23	79.31	29.92	0.00	34.34	16.53	17.81	0.00
	MS-5	1.43	35.87	34.41	1.46	0.00	44.82	38.92	5.90	0.00	8.95	4.51	4.44	0.00
	MS-6	1.66	50.15	47.31	2.84	16.59	59.34	53.32	6.02	23.40	9.19	6.01	3.17	6.81
Touchet Waitsburg	MS-7	1.42	18.26	18.00	0.26	5.44	23.25	23.19	0.06	37.38	4.99	5.18	-0.20	31.94
	MS-8	0.69	10.91	10.76	0.16	0.00	13.25	12.24	1.02	0.00	2.34	1.48	0.86	0.00
Upper Mainstem	MS-9	1.26	25.31	20.96	4.34	0.00	34.58	28.18	6.40	0.00	9.28	7.22	2.06	0.00
	MS-10	1.40	39.97	23.14	16.84	0.00	65.95	25.09	40.86	0.00	25.98	1.95	24.02	0.00
	MS-11	0.87	25.35	21.73	3.62	0.19	37.05	26.75	10.29	1.79	11.70	5.02	6.68	1.59
	MS-12	1.28	84.86	36.69	48.17	45.23	102.28	40.21	62.07	47.83	17.43	3.52	13.90	2.60
	MS-13	0.67	21.19	16.68	4.51	0.00	29.00	22.35	6.65	0.00	7.81	5.68	2.14	0.00
	MS-14	1.59	58.51	41.08	17.43	0.00	71.32	46.21	25.11	0.22	12.81	5.13	7.69	0.22
	MS-15	1.36	37.73	25.87	11.86	12.54	54.19	27.94	26.26	18.09	16.46	2.06	14.40	5.55
Touchet Dayton	MS-16	2.52	43.84	36.85	6.99	0.15	51.75	44.07	7.68	0.40	7.91	7.22	0.70	0.25
	MS-17	0.64	13.31	12.99	0.32	0.04	14.37	13.60	0.77	0.07	1.06	0.61	0.45	0.03
Coppei Waitsburg	C-1	1.01	4.68	4.58	0.09	24.89	5.32	5.26	0.05	53.41	0.64	0.68	-0.04	28.52
	C-2	1.19	15.74	6.51	9.22	12.24	25.75	9.44	16.31	25.02	10.01	2.92	7.09	12.78
Upper Coppei	C-3	1.24	66.03	5.35	60.68	0.00	79.28	7.15	72.14	0.00	13.25	1.79	11.46	0.00
	C-4	1.82	7.83	7.79	0.04	0.01	9.68	9.61	0.07	0.26	1.85	1.82	0.03	0.25
	C-5	0.73	2.99	2.99	0.00	0.00	3.56	3.53	0.03	0.00	0.57	0.54	0.03	0.00
	C-6	1.03	4.88	4.86	0.03	0.00	6.20	6.19	0.01	0.00	1.31	1.33	-0.02	0.00
	C-7	1.08	8.22	7.15	1.07	0.00	11.33	10.80	0.53	0.00	3.11	3.65	-0.54	0.00
Lower North Fork	NF-1	0.47	6.93	6.86	0.07	0.00	7.66	7.57	0.09	0.00	0.73	0.71	0.03	0.00
	NF-2	0.69	15.57	8.46	7.11	0.00	21.30	9.46	11.84	0.00	5.73	1.00	4.73	0.00
	NF-3	1.20	30.12	14.74	15.39	0.00	43.90	16.02	27.88	0.00	13.78	1.28	12.50	0.00
	NF-4	1.00	11.88	11.24	0.64	0.00	14.39	13.20	1.18	0.00	2.51	1.96	0.54	0.00
	NF-5	0.66	12.50	11.95	0.55	0.00	14.21	13.18	1.03	0.00	1.71	1.23	0.48	0.00
Upper North Fork	NF-6	1.22	19.68	14.75	4.93	0.00	23.36	15.41	7.95	0.00	3.68	0.66	3.02	0.00
	NF-7	0.93	7.91	7.46	0.45	0.00	8.92	8.24	0.68	0.00	1.01	0.78	0.23	0.00
	NF-8	1.37	25.17	17.61	7.57	0.00	30.13	24.15	5.98	0.00	4.96	6.54	-1.58	0.00
	NF-9	0.52	4.04	3.42	0.62	0.00	4.72	3.73	0.99	0.00	0.68	0.31	0.37	0.00
	NF-10	1.32	24.42	20.10	4.32	0.00	26.97	21.77	5.20	0.00	2.55	1.67	0.88	0.00
	NF-11	0.67	8.51	6.56	1.95	0.00	9.18	7.51	1.67	0.00	0.67	0.95	-0.28	0.00
	NF-12	0.85	11.85	10.33	1.52	0.00	13.20	11.12	2.08	0.00	1.35	0.79	0.56	0.00
	NF-13	1.13	11.43	9.54	1.89	0.00	12.89	11.08	1.81	0.00	1.46	1.54	-0.07	0.00
	NF-14	0.77	6.88	5.26	1.62	0.00	7.39	5.57	1.83	0.00	0.52	0.31	0.21	0.00
	NF-15	1.01	8.49	6.49	2.00	0.00	9.32	7.02	2.31	0.00	0.83	0.52	0.30	0.00
	NF-16	1.55	13.79	11.71	2.07	0.00	15.26	12.89	2.36	0.00	1.47	1.18	0.29	0.00

