



DATA SHEET
Agenda Item No. 12.

Meeting Date: December 6, 2018

Agenda Item:

Consider approval of Task Order No. 2 to existing contract with Freese & Nichols, Inc. for final design and bidding services of the dam and spillway for Lake Ralph Hall.

Placement:	<input type="checkbox"/> Consent	<input checked="" type="checkbox"/> Individual Consideration	<input type="checkbox"/> Executive Session
Vote:	<input type="checkbox"/> Non-Weighted	<input checked="" type="checkbox"/> Weighted Capital	
Recommending Department:	Engineering & Construction		

Background:

On April 5, 2018 the District approved Contract and Task Order No. 1 with Freese & Nichols, Inc. (FNI) for services related to design of the Leon Hurse Dam and Spillway. Key elements of work under this task order included conducting geotechnical field investigations, developing 30% design drawings and analyzing the hydraulic model for the dam and spillway. The preliminary design, geotechnical data report and draft hydraulic modeling have been prepared and submitted for review.

The Lake Ralph Hall Section 404 permit Record of Decision (ROD) is anticipated to be issued by the U.S. Army Corps of Engineers by mid 2019. In order to maintain the required schedule for construction, it is time to move forward with final design activities. Proposed Task Order No. 2 with FNI provides for the following design tasks:

- 100% Design Package
 - TCEQ required technical design reports
 - Intake and outlet structures plans and specifications
 - Dam embankment, principal and emergency spillways plans and specifications
 - Restored North Sulphur River section plans and specifications
- TCEQ permitting and approval activities
- Bidding phase services

The proposed task order includes budget amounts of \$4,116,023 for Basic Services; \$405,720 for Special Services (geotechnical testing, storm water pollution prevention planning and construction manager at risk (CMAR) project delivery method if necessary); and, \$125,000 for Additional Services. The total for proposed Task Order No. 2 is \$4,646,743.

Financial:

Sufficient funds are available in the FY 2019 Capital Budget for this task order and identified as project number 5RH. This funding was received in December 2015 from the Texas Water Development Board through the SWIFT deferred payment program.

Recommendation:

Staff recommends approval of Task Order No. 2 to the existing contract with Freese & Nichols, Inc.

Enclosure:

Draft Task Order No. 2.

Submitted By: 
Kurt Staller, Assistant Director of Engineering and Construction

Date: November 30, 2018

Freese and Nichols, Inc.

ATTACHMENT A-1

Task Order No. 2

This Task Order is part of the AGREEMENT between Freese and Nichols, Inc. (the "ENGINEER"), and Upper Trinity Regional Water District (the "OWNER"), for a project generally described as:

LAKE RAPLH HALL PROJECT: LEON HURSE DAM AND SPILLWAY

The purpose of this Task Order is as follows:

**ARTICLE I
SCOPE OF SERVICES**

The ENGINEER agrees to furnish the OWNER the following services:

BASIC ENGINEERING SERVICES

Basic Services for Task Order #2 will include providing final design, construction contract documents, and bid phase assistance for the Owner's proposed Leon Hurse Dam on the North Sulphur River, which will form Lake Ralph Hall. The facilities, as determined in the preliminary design phase, will generally include:

- Approximately 13,000-foot-long zoned embankment dam with a top elevation of about 566 feet and a maximum height of about 100 feet.
- Approximately 120-foot-wide 6 cycle labyrinth weir service spillway set on a roller compacted concrete (RCC) structure, located north of the Sulphur River channel.
- 20' wide single span bridge over the spillway crest.
- Approximately 1,700-foot-wide emergency spillway at about elevation 556.0 that discharges into Baker Creek.
- Pump Station Intake structure and associated sluice gates, screens, and stop log system, which will be integrated with the south RCC spillway abutment.
- Zebra mussel treatment methods will be evaluated as part of this phase and will be implemented in the design.
- Two multi-purpose buildings will be designed to sit atop the intake structure. These buildings will be designed to meet the Owner's needs.
- Approximately Two 72-inch pipes from the intake structure will be part of the service spillway foundation and will allow for low flow releases and connect to the pump station. These pipes will be contained within a pipe gallery through the dam. The conduit which eventually becomes the gallery will be used for passing stormwater flows during construction. It is assumed that these pipes will be designed to connect into the Pump Station.
- A valve vault will be used on the downstream side of the dam to control the direction of the flow and to make controlled releases into the downstream channel. The valve vault will be designed for sustained occupancy, and

will include proper access, lighting, ventilation systems and other requirements.

