US Army Corps
of Engineers®
Walla Walla District

LITTLE WOOD RIVER, GOODING, IDAHO

INTEGRATED LETTER REPORT AND ENVIRONMENTAL ASSESSMENT

APPENDIX E, COST ENGINEERING

This page intentionally left blank.

WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE

COST AGENCY TECHNICAL REVIEW CONDITIONAL CERTIFICATION STATEMENT

PN 153050
NWW –Little Wood River, Gooding, Idaho

The Little Wood River, Gooding, Idaho Project, as presented by the Walla Walla District, has received a **Conditional** Cost Agency Technical Review Certification (Cost ATR).

The referenced project has undergone a Cost ATR under the supervision of the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies.

Areas of concern resulting in a Conditional Certification and which must be addressed in the future include:

- Scope based on 2012 conceptual cross-section with incomplete design effort incorporating current design standards
- Limited site investigation data
- Real Estate costs based on 2019 limited appraisal data
- Real Estate acquisition timelines and potential Real Property Impacts

As of December 15, 2023, the Cost MCX conditionally certifies the estimated total project cost:

FY24 Project First Cost:	$36,757,000
Fully Funded Amount:	$38,639,000

Note: Cost Certification assumes Efficient Implementation (Funding). Cost ATR was devoted to remaining work. It did not review spent costs, which requires an audit process. It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management through the period of Federal participation.

2023.12.15
10:18:50 -08'00'

FOR: Michael P. Jacobs, PE, CCE
Chief, Cost Engineering MCX
Walla Walla District

****** TOTAL PROJECT COST SUMMARY ******

PROJECT: **Little Wood Channel, Gooding, Idaho**
PROJECT NO: 153050
LOCATION: Gooding, Idaho

DISTRICT: **NWW District**
POC: **CHIEF, COST ENGINEERING, xxx**

PREPARED: **11/28/2023**

This Estimate reflects the scope and schedule in report; Little Wood Channel, Gooding, Idaho, FY23 Letter/Feasibility Report Certification

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2024									
						Effective Price Level Date: 1 OCT 23									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	**TOTAL ($K)**	Spent Thru: **1-Oct-23** ($K)	**TOTAL FIRST COST** ($K)	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*		*K*	*L*	*M*	*N*	*O*
02	RELOCATIONS	$440	$163	37.0%	$603	0.0%	$440	$163	$603	$0	$603	5.4%	$464	$172	$635
08	ROADS, RAILROADS & BRIDGES	$5,880	$2,176	37.0%	$8,056	0.0%	$5,880	$2,176	$8,056	$0	$8,056	5.4%	$6,196	$2,293	$8,489
09	CHANNELS & CANALS	$13,244	$4,900	37.0%	$18,144	0.0%	$13,244	$4,900	$18,144	$0	$18,144	5.4%	$13,956	$5,164	$19,120
	CONSTRUCTION ESTIMATE TOTALS:	$19,564	$7,239		$26,803	0.0%	$19,564	$7,239	$26,803	$0	$26,803	5.4%	$20,616	$7,628	$28,243
01	LANDS AND DAMAGES	$531	$57	10.7%	$587	0.0%	$531	$57	$587	$0	$587	1.2%	$537	$57	$594
30	PLANNING, ENGINEERING & DESIGN	$5,576	$558	10.0%	$6,133	0.0%	$5,576	$558	$6,133	$0	$6,133	3.5%	$5,771	$577	$6,348
31	CONSTRUCTION MANAGEMENT	$2,837	$397	14.0%	$3,234	0.0%	$2,837	$397	$3,234	$0	$3,234	6.8%	$3,029	$424	$3,454
	PROJECT COST TOTALS:	$28,507	$8,250	28.9%	$36,757		$28,507	$8,250	**$36,757**	$0	**$36,757**	5.1%	$29,953	$8,686	$38,639

ESTIMATED TOTAL PROJECT COST: **$38,639**

_____ **CHIEF, COST ENGINEERING, xxx**

_____ **PROJECT MANAGER, xxx**

_____ **CHIEF, REAL ESTATE, xxx**

_____ **CHIEF, PLANNING, xxx**

_____ **CHIEF, ENGINEERING, xxx**

_____ **CHIEF, OPERATIONS, xxx**

_____ **CHIEF, CONSTRUCTION, xxx**

_____ **CHIEF, CONTRACTING,xxx**

_____ **CHIEF, PM-PB, xxxx**

_____ **0**

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: Little Wood Channel, Gooding, Idaho
LOCATION: Gooding, Idaho
This Estimate reflects the scope and schedule in report; Little Wood Channel, Gooding, Idaho, FY23 Letter/Feasibility Report Certification

DISTRICT: NWW District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/28/2023

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 28-Nov-23 Effective Price Level: 1-Oct-23				Program Year (Budget EC): 2024 Effective Price Level Date: 1 OCT 23								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	RISK BASED CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 1 or CONTRACT 1													
02	RELOCATIONS	$440	$163	37.0%	$603	0.0%	$440	$163	$603	2026Q1	5.4%	$464	$172	$635
08	ROADS, RAILROADS & BRIDGES	$5,880	$2,176	37.0%	$8,056	0.0%	$5,880	$2,176	$8,056	2026Q1	5.4%	$6,196	$2,293	$8,489
09	CHANNELS & CANALS	$13,244	$4,900	37.0%	$18,144	0.0%	$13,244	$4,900	$18,144	2026Q1	5.4%	$13,956	$5,164	$19,120
	CONSTRUCTION ESTIMATE TOTALS:	$19,564	$7,239	37.0%	**$26,803**		$19,564	$7,239	$26,803			$20,616	$7,628	$28,243
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	$489	$49	10.0%	$538	0.0%	$489	$49	$538	2024Q3	2.0%	$499	$50	$549
1.0%	Planning & Environmental Compliance	$196	$20	10.0%	$215	0.0%	$196	$20	$215	2024Q3	2.0%	$200	$20	$220
15.0%	Engineering & Design	$2,935	$293	10.0%	$3,228	0.0%	$2,935	$293	$3,228	2024Q3	2.0%	$2,994	$299	$3,293
1.0%	Reviews, ATRs, IEPRs, VE	$196	$20	10.0%	$215	0.0%	$196	$20	$215	2024Q3	2.0%	$200	$20	$220
1.0%	Life Cycle Updates (cost, schedule, risks)	$196	$20	10.0%	$215	0.0%	$196	$20	$215	2024Q3	2.0%	$200	$20	$220
1.0%	Contracting & Reprographics	$196	$20	10.0%	$215	0.0%	$196	$20	$215	2024Q3	2.0%	$200	$20	$220
3.0%	Engineering During Construction	$587	$59	10.0%	$646	0.0%	$587	$59	$646	2026Q1	6.8%	$627	$63	$689
2.0%	Planning During Construction	$391	$39	10.0%	$430	0.0%	$391	$39	$430	2026Q1	6.8%	$418	$42	$460
1.0%	Adaptive Management & Monitoring	$196	$20	10.0%	$215	0.0%	$196	$20	$215	2030Q1	20.6%	$236	$24	$259
1.0%	Project Operations	$196	$20	10.0%	$215	0.0%	$196	$20	$215	2024Q3	2.0%	$200	$20	$220
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	$1,956	$274	14.0%	$2,230	0.0%	$1,956	$274	$2,230	2026Q1	6.8%	$2,089	$293	$2,382
2.0%	Project Operation:	$391	$55	14.0%	$446	0.0%	$391	$55	$446	2026Q1	6.8%	$418	$59	$476
2.5%	Project Management	$489	$68	14.0%	$558	0.0%	$489	$68	$558	2026Q1	6.8%	$522	$73	$595
	CONTRACT COST TOTALS:	$27,977	$8,193		$36,170		$27,977	$8,193	**$36,170**			$29,416	$8,629	**$38,045**

