

MEMORANDUM

TO: Programs, Projects, and Operations Subcommittee

FROM: Ian Ghanavati, Water Resources Engineer

SUBJECT: Amendment No. 4 with Houston Engineering for WP-2 Professional Services

DATE: November 7, 2023

In May 2017, the Board of Directors approved the selection of FYRA, now Houston Engineering (HEI), for professional services for the planning, permitting, design and construction of the West Papillion Regional Basin Number 2 (WP-2) project.

The original contract was executed in May of 2017. The contract has been amended three times since to account for additional work required to finalize design for the project and complete its plan, as well as to separately bid and construct the WP-2 Water Quality Basin. A summary of the tasks in the current Amendment No. 4 is as follows:

- Additional geotechnical engineering and design modifications to the internal drainage system along with alternatives analysis based on comments from the Nebraska Department of Natural Resources (NDNR) Dam Safety Department and the specific conditions observed at the WP-2 site.
- Additional plan drafting and hydraulic modeling of the principal and auxiliary spillway due to internal drainage design changes.
- Modifications to specifications, quantities, and costs due to internal drainage design changes.
- Additional coordination with NDNR, Northern Natural Gas, and adjacent developments on the project.
- Preparation and submittal of a second WSF application.

HEI proposes to provide the professional services in contract Amendment No. 4 for a total not to exceed amount of \$113,235; see the attached Exhibit K for further details on task descriptions and the fee breakdown. This would bring the total contract, including Amendments 1, 2, 3, and 4 to \$1,842,937.

Management recommends that the Subcommittee recommend to the Board that the General Manager be authorized to execute the proposed Amendment No. 4 with Houston Engineering for the West Papillion Regional Basin Number 2 (WP-2) project in an amount not to exceed \$113,235 bringing the total contract not to exceed amount to \$1,842,937, subject to such other terms and conditions as the General Manager determines necessary and Legal Counsel approves as to form.

This is **EXHIBIT K**, consisting of 5 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated May 12, 2017.

**AMENDMENT TO OWNER-ENGINEER AGREEMENT
Amendment No. 4**

The Effective Date of this Amendment is: November 9, 2023.

Background Data

Effective Date of Owner-Engineer Agreement: May 12, 2017

Owner: Papio-Missouri River Natural Resources District

Engineer: FYRA Engineering (now Houston Engineering)

Project: Preliminary Design of Regional Detention Basin Site WP-2

Nature of Amendment: [Check those that are applicable and delete those that are inapplicable.]

- Additional Services to be performed by Engineer
- Modifications to services of Engineer
- Modifications to responsibilities of Owner
- Modifications of payment to Engineer
- Modifications to time(s) for rendering services
- Modifications to other terms and conditions of the Agreement

Description of Modifications:

Additional services to Regional Detention Basin design services are included to account for work beyond the original scope of work required for internal drainage design and geotechnical engineering, earthwork balance coordination, addressing changes in NDNR design requirements, and submitting a second Water Sustainability Fund application as described in Attachment 1 – Task Descriptions. Additional costs for these services are detailed in the Fee Estimate provided in Attachment 2 that shall supplement Exhibit C1, Appendix 2 of the Owner-Engineer Agreement.

MODIFIED VERSION of

Exhibit K – Amendment to Owner-Engineer Agreement.

Agreement Summary:

Original agreement amount:	\$ 593,239
Net change for prior amendments:	\$ 1,136,463
This amendment amount:	<u>\$ 113,235</u>
Adjusted Agreement amount:	\$ 1,842,937

Change in time for services (days or date, as applicable): n/a

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit C.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect.

OWNER:
Papio-Missouri River Natural Resources District

ENGINEER:
Houston Engineering

By: _____
Name: John Winkler
Title: General Manager

By: Melinda C. Rogers
Name: Lindy Rogers
Title: Senior Civil Engineer, Office Manager, Vice President

Date Signed:

Date Signed: 10/19/2023

MODIFIED VERSION of

Exhibit K – Amendment to Owner-Engineer Agreement.

Exhibit A to Attachment 1

PLAN COMPLETION

Geotechnical Engineering

Due to the uplift and seepage mitigation required for the design and overlap with the internal drainage systems, geotechnical modeling and internal drainage design became an unforeseen iterative process to develop a reasonable geotechnical design. Geotechnical guidance would be provided for internal drainage design, then once the design was laid out and detailed, conflicts or challenges would be identified that had to modify the approach.