- Associated electrical improvements, instrumentation and communication needed for operation of the gates on the intake tower and the valves in the downstream vault, as well as general lighting and security elements within the project. Instrumentation improvements shall include facilities to monitor reservoir levels and water quality parameters identified by TCEQ and the Owner. Instrument signals shall be terminated in a panel located in or near the pump station.
- Access road system throughout the dam property, extending to Farm to Market Road 1550 (FM 1550) to the north and to FM 64 to the south of the property. The roads on the dam will generally be a 20-foot wide flex base road. Access from FM 64 to the pump station will be paved with asphalt.
- Improvements to the downstream channel (Restored North Sulphur River) that will consist of about 10 feet of fill in the channel, a drop structure upstream of FM 904; a drop structure for the south mitigation channel, which will be designed by others; and up to two drop structures on mitigation channels on the north. The drop structures will be graded to allow for gradual transitions rather than an abrupt drop to accommodate mitigation needs.
- One boat ramp and related infrastructure. Location to be determined.

This scope of services is based upon the following assumptions;

1. FNI will prepare construction contract documents (plans and specifications) and a single Design Report for approval by Texas Commission on Environmental Quality (TCEQ) Dam Safety. The preferred path is to prepare the project for bid as a single construction package for the entire project. The Owner may require a separate early release package consisting of access, clearing, general site preparation and/or other items to be released as early as Spring 2019. This will then be followed by a construction package for the remainder of the work to be performed.
2. Earthen embankment, principal spillway, emergency spillway, and low flow outlet will be generally as described above.
3. The design of the intake structure and valve vault will be coordinated with the design of the pump station, which will be performed by others.

4. The design of the restored North Sulphur River will be coordinated with the design of the mitigation area, which will be performed by others.
5. The construction contract will be bid as necessary to complete the project, for this scope of services it is assumed that there will be two packages either as design-bid-build or competitive sealed proposals. This scope is based upon a design-bid-build process, but a competitive sealed proposal process can be used without additional fee.
6. The topography mapping that was requested for design by FNI will be provided by others. The Owner is scheduled to provide the final topographic mapping of the project site in January 2019.
7. Channels and structures for flow diversion during construction of the dam including details needed for sequencing the dam will be included in the final design. Detailed design of the coffer dams will be performed by the Contractor.
8. The efforts to obtain the Individual Permit authorization from the U.S. Army Corps of Engineers (USACE) and to obtain the Water Rights Permit from the TCEQ will be led by others. FNI will provide relevant information pertaining to the dam, reservoir and restored North Sulphur River as well as coordinate with the Owner and others in preparation for meetings or presentations to the USACE and TCEQ.
9. FNI will coordinate with an independent Technical Review Committee (TRC) tasked to review and comment on the key design submittals.
10. A Conditional letter of map revision (CLOMR) will not be required for the reservoir since the Sulphur River is not mapped currently. A LOMR will be developed as part of the Construction phase services.

The work will consist of eight (8) tasks performed simultaneously.

Task A – Project Management

1. Attend a kickoff meeting with the Owner and other team members to clarify project goals, communications, schedules, and to exchange initial information to begin the project.
2. Meet monthly with the Owner as regular project meetings during the design process for the design phase. Additional technical meetings are described in other tasks.
3. Attend meetings for coordination with the design of other consultants working on the pump station and the mitigation design, that are no more frequent than bimonthly.
4. Attend up to three workshops with the technical review committee that has been assembled by the Owner. These will be coordinated around their review of the deliverables.
5. Attend by conference call other project meetings with team members as needed for the development of the project.
6. Provide monthly status reports during the design process.
7. Provide monthly invoices for the work to date.
8. Perform quality assurance and quality control processes for the duration of the project.
9. As needed, communicate, coordinate and meet with the TRC.

Task B – Embankment Design

1. Geotechnical and structural analyses for the project will be sufficient to demonstrate adequate safety factors as required by TCEQ for all components of the structure for the following conditions, as needed:
 - Embankment slope stability under the following scenarios:
 - End-of-construction
 - Steady state
 - Rapid drawdown (upstream slope)
 - Earthquake under steady-state seepage conditions
 - Embankment seepage analysis – steady state conditions
 - Dynamic seepage for Rapid Drawdown
 - Appurtenant structural stability of principal spillway and outlet works
 - Earthwork and site preparation related recommendations for use during development of the plans and specifications.
 - Other analysis that may be required
2. In addition to the components reviewed in the Preliminary Design Phase, monitoring instrumentation for the embankment, spillway, and low flow outlet works, consisting of piezometers, inclinometers, and settlement points will be included in the design.