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: Little Wood Channel, Gooding, Idaho
LOCATION: Gooding, Idaho
This Estimate reflects the scope and schedule in report; Little Wood Channel, Gooding, Idaho, FY23 Letter/Feasibility Report Certification

DISTRICT: NWW District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/28/2023

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: / Effective Price Level:			28-Nov-23 / 1-Oct-23	Program Year (Budget EC): / Effective Price Level Date:			2024 / 1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	LERRDS													
03	RESERVOIRS	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
04	DAMS	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
05	LOCKS	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
06	FISH & WILDLIFE FACILITIES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
07	POWER PLANT	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
08	ROADS, RAILROADS & BRIDGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
10	BREAKWATER & SEAWALLS	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$0	$0	0.0%	**$0**		$0	$0	$0			$0	$0	$0
01	LANDS AND DAMAGES	$496	$50	10.0%	$545	0.0%	$496	$50	$545	2024Q3	1.2%	$501	$50	$552
	FEDERAL REVIEW AND ASSISTANCE	$35	$7	20.0%	$42	0.0%	$35	$7	$42	2024Q3	1.2%	$35	$7	$43
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Planning & Environmental Compliance	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15.0%	Engineering & Design	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Reviews, ATRs, IEPRs, VE	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Life Cycle Updates (cost, schedule, risks)	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Contracting & Reprographics	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
3.0%	Engineering During Construction	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Planning During Construction	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Adaptive Management & Monitoring	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Project Operations	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Project Operation:	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.5%	Project Management	$0	$0	10.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONTRACT COST TOTALS:	$531	$57		$587		$531	$57	**$587**			$537	$57	**$594**

Design Maturity Determination for Cost Certification

Date: 12/14/23
P2 Designation/Project Name: LITTLE WOOD RIVER

The Chief of Engineering is responsible for the technical content and engineering sufficiency for all engineering products produced by the command. As such, I have performed the Management Control Evaluation per Engineer Regulation (ER) 1110-2-1150, Engineering and Design for Civil Works Projects, Appendix H, Internal Management Control Review Checklist.

The current design DOES NOT require HQ approval (i.e., engineering waivers), requiring a deviation from mandatory requirements and mandatory standards, as defined in ERs, Engineering Manuals, Engineering Technical letters, and Engineering Circulars.

The current hydrology and hydraulics modeling is at 5 % design maturity, per reference (h) below.

The current geotechnical data and subsurface investigations are at 0 % design maturity, per reference (h) below. Subsurface investigations shall also include investigations of potential borrow and spoil areas.

The current survey data is at 0 % design maturity, per reference (h) below.

Other major technical and/or scope assumptions and risks include the following, which will be refined as the design progresses.

Surveys have not been performed. Assuming the design can avoid extensive utility relocations and survey is done at the beginning of PED. /// Hydraulic modeling to inform loading on the walls and scour in the channel has not been performed. Assuming modeling will be done at the beginning of PED and that the eight new bridges will be raised above the existing wall height (out of the channel), which results in impacts to adjacent roads for the bridge approach. /// Geotechnical investigations have not been performed. Assuming access to adjacent geotechnical investigations (IDOT Main Street Bridge) to inform subsurface condition design. /// The sponsor does not have the necessary easements to conduct surveys or perform the construction. Assuming surveys will be performed from within the channel and that the sponsor will attain the necessary easements for construction. /// The quantities used for cost development assumed 30% more wall repair than may be necessary. This provides some flexibility to scope to budget as WRDA 2022 already authorized $40M for this effort. /// The District requested additional funding to perform a more detailed study but was denied the funding. /// Conceptual cross sections from 2012 depicted one alternative (pre-cast panel wall with tie-back anchors) and the current effort discussed a cast-in-place gravity wall, but drawings were not developed for the gravity wall concept.

The aggregate for all features is 5 % design maturity. Therefore, per the CECW-EC memorandum dated 05-June-2023, I certify that the design deliverables used to generate the cost products for this project and the estimate meet the requirements for a CLASS 4 estimate, as per reference (a) below. Design risks, impacts and remaining efforts are summarized on page 2.

Considering risks and assumptions noted above, along with all other concerns documented in the Risk Register, the Cost and Schedule Risk Analysis has developed a contingency of 29 % at the 80 % confidence level for the defined project scope.

Chief of Engineering & Construction

Dwayne M. Weston, P.E., PMP
Walla Walla District, USACE

Printed Name

WESTON.DWAYNE.M.1231638152
2023.12.15 09:47:11 -08'00'

Signature

Design Maturity Determination for Cost Certification, Remaining Work

If an engineering waiver is required, list the risks and remaining design work needed to mitigate this issue in the current design. Identify remaining effort to complete the design required for 100% design.

Not applicable.

Identify remaining effort to complete geotechnical design effort required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Geotechnical investigations have not been done and are required for design. Soil characteristics directly impact wall design (i.e. wall thickness, number of anchors) and thereby the real estate requirements and construction methodologies (i.e. shoring plans). Additionally, determining the appropriate bridge foundation is not possible. In addition to the cost risk associated with this, the real estate concerns (i.e., how far would a tie-back anchor need an easement) are substantial.

Identify remaining effort required to complete H&H required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Only review of the 10-year flow history has been performed. Per the 2015 FEMA update, the current channel provides a 30-year level of protection to Gooding, ID (535 cfs). Hydraulic modeling to inform scour models, wall loading/height, and bridge replacement has not been done and is required. Survey results are needed to accurately develop hydraulic models. Results of hydraulic modeling will directly impact the design and construction costs but may also inform opportunity to improve conveyance without cost risk.

Identify remaining effort needed to complete survey data required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Surveys have not been performed and utilities have not been located. Pending availability of funds, Walla Walla District's in-house survey team is scheduled to perform the survey in February 2024. A complicating factor is that the Sponsor does not have the necessary easements to conduct a survey. Therefore, the survey team is working with Real Estate Division to develop a private property / canal access plan to limit risk of trespass.

If the project is anticipated to be executed in parts, provide a design assessment (percent complete) of each part/phase below.

Not applicable.

References:

a. ER 1110-2-1302 – Civil Works Cost Engineering
b. CECW-EC memorandum dated 05-June-2023MFR, Guidance on Cost Engineering Products update for Civil Works Projects in accordance with Engineer Regulation 1110-2-1302 – Civil Works Cost Engineering
c. ER 1165-2-217 – Civil Works Review Policy
d. ER 1110-2-1150 – Engineering and Design for Civil Works Projects
e. ER 1110-3-12 – Quality Management
f. ER 1110-345-700 – Design Analysis, Drawings and Specifications
g. EM 5-1-11 – Project Delivery Business Process (PDBP)
h. Engineering and Construction Bulletin (ECB) 2023-9 – Civil Works Design Milestone Checklists

Design Maturity Determination for Cost Certification – Instructions

Paragraph 1 – Design Date: Use the drop-down menu to populate the date of the design.

