

**CITY OF NEWPORT  
TASK ORDER NO. 11**

**NEWPORT DAM ACCESS ROAD AND RAW WATER PIPELINE  
CONCEPTUAL DESIGN (TO11)**

This TASK ORDER NO. 11 to the Engineering Services Agreement dated May 5, 2017, hereinafter called Agreement, between the City of Newport, (CITY), and HDR Engineering, Inc., (ENGINEER).

**A. SCOPE OF SERVICES**

CITY agrees to utilize the services of ENGINEER and ENGINEER agrees to perform engineering services as defined within the scope of work.

This PROJECT will include the scope of work as identified in the attached Task Order No. 11, NEWPORT DAM ACCESS ROAD AND RAW WATER PIPELINE CONCEPTUAL DESIGN dated June 17, 2020.

**B. CITY'S RESPONSIBILITIES**

CITY to provide ENGINEER with the following information:

1. CITY shall assign appropriate reviewers to the project and compile and provide a single consolidated, coordinated, legible, and internally consistent copy of written review comments to Consultant for all draft documents and work products, as appropriate.
2. CITY shall provide timely review of submitted products, as appropriate.

**C. COMPENSATION**

1. CITY shall pay ENGINEER according to the revised fee schedule set forth in the attached scope of work.
2. Services provided under this Task Order No. 11 shall not exceed \$440,686.

**D. MISCELLANEOUS**

All terms and conditions of the Engineering Services Agreement apply to this Task Order No.11 as though fully set forth therein. In the event of a conflict between previous task orders and the Engineering Services Agreement, the terms of this Task Order No. 11 shall apply.

The parties do mutually agree to all mutual covenants and agreements contained within this Task Order No. 11.

**CITY OF NEWPORT:**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**HDR Engineering, Inc.**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

*[Signature]*  
\_\_\_\_\_  
*City Manager*  
\_\_\_\_\_  
*07-20-20*  
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*Tracy Ellwein*  
\_\_\_\_\_  
Vice President  
\_\_\_\_\_  
7-22-2020  
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Tracy Ellwein  
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# **NEWPORT DAM ACCESS ROAD AND RAW WATER PIPELINE**

## **CONCEPTUAL DESIGN (TO11)**

### **SCOPE OF WORK**

June 17, 2020

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# Introduction to Scope of Services

This Scope of Services describes activities for a new access road and new raw water pipeline for the Big Creek Water Supply Dam and Reservoir project.

HDR Engineering, Inc. (HDR) previously performed engineering evaluations and concept design for the Big Creek Dams: lower dam (BC1) and upper dam (BC2). The outcome of the engineering evaluation and corrective action study recommended a new roller compacted concrete (RCC) dam downstream of BC2. The new RCC dam will have appropriate storage capacity to replace the current capacity of the two existing reservoirs, restore lost storage due to sediment accumulation in both reservoirs, provide for increased future water supplies, and provide storage to reduce the use of the Siletz River intake pump station. The feasibility of the proposed site, an update of the design configuration, initiation of environmental compliance activities, an estimate of probable construction cost to support funding of the project, and a preliminary reservoir operations study have been completed during previous phases of the work.

Environmental compliance and permitting activities have been initiated in previous phases (wetland delineation, cultural resources survey, soil investigations, fish passage waiver application, initiation of the permitting agencies involvement with the project) of work authorization by the City of Newport (City).

This scope of services is triggered by the FEMA Grant (Grant #HMGP-PF-FM-5195-OR-2) and includes additional activities related to a new access road and the new raw water pipeline. The new access road will connect the existing road downstream of the dam site with the reservoir and the properties upstream of the new dam site. The raw water pipeline will connect the dam outlet structure with the existing intake pump station to the water treatment plant (WTP). Modifications to existing pumps are anticipated and the extent will be determined in this scope of services.

This scope of services is intended to further design development for the access road and raw water pipeline. Because the FEMA grant does not cover geotechnical investigations or structural analyses, the level of effort is limited to further refinement of the design of the access road and pipeline. Once the dam has been designed, additional configuration changes, regulatory compliance, and site uncertainties may require adaptation or adjustment of the access road and raw water pipeline.