Task C – Spillway Design

1. Final hydraulic design of the spillway and the dam configuration will be sufficient to demonstrate compliance with TCEQ requirements for flood passage. This will include the completion of the physical model study (part of Original Authorization) of the spillway and incorporation of its findings and recommendations into the Final design.
2. Perform a breach analysis of the dam using HEC-RAS 2D unsteady flow techniques and develop two versions of an Emergency Action Plan, one for during construction and one for post construction, according to TCEQ guidelines. Submit the documents for TCEQ approval and coordinate with TCEQ to incorporate their comments and finalize the documents.

Task D – Intake and Valve Vault Design

1. The configuration of the intake structure will be developed to allow for an ultimate pump station capacity of approximately 160 MGD. Additionally, flow velocities through screen openings will be in accordance with Dam engineering practices and meet all state and federal regulations. This will be based on CFD modelling of the structure. CFD modelling will also be utilized for the piping and valves of the system. The design of the pipeline(s) to the pump station will be coordinated with the Owner and the pump station designer to an agreed upon dividing point. This may also be the dividing line between the construction contracts.
2. The outlet structure valve vault will be designed to include appropriate ventilation and access facilities to allow for confined space entry into the vault and maintenance access into the pipelines. This will be coordinated with stop log facilities at the intake to allow for dewatering of one side of or the entire system.

3. In addition to the components reviewed in the preliminary design phase, electrical systems for the outlet gate control system at the spillway, general lighting, and security systems at property access points will be included. The electrical system will be designed for local control on the spillway structure for all outlet gates and to be compatible for remote control with future electrical controls at the pump station and future SCADA system. The design shall include but not be limited to instrumentation to monitor reservoir water levels, flow rates discharged into the North Sulphur River, Calculation of discharge over the labyrinth weirs and emergency spillway, and water quality parameters provided by the Owner. All instruments, conduit and all appurtenances (cable, manholes etc...) shall be terminated in common panels located at the pump station.
4. Review alternatives for incorporating elements and materials into the design that will limit the risk of future exposure to zebra mussels at the intake and outlet facilities. These will be documented in a technical memorandum and in the final report. Selected components will be included in the 60% and subsequent deliverables.

Task E – Main Channel North Sulphur River Design

1. The design of the downstream channel improvements will include a pilot channel designed around the selected interval flow of the local drainage area downstream from the dam. It will be designed to limit erosion, but not eliminate it, under higher flows. The intention will be to allow the channel to have potential erosion consistent with natural processes. Design of the overbanks will be intended to provide a stable channel with sufficient capacity for the design flood events from the spillway, while also limiting erosion to that consistent with natural processes. The grade control structures will be designed to be consistent with regulatory requirements for the mitigation project while providing for a stable structure.

Task F – 60% Deliverables

- a. Drawings – Prepare required hydraulic, civil, geotechnical, structural, and electrical drawings. Drawings will include but will not be limited to plan and profile of the dam, dam cross sections, principal spillway plan, elevations and major sections, etc. All drawings will be produced on AutoCAD Version 2019 (or later). Submittals will be in pdf and AutoCAD format and up to 5 - 11x17 hard copies.
- b. Specifications – Prepare draft front-end and technical specifications for the project and a table of contents for anticipated technical specification sections. Standard FNI front end documents will be proposed. FNI will coordinate with the Owner to refine the standard front-end documents to meet the Owner's specific requirements.
- c. Probable Construction Cost – Develop an opinion of probable construction costs (OPCC) based on the 60% submittal.
- d. Interim Memorandums – Several Design Memorandums will be prepared to document key components of the Final Design Phase. These will be incorporated in the Final Design Report but will be made available as part of the

60% Submittal. Some may be in draft form, depending on the timing of the analysis

- e. Review Comments - Owner will consolidate their submittal review comments including comments from the technical review committee and provide comments to Engineer at the Review Meeting.
- f. Review Workshop - Meet with the Owner and their technical review committee and obtain the Owner's comments on the 60% Submittal. Resolve comments and address prior to submitting the 90% Design submittal.