Paragraph 1 – Project Information: Enter the P2 Project number and Project name.

Paragraph 3 – Engineering Waivers: Use the drop-down menu to populate this field with either "Does," or "Does not." If an engineering waiver is needed, or anticipated to be needed, provide the specific waiver required for the Project. A waiver is any deviation from current mandatory standards, as indicated.

Paragraph 4 – Hydrology and Hydraulics: Populate this field with the % design maturity.

Paragraph 5 – Geotechnical Information: Populate this field with the % design maturity.

Paragraph 6 – Survey Data: Populate this field with the % design maturity.

Paragraph 7 – Other Technical Assumptions and/or Scope: Enter any other major technical assumptions or scope assumptions here. Only include assumptions that pertain to design. Template discussion fields are provided as a courtesy. Please include additional pages as necessary.

Paragraph 8 – Signature: Print the name and title and provide the signature for the District's Chief of Engineering. This authority cannot be delegated; however, the Deputy Chief of Engineering and Design may sign the form in the absence of the Chief of Engineering. All fillable fields must be populated (use N/A if not applicable) in order for the document to be signed.

Page 2 – Remaining Work: Identify the current baseline design assumptions and the remaining design effort and risks to complete 100% design for the authorized project. If the project is to be broken into parts or phases, provide details on the aggregate design level of each phase and anticipated timeline for completion.

****** TOTAL PROJECT COST SUMMARY ******

PROJECT: **Little Wood Channel, Gooding, Idaho**
PROJECT NO: 153050
LOCATION: Gooding, Idaho

DISTRICT: **NWW District** **PREPARED:** **1/3/2024**
POC: **CHIEF, COST ENGINEERING, Michael P. Jacobs, P.E., C.C.E.**

This Estimate reflects the scope and schedule in report; Little Wood Channel, Gooding, Idaho, FY23 Letter/Feasibility Report Certification

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2024									
						Effective Price Level Date: 1 OCT 23									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	**TOTAL ($K)**	Spent Thru: **1-Oct-23** ($K)	**TOTAL FIRST COST** ($K)	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*		*K*	*L*	*M*	*N*	*O*
02	RELOCATIONS	$440	$163	37.0%	$603	0.0%	$440	$163	$603	$0	$603	5.4%	$464	$172	$635
08	ROADS, RAILROADS & BRIDGES	$5,880	$2,176	37.0%	$8,056	0.0%	$5,880	$2,176	$8,056	$0	$8,056	5.4%	$6,196	$2,293	$8,489
09	CHANNELS & CANALS	$13,244	$4,900	37.0%	$18,144	0.0%	$13,244	$4,900	$18,144	$0	$18,144	5.4%	$13,956	$5,164	$19,120
	CONSTRUCTION ESTIMATE TOTALS:	$19,564	$7,239		$26,803	0.0%	$19,564	$7,239	$26,803	$0	$26,803	5.4%	$20,616	$7,628	$28,243
01	LANDS AND DAMAGES	$531	$57	10.7%	$587	0.0%	$531	$57	$587	$0	$587	1.2%	$537	$57	$594
30	PLANNING, ENGINEERING & DESIGN	$5,576	$558	10.0%	$6,133	0.0%	$5,576	$558	$6,133	$0	$6,133	3.5%	$5,771	$577	$6,348
31	CONSTRUCTION MANAGEMENT	$2,837	$397	14.0%	$3,234	0.0%	$2,837	$397	$3,234	$0	$3,234	6.8%	$3,029	$424	$3,454
	PROJECT COST TOTALS:	$28,507	$8,250	28.9%	$36,757		$28,507	$8,250	**$36,757**	$0	**$36,757**	5.1%	$29,953	$8,686	$38,639

MP Jacobs
ZELCH.KAREN.S.1266659640 Digitally signed by ZELCH.KAREN.S.1266659640 Date: 2024.01.04 13:11:31 -08'00'

CHIEF, COST ENGINEERING, Michael P. Jacobs, P.E., C.C.E.

ESTIMATED TOTAL PROJECT COST: **$38,639**

PROJECT MANAGER, Karen L. Kelly

CHIEF, REAL ESTATE, Allison D. Needham

BOEN.CYNTHIA.A.1239595819 Digitally signed by BOEN.CYNTHIA.A.1239595819 Date: 2024.01.03 15:46:01 -08'00'

CHIEF, PLANNING, Cynthia A. Boen

CHIEF, ENGINEERING, xxx

CHIEF, OPERATIONS, xxx

CHIEF, CONSTRUCTION, xxx

CHIEF, CONTRACTING,xxx

CHIEF, PM-PB, xxxx

Abbreviated Risk Analysis

Project (less than $40M): **Little Wood Canal, Gooding, Idaho** — **Alternative: Alternative 3**

Project Development Stage/Alternative: **Feasibility (Recommended Plan)**

Risk Category: **Low Risk: Typical Construction, Simple** — **Meeting Date: 9/29/2023**

Total Estimated Construction Contract Cost = $ 19,563,587

	CWWBS	Feature of Work	Estimated Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	$ 496,000		10%	$ 49,600	$ 545,600
1	02 RELOCATIONS	Utility Relocations	$ 440,175		34%	$ 148,680	$ 588,855
2	08 ROADS, RAILROADS, AND BRIDGES	Bridges	$ 5,879,596		39%	$ 2,266,889	$ 8,146,485
3	09 CHANNELS AND CANALS (Except Navigation Ports and Harbors)	Channels	$ 13,243,816		41%	$ 5,466,372	$ 18,710,188
4			$ -		0%	$ -	$ -
5			$ -		0%	$ -	$ -
6			$ -		0%	$ -	$ -
7			$ -		0%	$ -	$ -
8			$ -		0%	$ -	$ -
9			$ -		0%	$ -	$ -
10			$ -		0%	$ -	$ -
11			$ -		0%	$ -	$ -
12	All Other	Remaining Construction Items	$ -	*0.0%*	0%	$ -	$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 2,138,000		21%	$ 451,555	$ 2,589,555
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 1,169,000		14%	$ 162,629	$ 1,331,629
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					$ -	

Totals					
Real Estate	$ 496,000	10%	$ 49,600	$	545,600.00
Total Construction Estimate	$ 19,563,587	40%	$ 7,881,940	$	27,445,527
Total Planning, Engineering & Design	$ 2,138,000	21%	$ 451,555	$	2,589,555
Total Construction Management	$ 1,169,000	14%	$ 162,629	$	1,331,629
Total Excluding Real Estate	**$ 22,870,587**	**37%**	**$ 8,496,125**	**$**	**31,366,712**

Confidence Level Range Estimate ($000's)	**Base**	**50%**	**80%**
	$22,871k	$27,969k	$31,367k

* 50% based on base is at 5% CL.

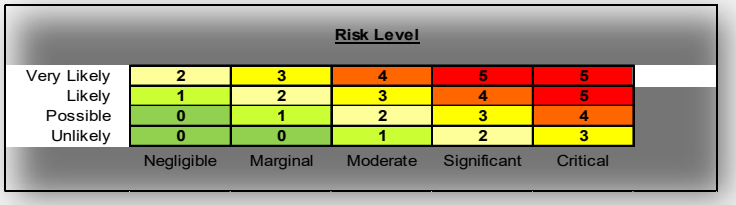
Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analsyis. Must include justification. Does not allocate to Real Estate.	