## PROJECT MANAGEMENT (NOT COVERED BY FEMA)

### Objectives

The objective of the project management task is to direct and manage project work, track project financials and maintain the project schedule. The activities performed under the project management task will cover the duration of this task order as described in this scope.

## **Scope, Schedule, and Budget Maintenance**

This task includes maintaining the project scope and validating scope items, developing and maintaining the project schedule, and tracking project budget expenditures, earned and planned value, physical percent complete and percent spent. Progress reports will be included with monthly invoices and include a summary of work performed with scope, schedule, and budget updates. This task also includes subconsultant coordination.

## **Project Meetings**

Project meetings under the project management task include the internal project kickoff meeting, weekly client/consultant project manager meetings, and project team meetings. HDR will develop agendas and meeting notes for meetings except the weekly client/consultant project manager check in meetings.

### **Internal HDR Project Meetings**

- Internal kickoff meeting
- HDR management meetings as required under HDR's QA/QC and risk management program
- Weekly project meetings (1hr duration)

### **Client Meetings**

- Client update meetings, approximately every 3 months via phone

## **TASK A RAW WATER CONVEYANCE**

To convey water from the proposed RCC dam to the existing WTP, a raw water pipeline is included in the feasibility design. The proposed alignment in the feasibility design is to run along the existing Big Creek Road from the proposed new dam outlet to the existing intake pump station. The existing intake pumps also need to be modified to accommodate the new hydraulics of the new dam. This scope includes a raw water pipeline alignment and suggested modifications for the intake pumps based on the new reservoir levels.

### **A.1 Identify Operating Criteria**

HDR conducted a reservoir operation study for the new dam under a previous Task Order (TO6). The water surface elevations at the dam and flows driven by demand will provide the basis for the hydraulics of the new raw water pipeline and pump modifications. HDR will review the proposed reservoir operations and determine the operations criteria for the intake pumps. The following tasks will be performed:

- Finalize water surface elevations and flows based on the reservoir operation data
- Develop a baseline for the hydraulic calculations on how to operate the treatment plant (how many membranes are online at what criteria – summer/winter demands) and identify the different operating scenarios to be used for the hydraulic model.
- Investigate if the clearwell operating levels need to be adjusted at the WTP

- Analyze existing flow and pressure data from the treatment plant SCADA system to calibrate the model. The City will provide the necessary data in digital format (Excel or CSV files).

Currently, the contact time for the sodium permanganate is not enough to fully achieve its oxidation potential. The new raw water pipeline will provide enough contact time if the chemical injection point is being moved further upstream. HDR will develop a concept for the new sodium permanganate chemical injection point. The new location concept will take into account a potential location for a new injection house/shed, power requirements for the chemical pumps, accessibility for the delivery trucks, and injection connections to the new raw water pipe.

Findings from this task will be presented in the Technical Memorandum.

## **A.2 Perform Hydraulic Calculations and Hydraulic Profile**

HDR will develop the hydraulic profile based on the WTP operations determined in the previous task and the water level in the proposed reservoir. A hydraulic model will be developed to calculate pipe sizes and pump modifications of the existing intake pumps.

Findings from this task will be presented in the Technical Memorandum.

## **A.3 Determine Preliminary Pipeline Design Criteria, Alignment, and Profile**

The conceptual alignment developed during the previous feasibility design phase of this project will be confirmed or modified based on the calculations. Connection details for the piping at the intake pump station will be developed. The results from Tasks A.1, A.2, A.3, and A.4 will be summarized in a technical memorandum. The drawings from the feasibility design will be updated for presentation to the City (7 drawings). HDR will present the results to the City at a 2-hour video call.

Findings from this task will be presented in the Technical Memorandum.

## **A.4 Pump-sizing Calculations and Modifications to Pump Station**

The existing intake pumps that pump the water to the WTP need to be modified to match the new reservoir hydraulics. HDR will develop pre-design details for the modifications necessary at the existing intake pump station. A potential gravity flow bypass pipeline that was developed during feasibility design will be confirmed and refined with the reservoir operation concept developed in Task Order 6.