Task G – 90% & 100% Deliverables

1. 90% (Draft Final) Design Submittal
 - a. The Draft Final submittal shall be sufficiently complete for submittal to TCEQ, bidding and construction purposes, pending final review and comment by TCEQ and the Owner.
 - b. Drawings – Prepare required hydraulic, civil, geotechnical, structural, and electrical drawings. All drawings will be produced on AutoCAD Version 2019 (or later). Submittals will be provide to the Owner in pdf format and any other format requested by the owner. At least 5 - 11x17 hard copies will be provided.
 - c. Specifications– Prepare draft final front-end and technical specifications for the project and a table of contents for anticipated technical specification sections.
 - d. Probable Construction Cost – Develop an opinion of probable construction costs (OPCC) based on the 90% submittal.
 - e. Review Comments - FNI will review and address Owner comments including comments from the technical review committee.
 - f. Review Workshop - Meet with the Owner and their Technical review committee and obtain the Owner's comments on the 90% Submittal. Resolve comments and address prior to submitting the Final Design package to TCEQ for approval.
 - g. Coordinate final design efforts with the other ongoing project related efforts being performed under separate agreements by separate design or planning teams.
2. 100% Final for TCEQ Approval:
 - a. Submit sealed documents for the final drawings, specifications, and Design Report to the TCEQ dam safety group for review and approval.
 - b. Submit Breach Analysis and Construction Phase EAP for TCEQ review and approval.
 - c. Resolve comments from TCEQ and address prior to developing a final set of drawings and technical specifications for bid and construction.
 - d. Prepare full Design Report describing the design of the project in a manner intended to demonstrate to TCEQ that the design is in compliance with TCEQ regulations. This will incorporate the Geotechnical Data report as a reference document.
3. 100% (Final) Issued for Bid Package
 - a. Develop a final sealed set of for Bid Contract Documents, including plans and specifications. Final documents shall be provided to the Owner in

PDF, AutoCAD, and MSWord and/or in other formats as requested by the Owner.

Task H – Bid Phase Services

1. FNI will assist with the Bid Phase, which will be the primary responsibility of the Owner. FNI responsibilities will include:
 - Provide needed copies of bid documents (electronic and/or hard copies).
 - Qualifications – Assist with development of qualification requirements and review of submitted qualification statements
 - Assist with responses to questions during the bid phase and issuance of any needed addendums
2. 100% (Final) Issued for Construction Package (Conformed Set)
 - Develop a final set of for Construction Contract Documents, including plans and specifications. This includes all addenda and modifications incorporated during the bidding process.
 - Provide appropriate portions of the Civil 3D, CAD, and other design files to the successful bidder.

SPECIAL SERVICES

Special Services are those services known to be required for completion of the project that the Owner agrees are to be furnished by the ENGINEER or by a subconsultant that cannot be defined sufficiently at this time to establish the maximum compensation. The services are not included in the scope of work of Basic Services or the amount of compensation for Basic Services. The Special Services for this assignment are described as follows:

Borrow Source Investigation

A geotechnical investigation will be conducted in an effort to pre-approve borrow source locations for the compacted fill requirements of the proposed embankment. The investigation will consist of excavating 45 test pits for visual inspection of the subsurface material and collection of bulk samples. Laboratory testing will be performed to determine classification, dispersion, moisture-density relationship, and strength characteristics of the collected test pit samples, and also for selected samples from the ES and BW series borings previously collected. FNI will prepare a technical memorandum describing the interpretations and conclusions from the borrow source investigation. FNI has budgeted \$118,000 for the borrow source investigation.

Additional Geotechnical Investigation

Geotechnical investigation or testing that is determined to be necessary due to the further development of the design. This may include but is not limited to obtaining supplemental information for structural foundations, alternate borrow areas, off-site aggregate sampling, and/or geophysical subconsultants services. Since the amount of effort is unknown, FNI has budgeted \$50,000 for this task. Owner

Additional Stream Drop Structures

Design of additional (more than three) stream drop structures for contributing tributaries to the Restored North Sulphur.

These drop structures may be necessary due to the further development of the mitigation design. Since the amount of effort is unknown, FNI has budgeted \$25,000 for this task. Owner

Stormwater Pollution Prevention Plan

FNI will design of a Stormwater Pollution Prevention Plan (SWPPP) for the dam, reservoir, and Restored North Sulphur river. The Basic Services includes the effort required to provide direction to the Construction Contractor to design and implement the SWPPP. Input will be needed to define the limits of the SWPPP with respect to the dam, the pump station, potential conflicts and relocations, and related project items. If the Owner deems it necessary, FNI will prepare a detailed SWPPP with prescriptive phasing, specific structures and best management practices (BMPs). Since the level of effort is unknown, FNI has budgeted \$62,720 for this task.

Additional Meeting and Coordination

If necessary, FNI will prepare content for and attend Customer Advisory Committee (CAC) meetings, Owner's Board of Directors meetings and/or other meetings. Owner Since the number of meetings is unknown, FNI has budgeted \$20,000 for this task.

Construction Manager at Risk Coordination

Selection and Coordination with Construction Manager at Risk (CMAR), if determined by the Owner to be used for the project.