Little Wood Canal, Gooding, Idaho Alternative 3

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Meeting Date: 29-Sep-23



Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Management & Scope Growth				**Maximum Project Growth**		**40%**
PS-1	Utility Relocations	Dewatering, construction season restrictions, scopes ability to minimize flood risk.	Unknown number of utility relocations. A utility survey has not been completed. Estimate assumes 3 water line relocations, 3 power line relocations, 1 gas line, no comms or sewer line relocations.	Moderate	Likely	3
PS-2	Bridges	Dewatering, construction season restrictions, scopes ability to minimize flood risk.	The design docs do mention that flow can be re-routed but it is utilized for irrigation during the summer months pushing the construction season into the winter which in southern Idaho has inclimate weather. There is also concern that the proposed scope will not adequatly reduce the flood risk and require more extensive work. These are all likley to occur with a Moderate impact to cost.	Moderate	Possible	2
PS-3	Channels	Dewatering, construction season restrictions, scopes ability to minimize flood risk.	The design docs do mention that flow can be re-routed but it is utilized for irrigation during the summer months pushing the construction season into the winter which in southern Idaho has inclimate weather. There is also concern that the proposed scope will not adequatly reduce the flood risk and require more extensive work. These are all likley to occur with a Moderate impact to cost.	Moderate	Possible	2
PS-13	Planning, Engineering, & Design	Risks during PED	Scheduling conflicts within the district, competing priorities, and potential rework as the scope is finalized and developed. This is likley to occur with negligible impacts to both the project schedule as well as PED cost	Moderate	Likely	3
PS-14	Construction Management	Construction Management of the project.	Scheduling conflicts within the district, competing priorities and availibility of personnel to manage the construciton project would likley lead to signiciant schedule delays but only Negligible cost impacts.	Negligible	Likely	1
Acquisition Strategy				**Maximum Project Growth**		**30%**
AS-1	Utility Relocations	Design-Build contract is planned. The contract could go MATOC	An accelerated schedule could be further accomplished by utilizing the district MATOC contract. This would save time because the contractors' experience has already been vetted. But the limited pool within the MATOC generally results in a higher awarded price than a full and open competition.	Moderate	Possible	2

AS-2	Bridges	Design-Build contract is planned. The contract could go MATOC	An accelerated schedule could be further accomplished by utilizing the district MATOC contract. This would save time because the contractors' experience has already been vetted. But the limited pool within the MATOC generally results in a higher awarded price than a full and open competition.	Moderate	Possible	2
AS-3	Channels	Design-Build contract is planned. The contract could go MATOC	An accelerated schedule could be further accomplished by utilizing the district MATOC contract. This would save time because the contractors' experience has already been vetted. But the limited pool within the MATOC generally results in a higher awarded price than a full and open competition.	Moderate	Possible	2
AS-13	Planning, Engineering, & Design	Design-Build contract is planned. The contract could go MATOC	A qualified MATOC contractor would not require additional support during submitttal design reviews. Marginal impacts to PED and possible to occur.	Marginal	Possible	1
AS-14	Construction Management	Design-Build contract is planned. The contract could go MATOC	A qualified MATOC contractor would not require additional support during construction Negligible impacts to CM and likley to occur.	Negligible	Possible	0
Construction Elements				**Maximum Project Growth**		**15%**
CON-1	Utility Relocations	Winter Month construction, Winter weather delays, care and diversion of water concerns	Winters in southern Idaho can be severe and cause delays to construction. Access to the site may be impacted by sever weather and also require additonal care and diversion of water measures be taken. The scope increases are covered by Project management so they will be modeled as negligible and likely here so as to not double count this risk.	Negligible	Unlikely	0
CON-2	Bridges	Winter Month construction, Winter weather delays, care and diversion of water concerns	Winters in southern Idaho can be severe and cause delays to construction. Access to the site may be impacted by sever weather and also require additonal care and diversion of water measures be taken. The scope increases are covered by Project management so they will be modeled as negligible and likely here so as to not double count this risk.	Negligible	Possible	0
CON-3	Channels	Winter Month construction, Winter weather delays, care and diversion of water concerns	Winters in southern Idaho can be severe and cause delays to construction. Access to the site may be impacted by sever weather and also require additonal care and diversion of water measures be taken. The scope increases are covered by Project management so they will be modeled as negligible and likely here so as to not double count this risk.	Negligible	Possible	0
CON-13	Planning, Engineering, & Design	None anticipated		Negligible	Unlikely	0
CON-14	Construction Management	None anticipated		Negligible	Unlikely	0
Specialty Construction or Fabrication				**Maximum Project Growth**		**50%**
SC-1	Utility Relocations	No specialty items are required for this project		Marginal	Unlikely	0
SC-2	Bridges	Precast Concrete Box Beams are 25% of the cost for each bridge	Costs for the precast concrete box beams were developed by RS Means and last updated 10/11/2023. The exact quantities for the bridges were developed by PACES using past awarded contracts specifically for box beam bridges. These concrete box beams are about 25% of the cost for each bridge. Any variability in this one item could affect the overal price in a large way.	Moderate	Possible	2

SC-3	Channels	Precast Concrete Panels are 36% of the cost for channel work	Costs for the precast concrete panels comes from a Huntsville cost book item that was specifically developed for precast retaining wall panels. The panels are USACE specific and these costs were developed for civil works projects. These precast panels are about 36% of the cost for the channel work. Any variability in this one item could affect the overal price in a large way.	Moderate	Possible	2
SC-13	Planning, Engineering, & Design	No specialty items are required for this project		Negligible	Unlikely	0
SC-14	Construction Management	No specialty items are required for this project		Negligible	Unlikely	0
Technical Design & Quantities				**Maximum Project Growth**		**20%**
T-1	Utility Relocations	Additonal work during construction, differing site conditionans along the channel	The existing channel is quite old and there may be differing site conditions as the channel walls are opened up with unfit fill material, rocks etc or that the damaged areas extend beyond those identified in the design docs. This will have a moderate impact on project cost, a significant impact on schedule and it is possible to occur. No investigation has been conducted to verify surrounding soil conditions but there are also no indications that this is an issue.	Marginal	Possible	1
T-2	Bridges	Additonal work during construction, differing site conditionans along the channel, geotechnical investigations	The existing channel is quite old and there may be differing site conditions as the bridge foundation is excavated. No geotechnical investigations have been completed. A larger foundation could be required. No investigation has been conducted to verify surrounding soil conditions but there are also no indications that this is an issue.	Moderate	Possible	2
T-3	Channels	Additonal work during construction, differing site conditionans along the channel, H&H modeling	The existing channel is quite old and there may be differing site conditions as the channel walls are opened up with unfit fill material, rocks etc or that the damaged areas extend beyond those identified in the design docs. This will have a moderate impact on project cost, a significant impact on schedule and it is possible to occur. No investigation has been conducted to verify surrounding soil conditions but there are also no indications that this is an issue.	Significant	Possible	3
T-13	Planning, Engineering, & Design	level of design, design confidence	The level of design is low and additional inpsctions and damages over the next several seasons could require additoinal measures to be taken and additonal work required to correct the cahnnel. Moderate and possible like the constrctuion piece.	Negligible	Possible	0
T-14	Construction Management	Differing site condtions and addiotional work discovered during construction	Impacts to the construction schedule may push construction into another season doubling the cost for construciton managemnt.	Marginal	Possible	1
Cost Estimate Assumptions				**Maximum Project Growth**		**25%**
EST-1	Utility Relocations	Limited quotes, limited knowledge of local area labor factors and resources	Recent impacts on material pricing and limited knowledge of local area factors on labor force, availability of acceptable materials (fill material, precast panels etc). Pricing based more on historical pricing for similar features and less on site specific items as would be anticipated later in the project development. It is likely that there will be a marginal growth in cost based on the level of estimate.	Marginal	Likely	2