**Table E-5  
Inundation Metrics by Area**

Reach Base Metrics			2-year Inundated Floodplain (ac)				5-year Inundated Floodplain (ac)				2-year to 5-year Increase (ac)			
Reach	Project Area	Length (RM)	Available	Connected	Disconnected	Unobtainable	Available	Connected	Disconnected	Unobtainable	Available	Connected	Disconnected	Unobtainable
Lower Wolf Fork	WF-1	0.69	10.21	7.24	2.97	0.00	12.23	8.26	3.97	0.00	2.02	1.02	1.00	0.00
	WF-2	1.33	18.51	15.37	3.14	0.00	22.08	17.15	4.93	0.00	3.57	1.79	1.78	0.00
	WF-3	0.91	15.44	12.05	3.38	0.00	18.28	13.47	4.80	0.00	2.84	1.42	1.42	0.00
	WF-4	1.02	8.61	6.54	2.06	0.00	10.02	7.25	2.77	0.00	1.41	0.70	0.70	0.00
Upper Wolf Fork	WF-5	0.76	5.45	4.92	0.53	0.00	6.28	5.46	0.83	0.00	0.84	0.53	0.30	0.00
	WF-6	0.91	9.16	7.32	1.84	0.00	9.57	7.23	2.35	0.00	0.41	-0.09	0.50	0.00
	WF-7	1.02	8.15	7.61	0.54	0.00	8.82	8.14	0.68	0.00	0.68	0.53	0.15	0.00
	WF-8	0.64	6.58	4.25	2.33	0.00	7.25	4.50	2.75	0.00	0.66	0.24	0.42	0.00
	WF-9	0.67	4.47	3.90	0.57	0.00	4.93	4.17	0.75	0.00	0.46	0.27	0.19	0.00
Robinson Fork	RF-1	0.73	5.12	3.83	1.29	0.00	6.00	4.43	1.56	0.00	0.88	0.60	0.28	0.00
	RF-2	0.60	3.01	2.76	0.24	0.00	3.84	3.43	0.42	0.00	0.84	0.66	0.18	0.00
	RF-3	0.58	3.28	2.83	0.44	0.00	3.91	3.32	0.60	0.00	0.64	0.49	0.15	0.00
	RF-4	0.60	3.55	3.23	0.33	0.00	4.01	3.60	0.41	0.00	0.46	0.37	0.09	0.00
South Fork	SF-1	0.62	6.73	4.90	1.83	0.00	8.57	5.56	3.01	0.00	1.85	0.66	1.18	0.00
	SF-2	1.36	15.89	13.62	2.28	0.00	18.56	14.84	3.72	0.00	2.66	1.22	1.44	0.00
	SF-3	1.32	9.69	8.78	0.91	0.00	11.81	10.15	1.66	0.00	2.12	1.37	0.75	0.00
	SF-4	1.34	18.21	16.61	1.60	0.00	21.86	19.62	2.24	0.00	3.65	3.01	0.64	0.00
	SF-5	1.29	11.64	11.12	0.52	0.00	13.69	12.60	1.09	0.00	2.05	1.48	0.57	0.00
	SF-6	0.68	11.82	9.68	2.14	0.00	13.84	11.27	2.57	0.00	2.02	1.58	0.43	0.00
	SF-7	1.26	12.77	10.76	2.01	0.00	15.50	13.08	2.42	0.00	2.73	2.32	0.41	0.00
	SF-8	1.02	13.19	12.09	1.10	0.00	16.03	14.50	1.54	0.00	2.84	2.41	0.43	0.00

**Table E-6**  
**Connectivity Metrics by Area/River Mile**

Reach Base Metrics			Connected Acreage (ac/rm)			Encroachment Benefit Acreage (ac/rm)			Aggradation Benefit Acreage (ac/rm)			Both Benefit Acreage (ac/rm)		
Reach	Project Area	Length (RM)	2C	Reach Rank	Basin Rank	2D	Reach Rank	Basin Rank	(5C-2C)	Reach Rank	Basin Rank	(5A-2C)	Reach Rank	Basin Rank
Lower Mainstem	MS-1	1.00	22.35	4	8	8.13	1	8	13.02	1	1	16.04	1	10
	MS-2	1.53	36.64	1	1	1.31	5	35	9.54	2	2	10.72	3	13
	MS-3	1.67	19.20	6	10	1.49	4	33	4.60	4	8	7.56	4	15
	MS-4	2.90	21.64	5	9	4.17	2	12	5.70	3	6	16.01	2	11
	MS-5	1.43	24.11	3	7	1.02	6	39	3.16	6	12	7.29	5	16
	MS-6	1.66	28.50	2	3	1.71	3	29	3.62	5	9	7.25	6	18
Touchet Waitsburg	MS-7	1.42	12.70	Not Ranked	Not Ranked	0.18	Not Ranked	Not Ranked	3.65	Not Ranked	Not Ranked	3.70	Not Ranked	Not Ranked
	MS-8	0.69	15.54	Not Ranked	Not Ranked	0.23	Not Ranked	Not Ranked	2.14	Not Ranked	Not Ranked	3.61	Not Ranked	Not Ranked
Upper Mainstem	MS-9	1.26	16.68	6	13	3.45	7	17	5.74	3	5	10.84	7	12
	MS-10	1.40	16.57	7	14	12.06	2	4	1.40	7	27	30.66	2	3
	MS-11	0.87	24.94	3	5	4.15	6	13	5.76	2	4	17.58	6	9
	MS-12	1.28	28.65	1	2	37.62	1	2	2.75	5	13	51.22	1	2
	MS-13	0.67	24.91	4	6	6.74	5	9	8.48	1	3	18.41	5	8
	MS-14	1.59	25.84	2	4	10.96	3	5	3.22	4	11	19.02	4	6
	MS-15	1.36	19.08	5	11	8.74	4	7	1.52	6	21	20.88	3	5
Touchet Dayton	MS-16	2.52	14.64	Not Ranked	Not Ranked	2.78	Not Ranked	Not Ranked	2.87	Not Ranked	Not Ranked	5.92	Not Ranked	Not Ranked
	MS-17	0.64	20.26	Not Ranked	Not Ranked	0.50	Not Ranked	Not Ranked	0.95	Not Ranked	Not Ranked	2.15	Not Ranked	Not Ranked
Coppei Waitsburg	C-1	1.01	4.54	Not Ranked	Not Ranked	0.09	Not Ranked	Not Ranked	0.67	Not Ranked	Not Ranked	0.73	Not Ranked	Not Ranked
	C-2	1.19	5.49	Not Ranked	Not Ranked	7.78	Not Ranked	Not Ranked	2.47	Not Ranked	Not Ranked	16.22	Not Ranked	Not Ranked
Upper Coppei	C-3	1.24	4.31	3	53	48.91	1	1	1.45	2	25	59.59	1	1
	C-4	1.82	4.29	4	54	0.02	4	54	1.00	4	37	1.04	4	54
	C-5	0.73	4.08	5	55	0.00	5	55	0.74	5	44	0.78	5	55
	C-6	1.03	4.70	2	51	0.02	3	53	1.28	3	30	1.29	3	52
	C-7	1.08	6.60	1	42	0.99	2	40	3.37	1	10	3.86	2	28
Lower North Fork	NF-1	0.47	14.55	2	16	0.14	5	52	1.50	3	22	1.69	5	48
	NF-2	0.69	12.22	4	22	10.27	2	6	1.45	4	24	18.56	2	7
	NF-3	1.20	12.23	3	21	12.78	1	3	1.06	5	35	24.22	1	4
	NF-4	1.00	11.22	5	27	0.64	4	46	1.96	1	17	3.14	4	35
	NF-5	0.66	17.97	1	12	0.82	3	42	1.84	2	18	3.39	3	33
Upper North Fork	NF-6	1.22	12.14	4	24	4.05	2	14	0.54	9	49	7.08	2	19
	NF-7	0.93	7.98	7	35	0.48	11	49	0.83	6	41	1.56	11	49
	NF-8	1.37	12.83	2	19	5.51	1	10	4.77	1	7	9.13	1	14
	NF-9	0.52	6.53	10	43	1.19	10	37	0.59	8	48	2.48	9	40
	NF-10	1.32	15.25	1	15	3.28	3	18	1.26	4	31	5.21	3	23
	NF-11	0.67	9.79	5	30	2.91	4	21	1.42	2	26	3.91	4	27
	NF-12	0.85	12.14	3	23	1.78	7	27	0.92	5	38	3.37	5	34
	NF-13	1.13	8.44	6	33	1.67	8	31	1.36	3	28	2.96	6	37
	NF-14	0.77	6.87	9	39	2.11	5	23	0.40	11	53	2.79	8	39
	NF-15	1.01	6.43	11	46	1.98	6	26	0.52	10	51	2.80	7	38
	NF-16	1.55	7.53	8	37	1.33	9	34	0.76	7	43	2.28	10	43