1. Assist the Owner with selecting and engaging a CMAR in accordance with the provisions of Government Code 2267, using the prescribed two-step process.
2. Assist the Owner in developing the selection criteria and weighting factors to be used in the selection of the CMAR that will provide best value to the Owner.
3. Assist the Owner with the development of the Request for Qualifications (RFQ) to be used in the selection of the CMAR. These documents will consist of the contracts, forms and notices, APD's scope of services, general conditions, supplementary conditions and general requirements. It is assumed that the preparation of contract documents for the agreement between the Owner and CMAR will be performed by others and that FNI will assist with aspects of this development as it pertains to the dam and Restored North Sulphur.
4. Assist the Owner in evaluating the SOQs received. Review the information provided by offerors in their SOQs and advise the Owner regarding the interpretation of the information provided as it relates to the selection criteria. Report findings of the review of SOQs and investigations to the selection committee.
5. Assist the Owner in evaluating proposals which will consist of costs for services, overhead rates, rates for bonds and insurance, proposed contingencies and costs for general conditions. These costs will be applied to the Owner budget for the project to allow a comparison of costs for each offeror. Add the score for proposal cost to the scores developed from the review of the SOQ and adjust scoring to determine the top ranking contenders.
6. Assist the Owner in coordinating and conducting interviews with the top two or three ranking offerors. Assist in developing pertinent interview questions. Facilitate the interview process and work with the selection committee to determine what, if any,

adjustments should be made to the scoring on the basis of information obtained in the interviews.

7. Coordinate with the selected CMAR throughout the final design phase and bid phase. Coordination is expected to include monthly coordination meetings in addition to multi-day workshops following each the 60% and 90% submittals to review project constructability, costs, risks, and opportunities for improvement with the CMAR and the Owner.
8. Since the level of effort and the number of meetings is unknown, FNI has budgeted \$ 130,000 for this task.

ADDITIONAL SERVICES

Additional services to be performed by the ENGINEER, if authorized by the OWNER, which are not included in the above-described Basic Engineering Services, are described as follows:

- A. Any additional services that may be required by the OWNER for completion of the project that are not included in the Basic or Special Services.

**Article II
Compensation**

BASIC SERVICES

Compensation by the OWNER to the ENGINEER for all Basic Services enumerated in Task Order No. 2 will be on an actual raw salary cost times a 3.0 multiplier basis as generally described in Exhibit CO. A budget allowance has been made for this item and will not be exceeded.

Task A – Project Management	\$411,977
Task B – Embankment Design	\$258,765
Task C – Spillway Design	\$475,260
Task D – Intake and Valve Vault Design	\$435,906
Task E – Main Channel NSR Design	\$101,815
Task F – 60% Deliverables	\$1,022,728
Task G – 90% & 100% Deliverables	\$1,180,421
Task H – Bid Phase Services	\$229,151

The total compensation for Basic Services authorized by Task Order No. 2 is not-to-exceed \$4,116,023.

Special Services

Compensation by the OWNER to the ENGINEER for all Special Services which may be required by the OWNER, shall will be enumerated on an actual raw salary cost times a 3.0 multiplier basis as generally described in Exhibit CO. A budget allowance has been made for this item and will not be exceeded without prior written authorization from the OWNER. No work will be undertaken on this item without specific written authorization from the OWNER.:

Not-to-exceed \$405,720

Additional Services

Compensation by the OWNER to the ENGINEER for all

Additional Services, which may be required by the OWNER will be enumerated on an actual raw salary cost times a 3.0 multiplier basis as generally described in Exhibit CO. A budget allowance has been made for this item and will not be exceeded without prior written authorization from the OWNER. No work will be undertaken on this item without specific written authorization from the OWNER.

Total budget allocation for Additional Services for Task Order No. 2:

Not-to-exceed \$ 125,000

Total Compensation Summary

Basic Services	\$ 4,116,023
Special Services	\$ 405,720
Additional Services	\$ 125,000
Total Authorization	<u>\$ 4,646,743</u>

Other Provisions

The following provisions shall apply to this Task Order:

Compensation for Services will be on an actual raw salary cost times a 3.0 multiplier basis specified when the task order authorizing the Additional Services is approved by the OWNER.

This Task Order No. 2 will become part of the referenced AGREEMENT when executed by both parties.

IN WITNESS WHEREOF, the parties execute below:

For the OWNER, Upper Trinity Regional Water Owner dated this _____ day of _____, 2018.

By: _____

Title: _____

For the ENGINEER, Freese and Nichols, Inc dated this _____ day of _____, 2018.

By: _____

Title: _____