Nebraska Department of Natural Resources (NDNR) Dam Safety Department provided comments that differed from their previous stance when reviewing Regional Detention Basins WP-6/7 that had not been mentioned in consultation with the agency prior to submittal of dam plans for approval. This added in an alternatives analysis for relief wells versus the toe drain system that was selected. Comments provided during the review of plans for state approval resulted in changes to internal drainage pipe designs that subsequently have to be checked from a geotechnical perspective and required filter modifications,

Internal Drainage Designs

Significant internal drainage design efforts were required to assess the feasibility of geotechnical recommendations within the site-specific conditions. Surveyed channel degradation resulted in significant redesign of the final internal drainage system and the principal spillway vertical alignment. NDNR Dam Safety Department comments created changes to the internal drainage pipe layouts, alignments, port locations and detailed design concepts that had to be redesigned that were not anticipated from past reviews.

Survey and Design Modifications

A site inspection in late 2021 found approximately 24-inches of degradation had occurred downstream of the existing reservoir structure. A survey of the site was completed in late December 2021. This degradation required a reassessment of the internal drain system, pipe camber, as well as redesign of the outlet, and improvement of the uplift mitigation measures downstream of the principal spillway outlet. These modifications required updates and additional review for the plan set.

Plan Drafting and Analysis

Updated drafting required to assess alternative internal drainage layouts and determine spatial and elevation conflicts. Includes revisions to construction plans, drafting, details and elevations tables for modifications made as a result of updated survey data and for DNDR comments. Extensive earthwork balance assessments beyond anticipated efforts were required to ensure sufficient materials for construction were available for construction. This includes the development of a plan for unusable auxiliary spillway materials and fisheries excavations, and quantifying suitable borrow materials on site

and determining potential off-site borrow material needs. Additionally, an updated SITES model was required above standard dam assessment procedures to provide supplemental data to NDNR Dam Safety to show that the downstream Northern Natural Gas line would not be a risk if the auxiliary spillway were to flow.

Specification, Quantities and Cost Updates

Modifications to specifications, quantities and costs required due to NDNR comments on changing the internal drainage pipe systems, filters and subsequent gradation changes, and for material unavailability identified during the bid period.

Additional Coordination

Additional time above what was anticipated to address NDNR comments due to change in internal drainage strategy. This includes conversations with NDNR staff, calling quarries for material gradation, and documenting the responses. Additional coordination with Northern Natural Gas regarding their request to extend protection above their gas line, the required Encroachment Agreement, and modifications to auxiliary spillway design per by NDNR comments. Coordination with subconsultants, NRD staff and NDNR regarding off-site borrow material and future trail alignments downstream of the dam below the auxiliary spillway.

WATER SUSTAINABILITY FUND APPLICATION

Preparation/Submittal of WSF Application

Develop project benefits for WP-4 that could not be pulled from past analysis. Perform updates for the second WSF joint application for WP-2 and WP-4 to obtain all background information and develop the written content for the application. Prepare and submit the WSF application to NDNR.



Attachment 2 to Exhibit K - Fee Estimate
P-MRNRD Regional Detention Site WP-2
Updates and Revisions
FYRA Project # 001-17-01

Description	Houston Engineering						Totals
	Principal Sotak, PE, D.WRE \$240	Geotech Gregalunas PE \$220	Senior Engr Mechtenberg PE \$180	Proj Engr PE (Varies) \$160	Staff Engr EI (Varies) \$135	FYRA Expenses	
Plan Completion							
Geotechnical Engineering		37		20			
Internal Drainage Designs	24			32			
Survey and Design Modifications			20	142	17		
Plan Drafting and Analysis			30	72	144		
Quantity and Specification Updates	4	2	8		8		
Additional Coordination	5.5	4	20				
Task Total	\$8,040	\$9,460	\$14,040	\$42,560	\$22,815	\$0	\$96,915
Water Sustainability Fund Application							
Preparation/Submittal of WSF Application	8		32		64		
Task Total	\$1,920	\$0	\$5,760	\$0	\$8,640	\$0	\$16,320
Column Total (Hours)	42	43	110	266	233	---	
Column Total (Costs)	\$9,960	\$9,460	\$19,800	\$42,560	\$31,455	\$0	\$113,235