**Table E-6**  
**Connectivity Metrics by Area/River Mile**

Reach Base Metrics			Connected Acreage (ac/rm)			Encroachment Benefit Acreage (ac/rm)			Aggradation Benefit Acreage (ac/rm)			Both Benefit Acreage (ac/rm)		
Reach	Project Area	Length (RM)	2C	Reach Rank	Basin Rank	2D	Reach Rank	Basin Rank	(5C-2C)	Reach Rank	Basin Rank	(5A-2C)	Reach Rank	Basin Rank
Lower Wolf Fork	WF-1	0.69	10.53	3	28	4.32	1	11	1.48	2	23	7.26	1	17
	WF-2	1.33	11.58	2	26	2.37	3	22	1.35	3	29	5.06	3	24
	WF-3	0.91	13.25	1	18	3.72	2	15	1.56	1	20	6.84	2	20
	WF-4	1.02	6.44	4	45	2.03	4	24	0.69	4	46	3.42	4	32
Upper Wolf Fork	WF-5	0.76	6.52	4	44	0.70	4	44	0.71	1	45	1.80	3	47
	WF-6	0.91	8.01	1	34	2.01	2	25	-0.10	5	55	2.46	2	41
	WF-7	1.02	7.48	2	38	0.53	5	48	0.52	2	50	1.19	5	53
	WF-8	0.64	6.64	3	40	3.64	1	16	0.38	4	54	4.67	1	25
	WF-9	0.67	5.80	5	47	0.84	3	41	0.40	3	52	1.52	4	50
Robinson Fork	RF-1	0.73	5.25	2	49	1.76	1	28	0.83	3	42	2.97	1	36
	RF-2	0.60	4.61	4	52	0.40	4	50	1.11	1	33	1.80	3	46
	RF-3	0.58	4.87	3	50	0.76	2	43	0.84	2	40	1.86	2	45
	RF-4	0.60	5.33	1	48	0.54	3	47	0.62	4	47	1.30	4	51
South Fork	SF-1	0.62	7.94	7	36	2.96	2	20	1.07	6	34	5.95	2	22
	SF-2	1.36	10.00	4	29	1.67	3	30	0.90	8	39	3.63	6	31
	SF-3	1.32	6.63	8	41	0.68	7	45	1.03	7	36	2.29	7	42
	SF-4	1.34	12.41	2	20	1.20	5	36	2.25	3	16	3.93	3	26
	SF-5	1.29	8.60	5	31	0.40	8	51	1.14	5	32	1.98	8	44
	SF-6	0.68	14.25	1	17	3.14	1	19	2.33	2	15	6.12	1	21
	SF-7	1.26	8.52	6	32	1.60	4	32	1.84	4	19	3.76	5	30
	SF-8	1.02	11.82	3	25	1.08	6	38	2.35	1	14	3.85	4	29