EST-2	Bridges	Limited quotes, limited knowledge of local area labor factors and resources	Recent impacts on material pricing and limited knowledge of local area factors on labor force, availability of acceptable materials (fill material, precast panels etc). Pricing based more on historical pricing for similar features and less on site specific items as would be anticipated later in the project development. It is likely that there will be a marginal growth in cost based on the level of estimate.	Moderate	Likely	3
EST-3	Channels	Limited quotes, limited knowledge of local area labor factors and resources	Recent impacts on material pricing and limited knowledge of local area factors on labor force, availability of acceptable materials (fill material, precast panels etc). Pricing based more on historical pricing for similar features and less on site specific items as would be anticipated later in the project development. It is likely that there will be a marginal growth in cost based on the level of estimate.	Moderate	Likely	3
EST-13	Planning, Engineering, & Design	Estimate based on percentages of construction	the percentages used are national averages for PED and Construction Management. Additional contigency has been captured in other areas and additonal contigency is not necessary at this level.	Negligible	Unlikely	0
EST-14	Construction Management	Estimate based on percentages of construction	the percentages used are national averages for PED and Construction Management. Additional contigency has been captured in other areas and additonal contigency is not necessary at this level.	Negligible	Unlikely	0
External Project Risks				**Maximum Project Growth**		**20%**
EX-1	Utility Relocations	Inflation, Real Estate, Local Sponsor funding, Federal Funding, Material Availability, Labor availability and fuel pricing	With inflation increasing, production materials are also being impacted by various factors. Labor availbility is also a concern in many areas. Funding streams from both the sponsor and the federal contributers could also impact construction cost by extending it out to multiple phases. It is likley that any one of these will have a moderate impact on the contract pricing.	Marginal	Likely	2
EX-2	Bridges	Inflation, Real Estate, Local Sponsor funding, Federal Funding, Material Availability, Labor availability and fuel pricing	With inflation increasing, production materials are also being impacted by various factors. Labor availbility is also a concern in many areas. Funding streams from both the sponsor and the federal contributers could also impact construction cost by extending it out to multiple phases. It is likley that any one of these will have a moderate impact on the contract pricing.	Marginal	Likely	2
EX-3	Channels	Inflation, Real Estate, Local Sponsor funding, Federal Funding, Material Availability, Labor availability and fuel pricing	With inflation increasing, production materials are also being impacted by various factors. Labor availbility is also a concern in many areas. Funding streams from both the sponsor and the federal contributers could also impact construction cost by extending it out to multiple phases. It is likley that any one of these will have a moderate impact on the contract pricing.	Marginal	Likely	2
EX-13	Planning, Engineering, & Design	Scheduling concerns and avaibility of workforce have been modeled in other locations in this risk register. See PS-13		Negligible	Unlikely	0
EX-14	Construction Management	Scheduling concerns and avaibility of workforce have been modeled in other locations in this risk register. See PS-14		Negligible	Unlikely	0

LITTLE WOOD RIVER, GOODING, IDAHO
INTEGRATED LETTER REPORT
AND ENVIRONMENTAL ASSESSMENT

APPENDIX E, COST ENGINEERING

CONTENTS

FIGURES

1 PROJECT DESCRIPTION

This study was initiated to investigate measures that could potentially resolve flood risks in the communities of Gooding, Idaho.

A National Economic Development (NED) plan for flood risk reduction was not developed for this effort because economic justification is not required. Instead, the Report recommends the least cost alternative that meets the Project's objectives. Following the Corps' six-step planning process produced only one action alternative (Alternative 1) and the No-Action alternative in the final array of alternatives evaluated. Of those, only the action alternative meets the planning criteria for completeness, effectiveness, efficiency, and acceptability; meets the directive in the project authorization language; is feasible; and satisfies the purpose of flood risk reduction.

Figure 1. Plan View of Gooding Canal Project Alignment and Staging Area

Four construction methods were developed and evaluated to determine the least-cost method for reconstruction of the channel walls:

Method A – Tied-Back Precast Concrete Panel Walls

Method B – Tied-Back Sheet Piles

Method C – Trenched Tied-Back Sheet Piles

Method D – Stacked Concrete Blocks

All construction methods provide the same level of flood protection; therefore, the least cost method was used to determine a method for wall construction.

Method A was selected as the least-cost construction method for the Gooding Canal rehabilitation. A further refined estimate of Method A is included in the Total Project Cost Summary in Section 5.7, which includes costs for planning, design, and construction (including construction management).

2 SITE DESCRIPTION

The study area is within the City of Gooding, Gooding County, Idaho. Gooding is the forty-second largest city in Idaho by population.

The Little Wood River flows through the city of Gooding, Idaho in a constructed masonry channel known as the Gooding Canal. In the 1930s, the Works Progress Administration (later known as the Work Projects Administration, or WPA) realigned the river and constructed the rectangular channel made of grouted and ungrouted hand-placed lava rock over the native lava rock riverbed. The work was completed in 1941 and extends for just under a mile.

Since 1941, the channel has performed well, but its walls have deteriorated significantly, and the rate of deterioration is increasing as the project ages. Diminished, but useful functionality of the Gooding Canal has been preserved by the city of Gooding through ongoing maintenance, targeted repairs, and replacement of channel wall sections. However, the channel, constructed with impermanent methods and less resilient materials, is now more than 80 years old and approaching the end of its useful life. Rehabilitation or replacement of the channel walls is warranted.