Electrical changes to the pumps and variable frequency drives (VFDs) will be evaluated on a conceptual level and documented in the memorandum for future implementation. The new chemical feed station and new dam will require new telecommunication lines. This task includes a preliminary sizing of the conduit that will have to be constructed from the existing treatment plant to the dam. The objective is to place the conduit along with the raw water pipeline into the existing road to avoid tearing up the road twice. The technical memorandum will include a suggested conduit size and number for the proposed telecommunication lines.

Findings from this task will be presented in the Technical Memorandum.



## **A.5 Develop Design Drawings and Specifications**

Design raw water pipeline and connections from the outlet structure at the dam to the existing intake pump station and create the plan and profile drawings to a draft 60 percent design level. The pipeline is anticipated to be about 3,600 feet long (0.7 mile long). It is estimated that 15 drawings will be developed for the raw water pipeline. City of Newport and Oregon Department of Transportation (ODOT) standard construction practices and details will be incorporated and used when applicable. It is estimated that six pump station modification drawings and preliminary construction specifications to a 60 percent design level will be developed. The preferred pipeline alignment identified in the previous Preliminary Design Report will be used as the basis of design. Refinements identified in previous scope tasks above will be incorporated into the design. Draft 60 percent drawings and specifications will be presented to the City for review and comments before final 60 percent drawings and specifications are developed. Without geotechnical information, cathodic protection design of the pipeline is not included in this scope of services other than basic elements such as those identified in the previous preliminary design report (i.e., standard ductile iron pipe coatings and linings as well as polyethylene encasement).

### **Deliverables for TASK A:**

- Presentation to the City of findings to confirm approach of operations for the pumps station modifications (2-hour video call)
- Draft Technical Memorandum summarizing design criteria, hydraulic calculations, and pump sizing/modifications (Word format)
- Final Technical Memorandum summarizing design criteria, hydraulic calculations, and pump sizing/modifications (PDF format)
- Draft 60% design drawings (PDF format)
- Draft 60% specifications (PDF Format)
- Final 60% design drawings (PDF format)
- Final 60% specifications (PDF Format)

## **TASK B ACCESS ROAD**

Publically accessible roads will be required for the new dam and existing residences located upstream of BC-2. Access roads must be adequate for construction access, and for permanent access to and operation of the dam and reservoir. A previously developed concept presented in the Feasibility Design Access Road Report will require realigning the existing access road and including at least two bridges to cross steep drainages. Because the existing road upstream of the proposed dam will be partially inundated by the new reservoir water boundaries, it will have to be relocated to allow travel around the new dam and reconnect upstream of the dam. It may include additional bridges depending on the alignment. A potential new road developed by the power company will also be taken into account for the alignment analysis.

This access road design task will further refine the previous conceptual design and help identify future bridge and retaining wall locations necessary for geotechnical investigations and structural engineering.

## **B.1 Develop Design Criteria**

The new road will match the existing road in being a single lane road with several turn out locations for oncoming traffic to pass. The road will not be paved, but remain a compacted gravel road.

HDR will work with the City and coordinate design criteria and standards (i.e., lane width, number of turn outs, slope stability, surfacing, safety, signage, stakeholder design requirements). One 1-hour meeting with the City will occur to develop design criteria for the access road. HDR will also conduct an environmental desktop review for publically available information on constraints.

Findings from this task will be presented in the Technical Memorandum.

## **B.2 Develop Plan and Profile and Calculations for Plan & Profile and Alignment**

A preferred concept and alignment for the access road will be developed using the contours from the previous topographical survey completed to provide a preliminary alignment not exceeding the grades and slopes determined in Task B.1. The proposed alignment will be field verified and staked by two HDR personnel. Two weeks are scoped to get the lower and upper access roads completed (approximately 3 miles of road). The City will provide at least one staff member to help clear paths through the terrain. HDR will obtain GPS coordinates along the staked route and meet with the City for one day on-site to confirm the proposed staked alignment.