**Table E-7**  
**Connectivity Metrics by Potential and Combined Connectivity Score**

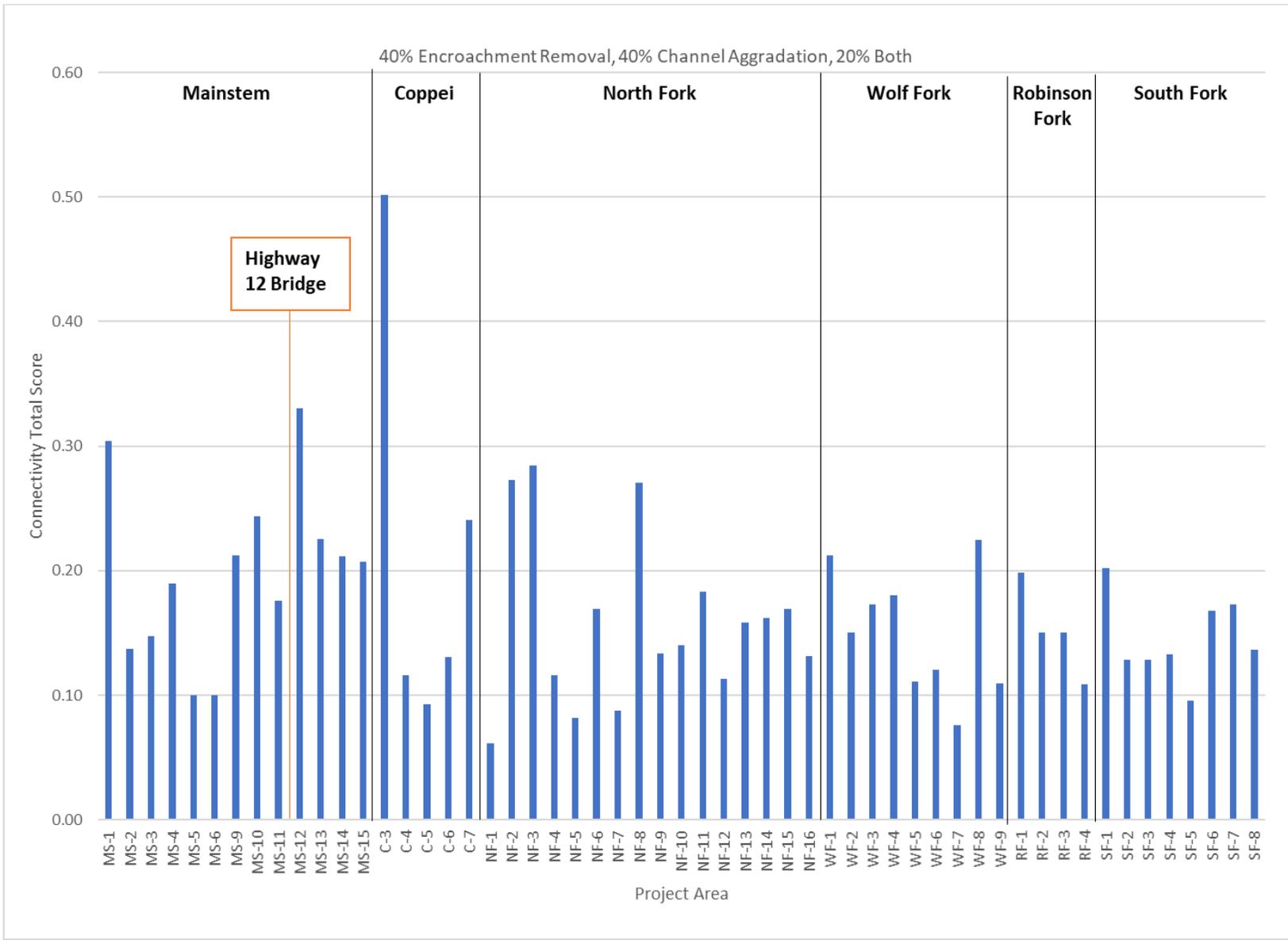
Reach Base Metrics			Connected Ratio			Encroachment Benefit Ratio			Aggradation Benefit Ratio			Both Benefit Ratio			Combined Connectivity		
Reach	Project Area	Length (RM)	2C/5A	Reach Rank	Basin Rank	2D/5A	Reach Rank	Basin Rank	(5C-2C)/5A	Reach Rank	Basin Rank	(5A-2C)/5A	Reach Rank	Basin Rank	Total Score	Reach Rank	Basin Rank
Lower Mainstem	MS-1	1.00	58%	5	45	21%	1	16	34%	1	1	42%	2	11	0.30	1	3
	MS-2	1.53	77%	2	15	3%	6	51	20%	2	6	23%	5	41	0.14	4	33
	MS-3	1.67	72%	4	28	6%	3	44	17%	3	10	28%	3	28	0.15	3	31
	MS-4	2.90	57%	6	48	11%	2	34	15%	4	12	43%	1	8	0.19	2	17
	MS-5	1.43	77%	3	17	3%	5	50	10%	6	26	23%	4	39	0.10	6	49
	MS-6	1.66	80%	1	9	5%	4	46	10%	5	24	20%	6	47	0.10	5	48
Touchet Waitsburg	MS-7	1.42	77%	Not Ranked	Not Ranked	1%	Not Ranked	Not Ranked	22%	Not Ranked	Not Ranked	23%	Not Ranked	Not Ranked	0.14	Not Ranked	Not Ranked
	MS-8	0.69	81%	Not Ranked	Not Ranked	1%	Not Ranked	Not Ranked	11%	Not Ranked	Not Ranked	19%	Not Ranked	Not Ranked	0.09	Not Ranked	Not Ranked
Upper Mainstem	MS-9	1.26	61%	1	40	13%	6	29	21%	1	5	39%	7	16	0.21	4	11
	MS-10	1.40	35%	7	53	26%	2	6	3%	7	51	65%	1	3	0.24	2	7
	MS-11	0.87	59%	2	43	10%	7	35	14%	3	17	41%	6	13	0.18	7	20
	MS-12	1.28	36%	6	52	47%	1	2	3%	6	49	64%	2	4	0.33	1	2
	MS-13	0.67	58%	4	47	16%	5	22	20%	2	7	42%	4	9	0.23	3	9
	MS-14	1.59	58%	3	46	24%	3	8	7%	4	37	42%	5	10	0.21	5	13
	MS-15	1.36	48%	5	50	22%	4	11	4%	5	48	52%	3	6	0.21	6	14
Touchet Dayton	MS-16	2.52	71%	Not Ranked	Not Ranked	14%	Not Ranked	Not Ranked	14%	Not Ranked	Not Ranked	29%	Not Ranked	Not Ranked	0.17	Not Ranked	Not Ranked
	MS-17	0.64	90%	Not Ranked	Not Ranked	2%	Not Ranked	Not Ranked	4%	Not Ranked	Not Ranked	10%	Not Ranked	Not Ranked	0.05	Not Ranked	Not Ranked
Coppei Waitsburg	C-1	1.01	86%	Not Ranked	Not Ranked	2%	Not Ranked	Not Ranked	13%	Not Ranked	Not Ranked	14%	Not Ranked	Not Ranked	0.09	Not Ranked	Not Ranked
	C-2	1.19	25%	Not Ranked	Not Ranked	36%	Not Ranked	Not Ranked	11%	Not Ranked	Not Ranked	75%	Not Ranked	Not Ranked	0.34	Not Ranked	Not Ranked
Upper Coppei	C-3	1.24	7%	5	55	77%	1	1	2%	5	54	93%	1	1	0.50	1	1
	C-4	1.82	80%	2	7	0%	3	53	19%	3	8	20%	4	49	0.12	4	43
	C-5	0.73	84%	1	4	0%	5	55	15%	4	11	16%	5	52	0.09	5	51
	C-6	1.03	78%	3	11	0%	4	54	21%	2	4	22%	3	45	0.13	3	38
	C-7	1.08	63%	4	39	9%	2	36	32%	1	2	37%	2	17	0.24	2	8
Lower North Fork	NF-1	0.47	90%	1	1	1%	5	52	9%	2	28	10%	5	55	0.06	5	55
	NF-2	0.69	40%	4	51	33%	2	4	5%	4	46	60%	2	5	0.27	2	5
	NF-3	1.20	34%	5	54	35%	1	3	3%	5	52	66%	1	2	0.28	1	4
	NF-4	1.00	78%	3	14	4%	3	47	14%	1	16	22%	3	42	0.12	3	42
	NF-5	0.66	84%	2	3	4%	4	48	9%	3	30	16%	4	53	0.08	4	53
Upper North Fork	NF-6	1.22	63%	10	38	21%	5	17	3%	11	53	37%	2	18	0.17	3	23
	NF-7	0.93	84%	1	5	5%	11	45	9%	4	29	16%	11	51	0.09	11	52
	NF-8	1.37	58%	11	44	25%	1	7	22%	1	3	42%	1	12	0.27	1	6
	NF-9	0.52	72%	6	25	13%	9	27	7%	6	40	28%	6	31	0.13	8	35
	NF-10	1.32	75%	4	21	16%	6	21	6%	7	41	25%	8	35	0.14	7	32
	NF-11	0.67	71%	7	29	21%	4	15	10%	3	23	29%	5	27	0.18	2	18
	NF-12	0.85	78%	2	13	11%	10	31	6%	8	43	22%	10	43	0.11	10	44
	NF-13	1.13	74%	5	23	15%	7	24	12%	2	19	26%	7	33	0.16	6	27
	NF-14	0.77	71%	8	30	22%	2	10	4%	10	47	29%	4	26	0.16	5	26
	NF-15	1.01	70%	9	32	21%	3	12	6%	9	44	30%	3	24	0.17	4	24
	NF-16	1.55	77%	3	16	14%	8	26	8%	5	36	23%	9	40	0.13	9	37