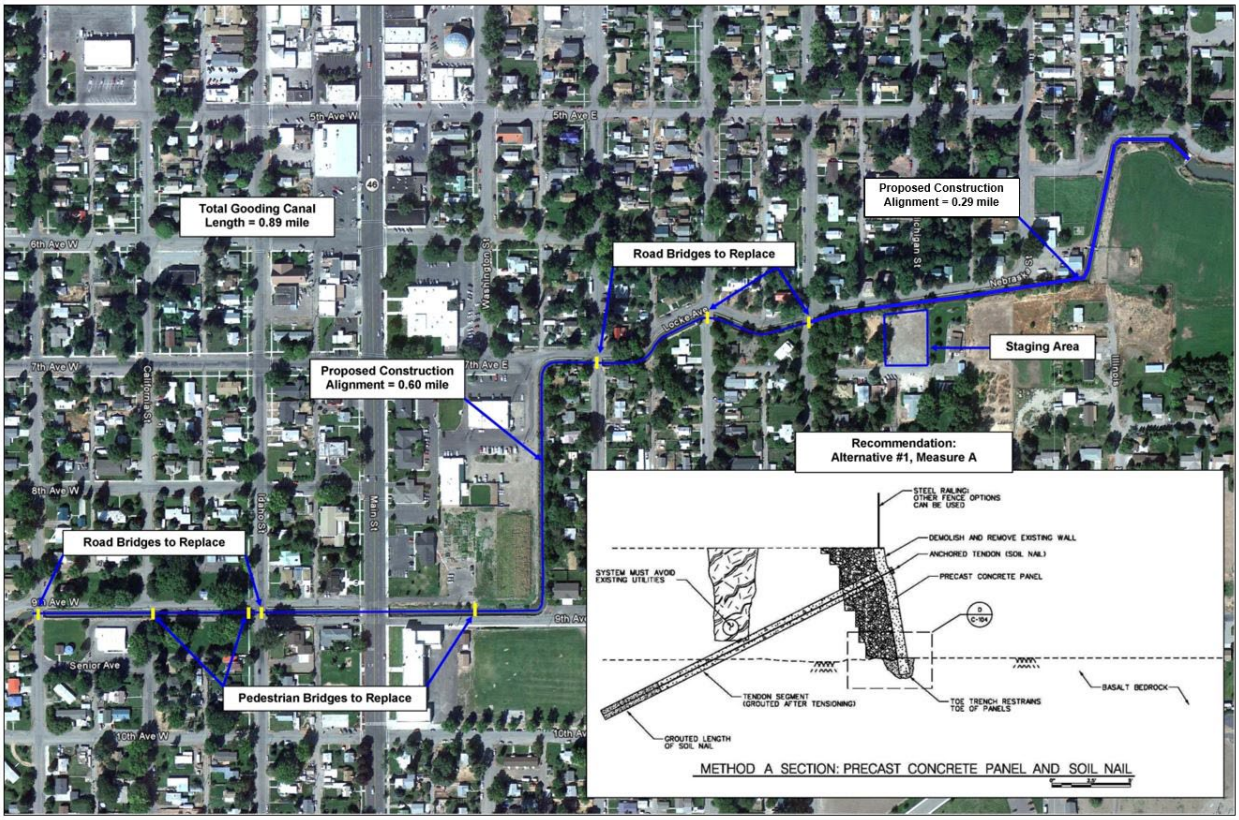


Figure 2. Selected Plan Features

Specific features of Alternative 4 include removal of the existing lava rock wall, replacement of the wall with an engineered channel, and the replacement of five vehicle bridge crossings and 3 pedestrian bridge crossings for flood risk reduction. Due to the original construction methods, the bridge and pedestrian crossings cannot be salvaged during canal rehabilitation and will need to be demolished and replaced.

3 BASIS OF ESTIMATE

Due to the level of Scope and Technical Definition for this Pre-Authorization estimate (Limited-Fair) the Civil Works Estimate currently falls into a Class 3 Estimate, based on ER 1110-2-1302.

ER 1110-2-1302
30 Jun 16

Table 1. Civil Works Estimates – Class Level Designation

Project Phase	Scope and Technical Definition		Risk Level	Minimum Estimate Class
Pre-Budget Development (not recommended for reports)	Extremely Limited		Extremely High	5*
Pre-Authorization				
Initial Alternatives	Very Limited		Very High	4*
Feasibility Alternatives	Very Limited		High	4*
Feasibility – Federal Recommended Plan	Limited-Fair		Moderate	3
National Economic Decision (NED)	Limited-Fair		Moderate	3
Locally Preferred Plan (LPP)	Limited-Fair		Moderate	3
Funding Request Decision Documents	Limited-Fair		Moderate	3
Authorization				
Continuing Authorities Program	Limited		Moderate to High	3-4
Civil Emergency Management Program	Limited		Moderate to High	3-4
Alternative Studies	Limited		Moderate to High	3-4
General Re-Evaluation Report	Limited-Fair		Moderate	3
Limited Re-Evaluation Report	Limited-Fair		Moderate	3
Design Documentation Report	Limited-Fair		Moderate	3
Engineering Decision Report	Limited-Fair		Moderate	3
Post Authorization Change Reports	Fair		Moderate	2-3
Other Funding Decision Documents	Limited-Fair		Moderate	3
Preconstruction, Engineering & Design (working estimates)				
PED 30%	Fair		Moderate	3
PED 60%	Fair-Good		Moderate to Low	2
PED 90%	Very Good		Low	1
IGE <100% Design	Fair-Good		Moderate to Low	2
IGE 100% Design	Very Good		Low	1
Construction / Post Award				
Budgets (modifications / claims)	Fair-Good		Moderate to Low	2
IGEs (modifications / claims)	Very Good		Low	1

* Do not use in formal/Chief of Engineer's Reports

Figure 3. Civil Works Estimates – Class Level Designation

Costs were derived utilizing RSMeans, PACES, corollary data from similar Corps projects, vendor quotes, and DOT bid tabs for comparison. RSMeans crews were adjusted as necessary to meet project conditions such as labor, equipment, and productivity. For the corollary cost data, recent projects in close geographic proximity with similar scope were used when possible to provide the most reasonable comparative costs. Additionally, bid tabs from local DOT were investigated to compare derived unit prices with locally awarded unit prices.

3.1 Basis of Design

The scoping description outlined in the Focused Array of Alternatives (Planning), as well as the construction features outlined in the Gooding Feasibility Preliminary Plans, were used to develop the construction estimate. (Refer to Appendix D, Drawings, for further details on design features.)

3.2 Basis of Quantities

Quantity takeoffs were provided by the Civil Lead based on the current levee alignment, CADD surface differences, and established cross sections for areas and volumes and were structured according to the alternatives outlined in the scoping documents described in the Basis of Design section.

Quantity calculations were done in December 2011. Existing channel dimensions were measured using site surveys at that time. These were done for each alternative at that time.

The cost estimator verified the cost driver quantities based on independent estimates from a typical geometric section.

3.3 Basis of Utility Relocations

No survey of utility relocations has been done. Only a few have been mentioned that are obvious.

An assumption was made for 7 utility relocations: 3 water line, 3 electrical line and 1 gas line.

The assumed relocation would be to shut off and demo the existing line crossing the channel while bridge construction occurs, and install a new line in its place using the new bridge as support. For water lines, this work would include demo, line replacement, pipe restraint and hangers along bridge, thrust blocks, and valves. For electrical lines, this work would include demo, line replacement, conduit and hangers, and pull boxes. For the gas line, this work would include demo, line replacement, hangers, and thrust blocks.

3.4 Basis of Precast Concrete Costs

The major feature of work in this project is the precast concrete panels lining the channel walls and the precast concrete box beams that provide the structural support for the bridges.

Costs for the precast concrete panels comes from a Huntsville cost book item that was specifically developed for precast retaining wall panels. The panels are USACE-specific, and these costs were developed for civil works projects. These precast panels are about 36% of the cost for the channel work.

Costs for the precast concrete box beams were developed by RS Means and last updated 10/11/2023. The exact quantities for the bridges were developed by PACES using past awarded contracts specifically for box beam bridges. These concrete box beams are about 25% of the cost for each bridge.

4 CONSTRUCTION ESTIMATE

The Construction Features were categorized into Work Breakdown Structure (WBS) Codes for conducting an Abbreviated Risk Analysis (ARA) and populating the Total Project Cost Summary (TPCS) worksheet. The following WBS Feature Codes were utilized, and each construction feature grouped per WBS definition.