## **B.3 Review Location of Bridges/Walls**

During the field work, general locations for bridges and retaining walls will be identified, along with field estimated lengths of bridges and retaining walls. This field obtained information will be incorporated into the road design criteria established under Task B.1. Bridges and retaining wall design is not part of this scope and will require detailed topographical survey in areas where the existing survey does not cover the area, and geotechnical investigation prior to design of the structural features. Findings from this task will be presented in the Technical Memorandum.

## **B.4 Develop Design Drawings and Specifications**

The field verified road alignment will be used as a basis to prepare preliminary horizontal and vertical alignments. Plans and profiles will be prepared in accordance with the design criteria, and to further identify the extents of bridges and retaining walls. It is estimated 20 drawings will be produced for the lower and upper dam access roads. Bridges and retaining wall will be noted on the drawings with approximate lengths and locations pending future survey and geotechnical investigations. Connections to the future dam and existing upper reservoir road cannot be determined as long as the dam is not designed. That portion of the road will be approximate and subject to change. Preliminary construction specifications will be developed.

HDR will prepare preliminary earthwork calculations for the road (excluding the connection points to the dam and upper reservoir access road). Balancing cut and fill volumes for the road will not be possible due to the need to meet design criteria for the road in the steep terrain.



### **Deliverables for TASK B**

- Site meeting with City for confirm road alignment staked in field (this will take place at the end of the field work)
- Draft Technical Memorandum for design criteria (Word format)
- Final Technical Memorandum for design criteria (PDF format)
- Draft preliminary plan and profile for Access Road (PDF format)
- Final preliminary plan and profile for Access Road (PDF format)

### **Assumptions for this Task Order**

- The duration of the project will be 18 months starting at Notice to Proceed.
- HDR is not responsible to create and submit performance reports required by the FEMA grant agreement. The City will be responsible for the performance reports.
- Field work will be performed on City property and no easement acquisitions are included.
- Permits, access permission and clearances, and access support will be provided by the City.
- Field work will be performed as noted. No additional field work is included in this scope.
- Geotechnical investigation or analysis is not part of this scope.
- Structural design of bridges, retaining walls, culverts, and pump/injection housing structures is not part of this scope.
- Site clearing of proposed road alignments will be performed by the City.
- No restricted hours or security requirements are anticipated to perform the field work.
- Hazardous or toxic waste materials will not be encountered.
- City to provide comments on draft documents within two weeks of receiving the documents.
- Topographic survey is not included in this scope.
- Environmental permitting is not included in this scope.
- Cost estimate, construction schedule/constructability is not included in this scope.
- Electrical components, power, and controls for the system are not included in this scope, but will be part of a subsequent scope.
- Specifications will not include Division 00 and Division 01.
- Specifications for the raw water pipeline will be in CSI 6-digit format.
- Drawings and specifications will be completed using HDR standards for the raw water pipeline.
- Drawings for the access road will be done using HDR standards.
- Specifications for the access road will be done using ODOT format.
- Landslide analysis for the road alignment is not part of this scope.
- The dam outlet structure and valve house connection to the raw water pipeline are not included in this scope.
- Culvert design and watershed flood flows, hydraulic modeling are not part of this scope.

## Next Steps for Design Completion

This current Task Order will provide a potential alignment for the access road and raw water pipeline that will need to be verified with geotechnical explorations and may require an expansion of the topographical survey. Future efforts to take the access road and raw water pipeline to 100 percent Design include the following:

- Perform geotechnical explorations at the proposed alignment for the access road and raw water pipeline to confirm suitability of the soils and foundation materials, as well as corrosion control design parameters for the pipeline.
- Conduct a landslide analysis to provide design parameters for the access road to prevent possible future landslides.
- Evaluate hydraulic watershed flows and rainfall intensities to determine culvert sizes and bridge sizing to avoid future flooding and washouts of the access road.
- Complete potential topographical survey to expand the area that may not have been covered in previous surveys. The proposed alignment of the access road will provide information whether this survey is necessary.
- Complete environmental surveys along the access road alignment to comply with the permitting process. This will include but is not limited to cultural resources survey, tree survey, and endangered species survey.

After completion of the above listed items, the design for the new access road and raw water pipeline can be progressed including completing the final connections to the new dam once the dam design is underway.