**Table E-7**  
**Connectivity Metrics by Potential and Combined Connectivity Score**

Reach Base Metrics			Connected Ratio			Encroachment Benefit Ratio			Aggradation Benefit Ratio			Both Benefit Ratio			Combined Connectivity		
Reach	Project Area	Length (RM)	2C/5A	Reach Rank	Basin Rank	2D/5A	Reach Rank	Basin Rank	(5C-2C)/5A	Reach Rank	Basin Rank	(5A-2C)/5A	Reach Rank	Basin Rank	Total Score	Reach Rank	Basin Rank
Lower Wolf Fork	WF-1	0.69	59%	4	41	24%	1	9	8%	1	32	41%	1	15	0.21	1	12
	WF-2	1.33	70%	1	33	14%	4	25	8%	2	33	30%	4	23	0.15	4	30
	WF-3	0.91	66%	2	35	19%	3	20	8%	3	34	34%	3	21	0.17	3	21
	WF-4	1.02	65%	3	36	21%	2	18	7%	4	38	35%	2	20	0.18	2	19
Upper Wolf Fork	WF-5	0.76	78%	3	12	8%	4	37	8%	1	31	22%	3	44	0.11	3	45
	WF-6	0.91	76%	4	18	19%	2	19	-1%	5	55	24%	2	38	0.12	2	41
	WF-7	1.02	86%	1	2	6%	5	43	6%	2	42	14%	5	54	0.08	5	54
	WF-8	0.64	59%	5	42	32%	1	5	3%	4	50	41%	1	14	0.22	1	10
	WF-9	0.67	79%	2	10	11%	3	32	5%	3	45	21%	4	46	0.11	4	46
Robinson Fork	RF-1	0.73	64%	4	37	21%	1	13	10%	3	25	36%	1	19	0.20	1	16
	RF-2	0.60	72%	3	27	6%	4	42	17%	1	9	28%	2	29	0.15	3	29
	RF-3	0.58	72%	2	26	11%	2	33	12%	2	18	28%	3	30	0.15	2	28
	RF-4	0.60	80%	1	8	8%	3	38	9%	4	27	20%	4	48	0.11	4	47
South Fork	SF-1	0.62	57%	8	49	21%	1	14	8%	7	35	43%	1	7	0.20	1	15
	SF-2	1.36	73%	5	24	12%	4	30	7%	8	39	27%	4	32	0.13	6	39
	SF-3	1.32	74%	4	22	8%	5	39	12%	4	20	26%	5	34	0.13	7	40
	SF-4	1.34	76%	2	19	7%	6	40	14%	3	15	24%	7	37	0.13	5	36
	SF-5	1.29	81%	1	6	4%	8	49	11%	6	22	19%	8	50	0.10	8	50
	SF-6	0.68	70%	6	31	15%	2	23	11%	5	21	30%	3	25	0.17	3	25
	SF-7	1.26	69%	7	34	13%	3	28	15%	2	14	31%	2	22	0.17	2	22
	SF-8	1.02	75%	3	20	7%	7	41	15%	1	13	25%	6	36	0.14	4	34