01 Channels and Canals:

This feature includes all costs of acquiring for the project (by purchase or condemnation) real property or permanent interests therein, including Government costs, damages, and costs of disposal of real estate. Government costs include planning expenses for the real estate portion of the General Design Memo and for the detailed Real Estate Memo; and project real estate office administration, surveys, and marking for land acquisition purposes and appraisals.

For projects which require that costs be incurred on real estate activities, i.e., for records search, appraisals, and field inspection to assure compliance by local interests in the provision of local requirements on projects where no Federal land acquisition is involved, a memorandum statement will be provided with the PB-3 indicating the estimated costs of such real estate activities. These costs will be charged to feature 30, Engineering and Design and that feature will be properly footnoted to show the amount of such costs. A similar footnote will be shown on the PB-1s and PB-2a's for all such projects. This feature is credited with disposal receipts from sale of such items as standing crops, standing timber, structures, and improvements in place and acquired with the land. Disposal receipts from sale of excess land not turned in to the U.S. Treasury as miscellaneous receipts are credited to this feature. Lands or interests purchased for relocations and conveyed to others are included in the feature "Relocations." Temporary interests such as leases are included in the feature or distributive item benefited thereby.

09 Channels and Canals:

This feature includes all forms of excavation (including dredging, preparation of spoil disposal area, and attendant facilities) necessary for the development and construction of channels, harbors, and canals for navigation purposes; and deepening, providing new, or improving existing watercourses for flood control and major drainage. Excavation of natural watercourse to provide adequate depths for navigation is included. Excavation for specific structures, such as dams and locks used in the development of waterways and conservation of water resources, is included with such structures. The removal of trees, brush, accumulated snags, drift, debris, water hyacinths and other aquatic growths from canals, harbors, and channels in navigable streams and tributaries thereof for navigational included in this feature. Excavation, clearing, and removal of accumulated snags, drifts, debris, and vegetable growth from streams for flood control and major drainage purposes also is included. Included in this feature are revetments, linings, dikes, and bulkheads constructed as channel improvement works for flood control or navigation, as against such items constructed for

bank stabilization only. Also included are jetties constructed in connection with flood control channel improvements.

5 BASIS OF TOTAL PROJECT COST ESTIMATE

Due to the level of design and technical information available, the estimate is designated a Class 3 level (per ER 1110-2-1302).

Class 3 – Technical information (including designs) are approaching a 10-60% quality of project definition. There is greater confidence in project planning and scope, construction elements and quantity development. The estimates rely less on generic cost book items, greater reliance on quotes, recent historical and site-specific crew based details. Class 3 estimates are a reflection of improved technical documents. The estimates must be supported by a technical information (scope, design, acquisition and construction methods, etc.) discussion within the estimate and the uncertainties associated with each major cost item in the estimate. Special attention must be given to large construction elements and items that are sensitive to technical information change.

5.1 General Conditions and Markups

The estimate further assumes that the prime contractor will perform the earthwork and related work and subcontract out the remaining work. Sub-contractors include Landscaping, Concrete, Clearing & Grubbing, and a Generic Sub for miscellaneous items. Crew productivity levels were reduced as a global construction markup due to limited site access.

A productivity markup was included as 0.90. This represents the basic differing conditions from the RS Means assumed project, which would be a multi-million-dollar project in a major metropolitan area within 15 minutes of material suppliers with adequate labor supply, and a worksite that is close to the laydown area and parking area with good access.

This project is located in a small, remote town, an hour from Boise, located in a sprawling residential area, so it’s a big job site, with limited ability to gather a large crew and delivery trucks all in the same area.

A contingency was developed for each WBS Feature Code and respective construction features through an Abbreviated Risk Analysis and applied to the total estimate to account for current design uncertainties that will be refined as the plans and specs are further developed and additional site information gathered. The value was reasonable given the state of design and the number of uncertainties. A comparably scoped and geographically located project (Forest View Levee and McCook Levee Awarded Contracts) provided a comparable ARA weighted percentage for comparison. Two railroads (CN & BNSF) exist between the McCook and West Lyon’s levees and the construction activities near the railroad driving WBS-specific contingencies for both studies.

Escalation factors were calculated in the TPCS worksheet and depend on the specific WBS Feature Code. Based on 1Q 2023 FEAS estimate completion date and 3Q 2027 as mid construction, each WBS Feature Code escalation value was calculated per EM 1110-2-1304 30 September 2017 Civil Works Construction Cost Index System (CWCCIS).

The estimate further assumes that other general condition items not otherwise specified in the temporary construction facilities bid item are included in the mobilization and demobilization bid items.

5.2 Miscellaneous Assumptions and Notes

- Disposal area is a City-owned property within 1 mile of the project. There will be no disposal fees needed, but trucking to this site is a requirement.
- Contingencies and escalation factors have been intentionally omitted from MII. They are added in the Total Project Cost Summary. Refer to the "Total Project Cost Summary" section of this appendix for further details.
- The estimate assumes several utility crossings at the bridges. The estimate assumes minor underground utilities may need to be repaired or relocated though no conflicts have been confirmed by the USACE PDT.
- MII Class B bond table formula used to calculate the bond costs.
- Costs for the 30 and 31 accounts were derived by inputting typical District labor percentage values in the TPCS worksheet along with verified Design and Construction Admin percentages from their respective department chiefs.
- WBS 01 Lands and Damages costs and contingency provided by Walla Walla District (NWW) Real Estate Office. Admin costs related to real estate are included in the 30 account in the TPCS.
- Equipment rates used are from EP 1110-1-8, Volume 8, 2022.
- Materials that will become permanent features of the federal project are exempt from state sales tax in Idaho.
- Davis Bacon Wages 10/03/2023 (Labor Rates)
- This estimate contains an overtime schedule of 6 days per week at 10 hours per day.
- EIA 10/20/2023 Fuel Pricing (U.S. Energy Information Administration Current Fuel Pricing).
- Per the Design Maturity Validation memo, H&H modeling is at 0%; Geotechnical investigations are at 0%; and survey data are at 0%.
- The District Value Officer and Project Manager are currently working on the VMP. The plan will be to conduct a Value Study during PED. No bridging documents are necessary at this point. This was added to the cost narrative.

- Per the report appendices, there are no known negative impacts on any cultural resources or endangered species by the construction of project.
- All quantities from designers were checked again for this year's submittal and found to be accurate.

6 CONSTRUCTION SCHEDULE

A formal construction schedule was developed for the TSP. Based on the MII construction features and cost engineering experience, a construction schedule was developed that takes into account the number of days needed to complete the channel work and bridge work, including holidays and possible weather concerns for the duration of the project, along with a reasonable date for the award. See the attached Gantt chart for a project schedule.

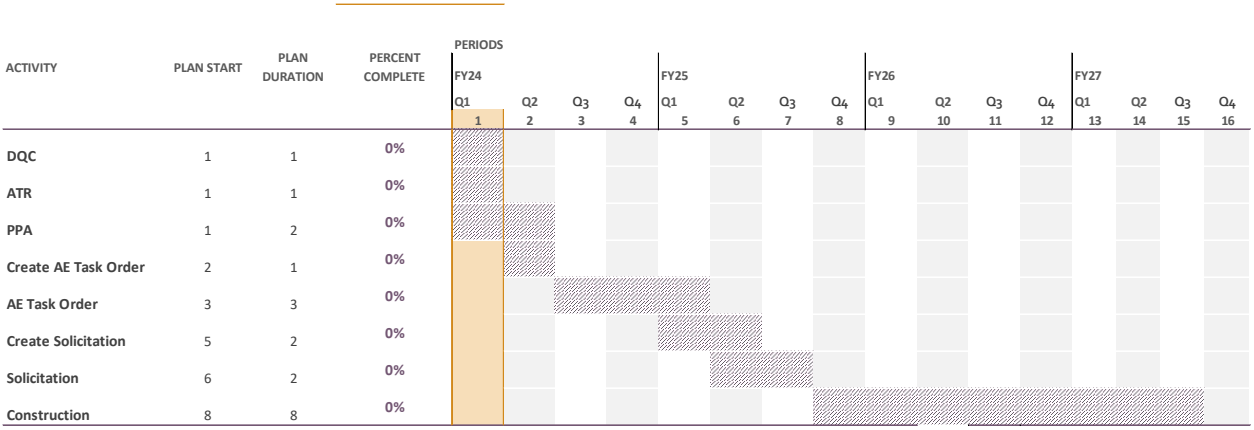


Figure 4. Gantt Chart for Project Schedule

Considerations for this schedule include the following: In-channel work can be done in the non-irrigation season of Oct 1 to Mar 14 each year; only 2 vehicle bridges to be worked on at a time.

7 ACQUISITION PLAN

The current acquisition strategy is a Design-Build Contract. This contract will have two solicitation phases. Phase 1 is the RFQ and Phase 2 will provide the design the contractor's will use for their proposal. Award is scheduled for 10 December 2024. Contract is assumed to be a 2-year construction schedule.

8 RISK ASSESSMENT

Various risks (uncertainties) include potentially contaminated soil and related disposal fees, potential shoreline wetland impacts, dewatering duration/methods, construction costs affiliated working with/near utilities. Initially, the PDT did not perform any geotechnical investigations, instead including this risk in the risk analysis. Initially, the PDT also did not perform H&H modeling, instead including this risk in the risk analysis.

Current methodology would encourage geotechnical investigations and H&H modeling for the initial report, but the funding sent to update and resubmit this report was insufficient to fund these efforts.

An abbreviated risk analysis (ARA) was performed to develop a contingency for the construction cost estimate. The concerns outlined in the ARA would have a marginal to negligible impact on the project. General concerns include the fact that a contracting member is not currently on the PDT or that the project could potentially not be given small business contract consideration. Project costs have the potential to increase due to modified quantities and scope during the course of the project, considering the level of design.

Risk Element	Typical Concerns
Project Management & Scope Growth	• Potential for scope growth, added features? • Project accomplishes intent? • Funding Difficulties? • Sufficent Staffing/Support?
Acquisition Strategy	• Contracting plan firmly established? • 8a or small business likely? • Requirement for subcontracting? • Accelerated schedule or harsh weather schedule? • High-risk acquisition limits competition, design/build? • Limited bid competition anticipated? • Bid schedule developed to reduce quantity risks?
Construction Elements	• Accelerated schedule or harsh weather schedule? • High risk or complex construction elements, site access, in-water? • Water care and diversion plan? • Unique construction methods? • Special mobilization? • Special equipment or subcontractors needed? • Potential for construction modification and claims?
Specialty Construction or Fabrication	• Atypical construction elements, unusual material or equipment manufactured or installed? • Confidence in constructibility or methodology? • One of a kind and confidence in fabrication and installation? • Ability to reasonably transport? • Risk of specialty equipment functioning first time? Testing?
Technical Design & Quantities	• Level of confidence based on design and assumptions? • Possibility for increased quantities due to loss, waste, or subsidence? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities? • Quality control check applied?
Cost Estimate Assumptions	• Reliability and number of key quotes? • Assumptions related to prime and subcontractor markups/assignments? • Assumptions regarding crew, productivity, overtime? • Site accessibility, transport delays, congestion? • Overuse of Cost Book, lump sum, allowances? • Lack confidence on critical cost items?
External Project Risks	• Potential for severe adverse weather? • Political influences, lack of support, obstacles? • Unanticipated inflations in fuel, key materials? • Potential for market volatility impacting competition, pricing? • Funding Constraints

Figure 5. Risk Elements and Typical Concerns

A running weighted contingency of **37%** was estimated from the ARA (excluding LERRDS). The contingency accounts for potential impacts and the likelihood of occurrence of the Typical Risk Elements Concerns as they pertain to each major feature of work.

The ARA contingency is somewhat high. The reasons for this are now documented in the Design Maturity Validation memo. H&H modeling are at 0%, Geotechnical investigations are at 0% and survey data is at 0%. The Cost MCX believes this ARA covers the risks to the current scope of work. It's not anticipated at this time that there

could be findings from these uncertainties that would require a new or substantially different scope of work.

9 LANDS AND DAMAGES (CW-WBS 01, LERRDS)

Real Estate costs and contingency values were developed and provided by NWW Real Estate. Cost appendix narrative has been updated for the revised Real Estate Appendix. The LERRDs costs have been captured on the TPCS and include the Real Estate derived contingency of 10%. Also, the costs for the Federal Review and Assistance were captured and are in the TPCS.

10 PLANNING, ENGINEERING, AND DESIGN (CW-WBS 30)

Cost for the 30 account (PED) was provided by the NWW Cost Engineering Chief at 27.5% total construction cost. The percentage is comparable to historical feasibility level projects in NWW and are in the recommended range suggested by the Cost Center of Expertise (MCX), Walla Walla.

11 CONSTRUCTION MANAGEMENT (CW-WBS 31)

Cost for the 31 account (CM) was provided by the NWW Cost Engineering Chief at 14.5% of the total construction cost. The percentages are comparable to historical feasibility level projects in NWW and are in the recommended range suggested by the Cost MCX, Walla Walla.

12 ALTERNATIVE ANALYSIS

Four construction methods were developed and evaluated to determine the least-cost method for reconstruction of the channel walls.

Method A – Tied-Back Precast Concrete Panel Walls

Method B – Tied-Back Sheet Piles

Method C – Trenched Tied-Back Sheet Piles

Method D – Stacked Concrete Blocks

All construction methods provide the same level of flood protection; therefore, the least cost method was used to determine a method for wall construction.

Method A was selected as the least-cost construction method for the Gooding Canal rehabilitation. A further refined estimate of Method A is included in the Total Project Cost Summary in Section 5.7, which includes costs for planning, design, and construction (including construction management).

13 REFERENCES

U.S. Army Corps of Engineers, 1993, Engineering and Design Cost Engineering Policy and General Requirements, Engineering Regulation 1110-1-1300, Department of the Army, Washington D.C., 26 March 1993.

U.S. Army Corps of Engineers, 1999, Engineering and Design for Civil Works Projects,

Engineering Regulation 1110-2-1150, Department of the Army, Washington D.C., 31 August 1999.

U.S. Army Corps of Engineers, 2008a, Civil Works Cost Engineering, Engineering Regulation 1110-2-1302, Department of the Army, Washington D.C., 15 September 2008.

U.S. Army Corps of Engineers, 2008b, Construction Cost Estimating Guide for Civil Works,

Engineering Technical Letter 1110-2-573, Department of the Army, Washington D.C., 30 September 2008.