## Figures

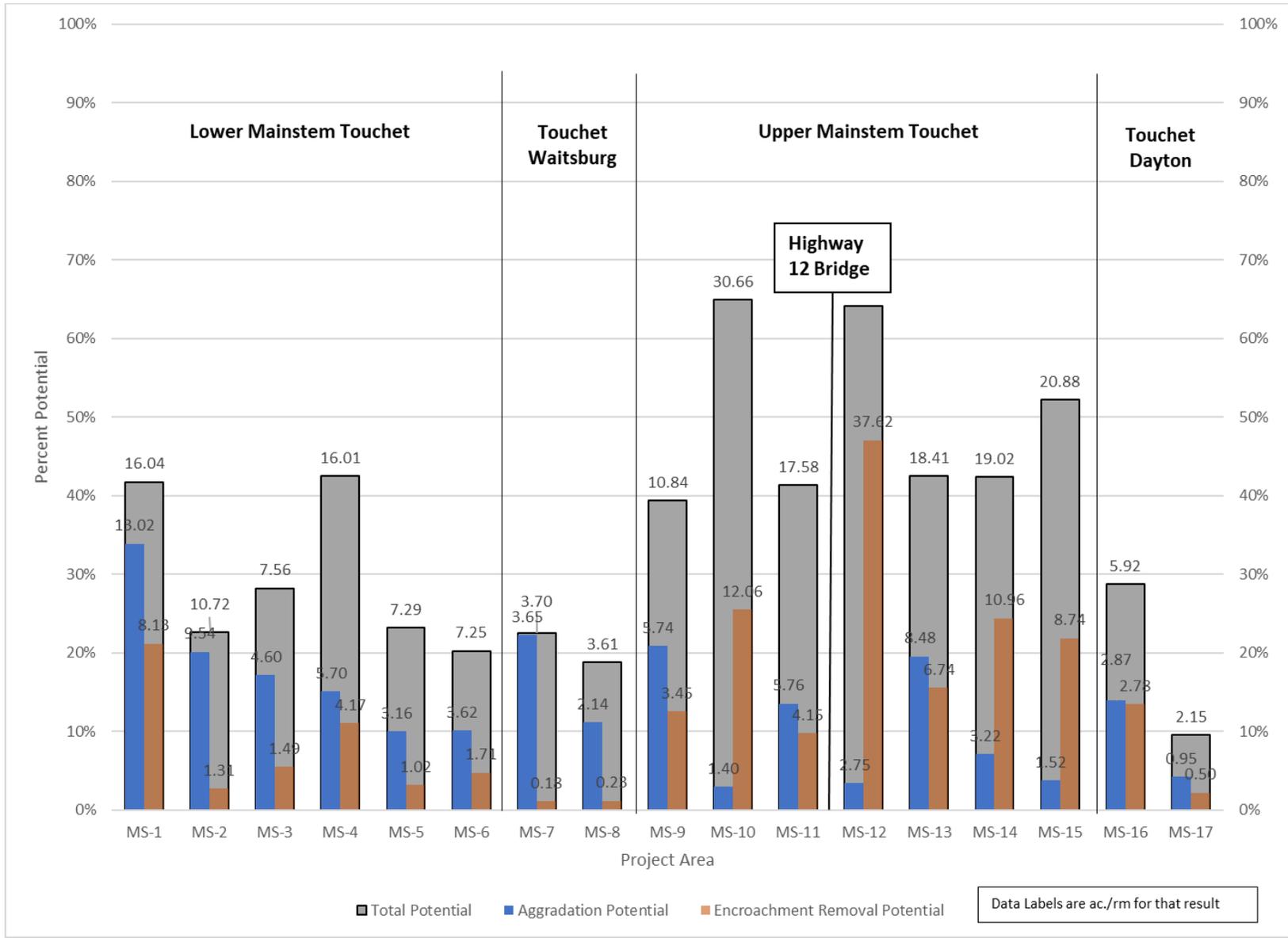
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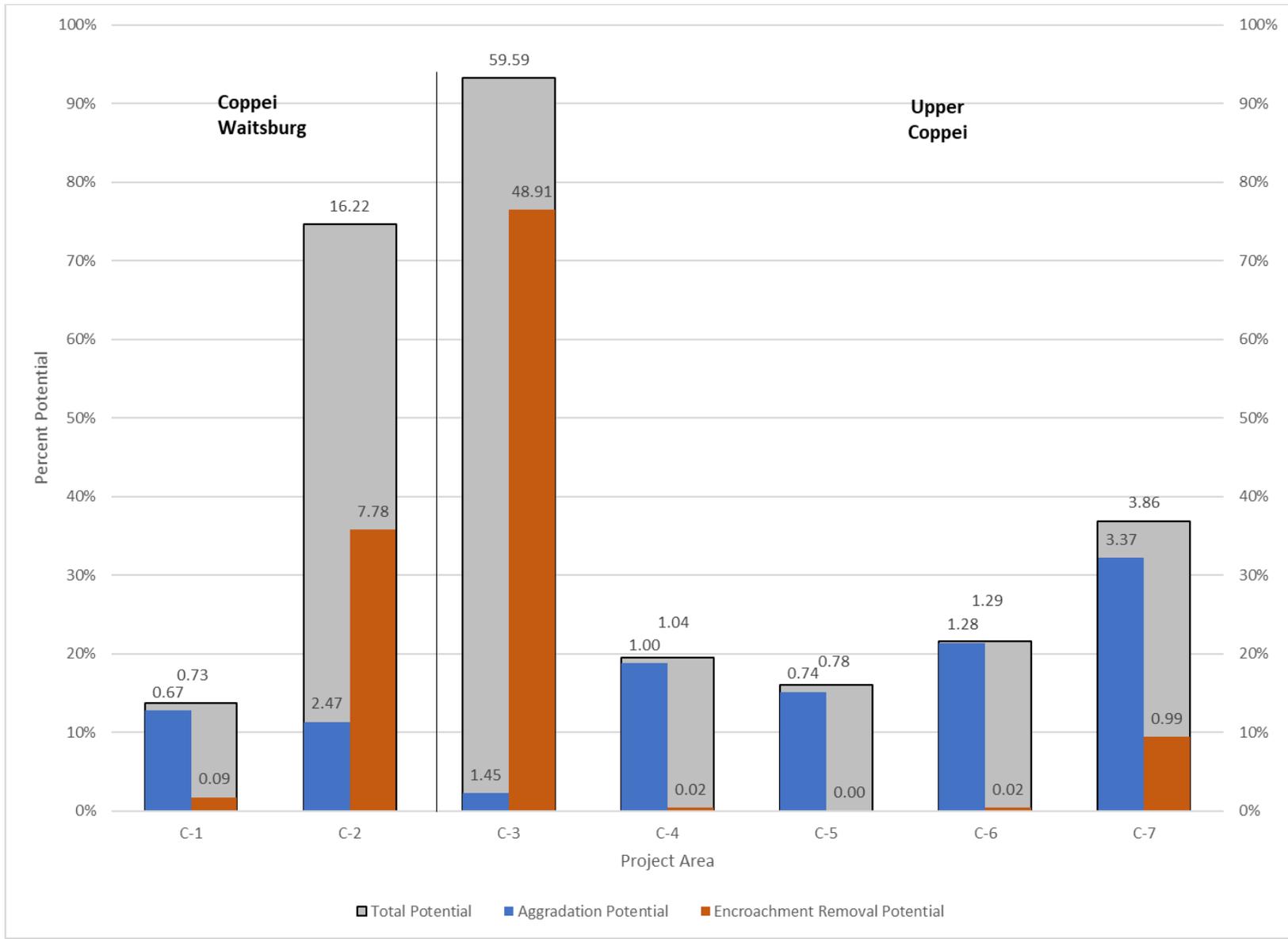
**Figure E-9**  
**Basin Connectivity Potential Scores**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration



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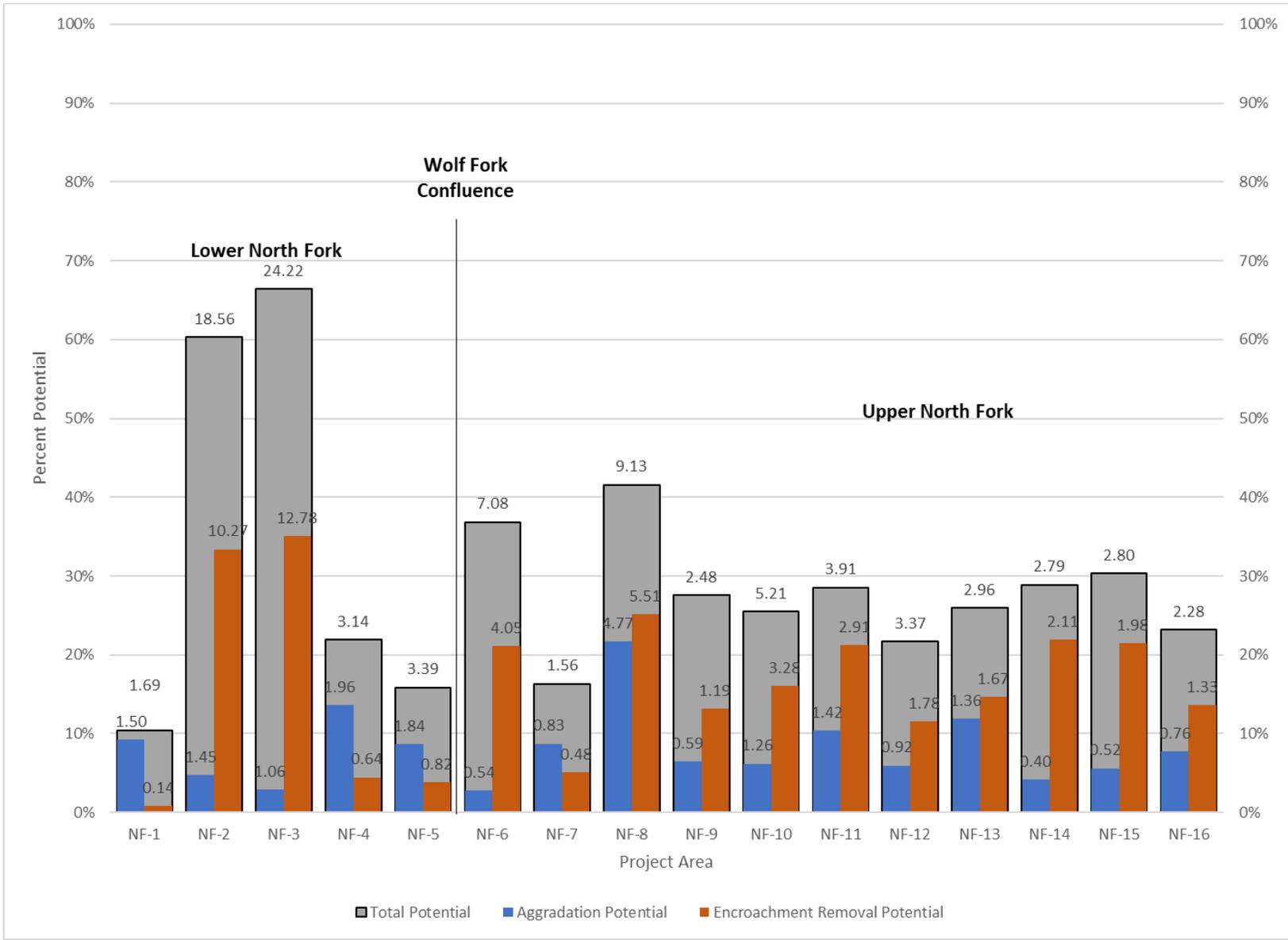
**Figure E-10**  
**Mainstem Connectivity Analysis Results**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration



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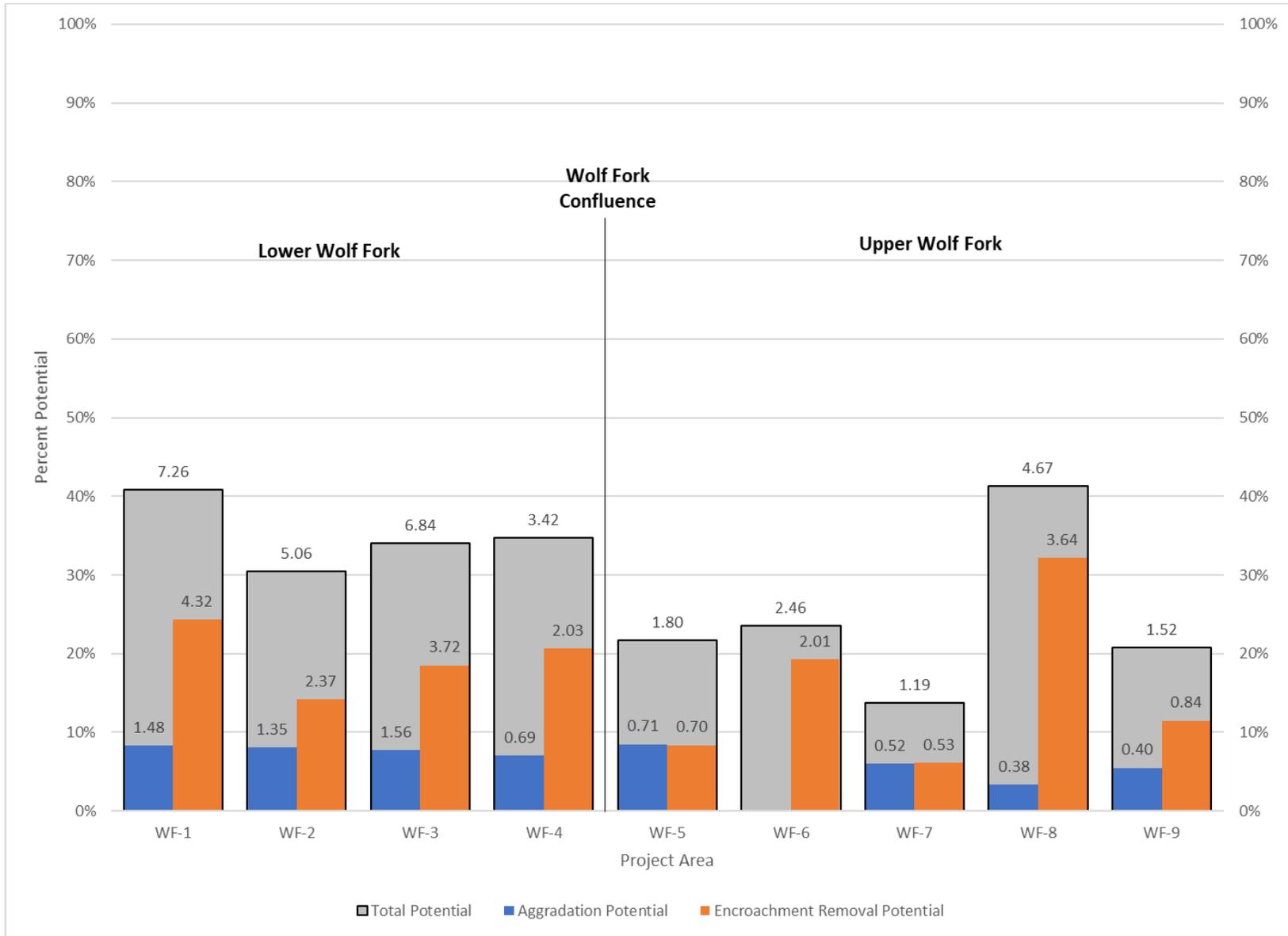
**Figure E-11**  
**Coppei Creek Connectivity Analysis Results**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration



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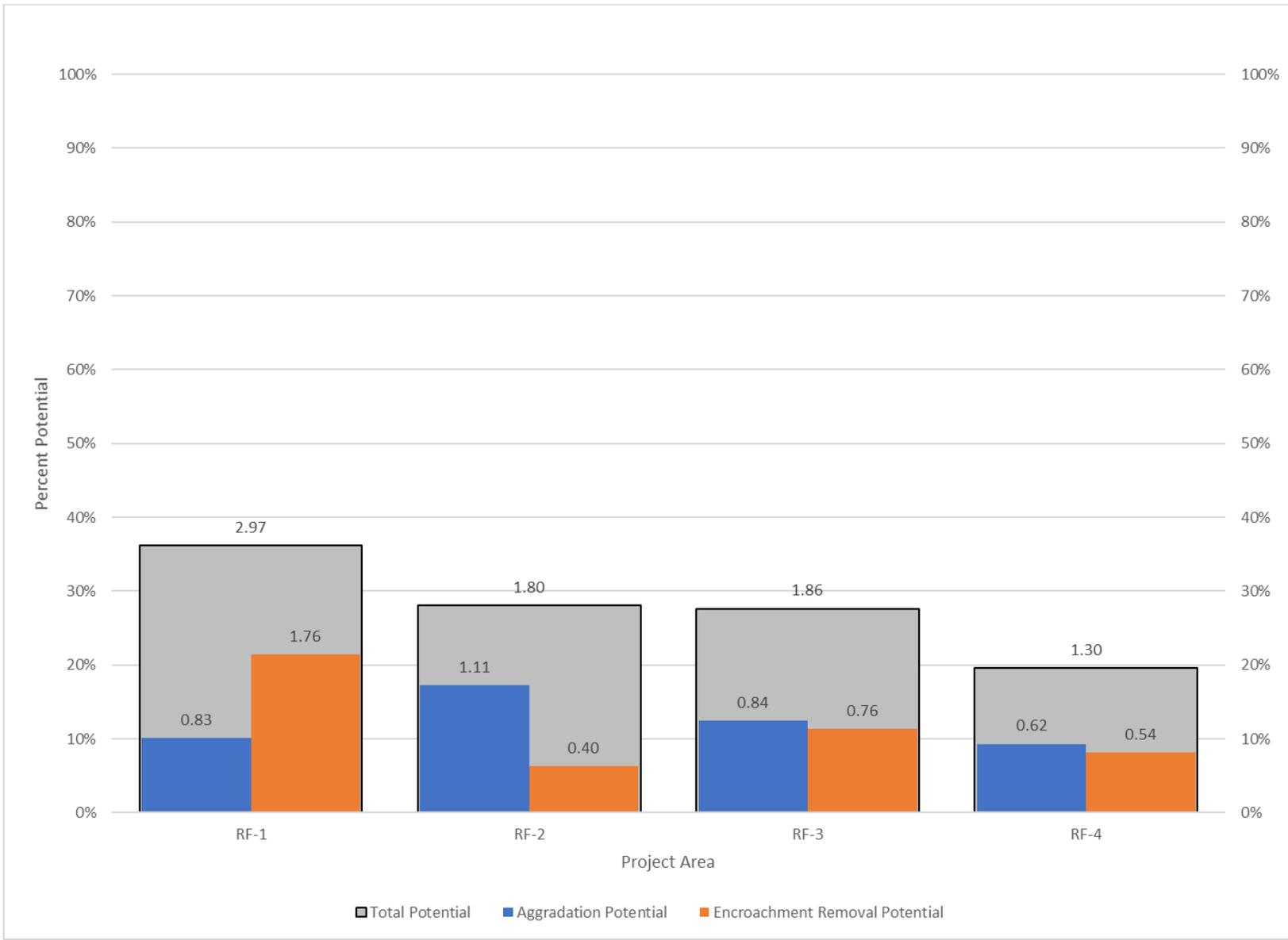
**Figure E-12**  
**North Fork Connectivity Analysis Results**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration



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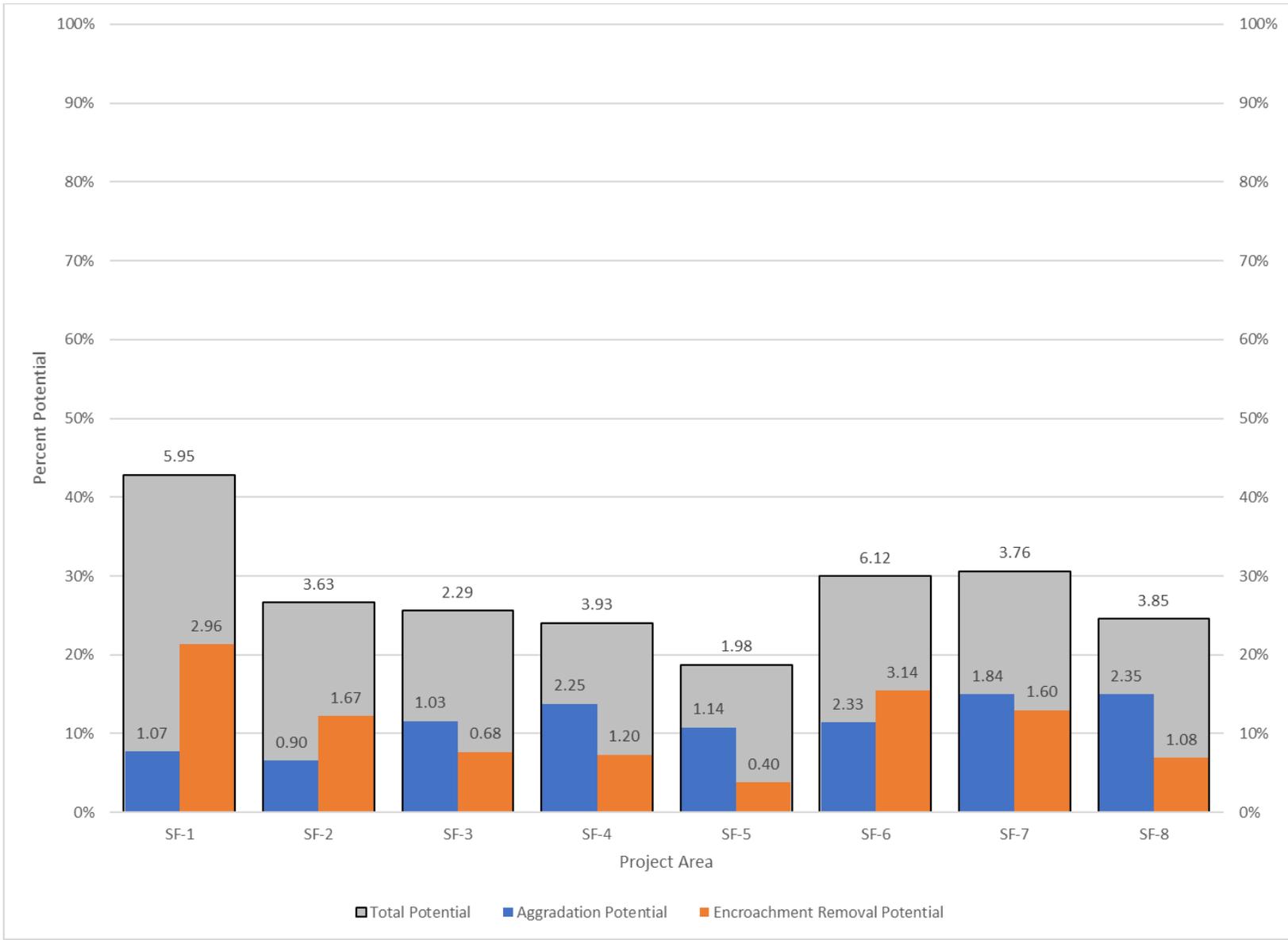
**Figure E-13**  
**Wolf Fork Connectivity Analysis Results**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration



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**Figure E-14**  
**Robinson Fork Connectivity Analysis Results**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration



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**Figure E-15**  
**South Fork Connectivity Analysis Results**  
 Geomorphic Assessment and Restoration Prioritization  
 Upper Touchet Basin Habitat Restoration