September 15, 2020 Reference No. 11217253

Mr. John Friedenbach
Humboldt Bay Municipal Water District
P.O. Box 95
Eureka, CA 95502

Re: Scope of Services for Reservoirs Seismic Retrofit Project (3 tanks)

Dear John,

GHD greatly appreciates the Humboldt Bay Municipal Water District's (HBMWD or District) selection of GHD to provide engineering services for the Reservoirs Seismic Retrofit Project (Project). This letter includes GHD's scope and fee for providing professional engineering services for Phase 1 of the Project.

The District has three tanks: a 1 million-gallon (MG) tank at Korblex, a 2 MG tank at Korblex, and a 1 MG tank on the Samoa Peninsula. Phase 1 of the Project includes seismic analysis; development of structural retrofit options and recommendations; geotechnical investigation; environmental studies including wetlands delineation, biological evaluation, cultural investigation, a Limited Phase 1 environmental database report, and an asbestos and lead survey; and 60% design submittal for seismic retrofit of each of the three tanks. The scope of work for this project is based on the tasks outlined in the RFP will consist of the following tasks:

Scope of Work

The following tasks define our scope of work.

Task 1 – Project Management

This task consists of the overall project management and close coordination with the District, funding agencies, and permitting agencies. Project management includes internal project team member coordination as well as coordinating the activities of sub-consultants.

1.1 Attend and document design meetings

GHD will organize and facilitate project meetings with the District, and other stakeholders as needed. GHD will attend and report on the Project as necessary at the District Board meetings and will facilitate additional meetings as necessary with FEMA Staff, other permitting agencies, and other stakeholders. For the purposes of this scope, it is assumed that GHD will attend and facilitate up to three (3) meetings with the District staff and stakeholders. GHD will prepare agendas for the meetings, document minutes, and distribute minutes after the meetings.

1.2 Draft correspondence

GHD will prepare correspondence with District Staff, their Board, FEMA Staff, the permitting agencies, and other stakeholders as needed. Draft copies of the correspondence will be submitted to the District for review, and copies of all final documents will also be submitted to the District and copies maintained at GHD.

1.3 Manage subcontractors

GHD will contract with and manage the necessary subcontractors for this work. GHD will verify that the subcontractors have the necessary insurance and other requirements and that their invoices conform to the grant requirements to expedite reimbursement of grant funds.

1.4 Maintain project files

GHD maintains extensive records of District design files going back many decades to the early formation of the District. These files include both hard copy and electronic information. Maintaining these files for the District provides important information not only for the completion of the seismic retrofit project, but also to build the repository of historical reference information. GHD will provide the District with electronic copies of key documents during the project and will retain additional internal design information for long term reference for the District.

1.5 Manage and direct overall design and environmental teams

GHD will coordinate, manage, and direct the design and environmental teams throughout the Phase 1 work as necessary for the completion of the environmental work associated with this project. This includes development of scope, schedule, and budgets for the design and environmental teams with frequent check-ins with both internal staff members as well as with the District.

Task 1 Deliverables:

- Meeting agendas
- Meeting minutes

Task 2 – Quality Control and Quality Assurance of all Work Products

Quality Assurance (QA) is the plan for development of work products meeting the required quality standards and Quality Control (QC) is the process of checking the work products to verify that they meet appropriate standards. GHD's process is based on ISO 9000. GHD will build QA into the overall plan and approach to the work and QC checks into the process so that all deliverables are appropriately reviewed prior to delivery. GHD's process includes planned Quality Control checks and standard review forms that are completed by the reviewer and project manager and are included in the permanent files for the District.

Task 3 – Grant Administration

3.1 Coordinate the FEMA Hazard Mitigation grant administration with FEMA and/or CalOES and District staff

GHD will coordinate with staff at FEMA and CalOES as well as with District Staff for administration of the Hazard Mitigation Grant, and conduct other meetings, conference calls, and coordination as required to help facilitate the continued smooth execution of the grant.

3.2 Confirm scope of the project is consistent with scope defined in the grant application and/or agreement

GHD will direct the development of the project to be consistent with the approved scope and grant program. GHD will regularly coordinate with program staff regarding project scope and as needed will request scope confirmation on required project elements that may not explicitly be included in the scope.

3.3 Confirm compliance with the grant program requirements and funding agreement

GHD will review all grant requirements with the District and will coordinate activities with District staff to assist the District complying with funding agreements.

3.4 Complete Quarterly Status Reports for submittal to CalOES documenting progress of the project

GHD will complete the quarterly progress reports required under the grant and submit them to the District for review and submittal to OES. It is assumed that overall grant closeout requirements will be addressed under Phase 2.

Task 3 Deliverables:

- Quarterly status reports

Task 4 – Geotechnical Investigation

4.1 Complete borings and analysis to support the tank retrofit design

Crawford & Associates (CAInc), as a subconsultant to GHD, will conduct a geotechnical investigation for the project. This task will include:

- Desktop review of available geotechnical data for the two sites
- Coordination with GHD on boring locations and project objectives
- Visit the site to mark our boring locations for Underground Service Alert (USA),
- Obtain the required County Environmental Health boring permit.
- Site reconnaissance
- 2 borings (1 at each site) to 50 feet depth
    - Engineer/Geologist will direct the sampling and log the borings. At a minimum, we will sample at 2.5-foot intervals in the upper 10 feet and 5-foot intervals thereafter using a split spoon sampler. The drilling contractor will advance the borings with a rubber-tired, truck-mounted drill rig using 6-to 8-inch-diameter hollow- or solid-stem augers and/or mud-rotary techniques. Standard Penetration Testing and Modified California sampling will be

performed within the borings with a 140-pound automatic hammer to obtain samples and blow count information. Visual soil classification will be performed on all samples.

- CAInc will perform the following laboratory tests, as appropriate, on representative soil samples obtained from the exploratory boring:
  - Moisture content and dry density
  - Grainsize analysis
  - Direct shear and/or unconfined compressive strength
  - Consolidation
  - Plasticity Index
- It is assumed that:
  - Rights of entries, if needed, will be provided by the District
  - Work hours will be unrestricted weekdays from 7 am to 5 pm
  - Traffic control will not be needed.

4.2 Prepare geotechnical report summarizing the findings of the investigation

CAInc will perform engineering analysis to determine geotechnical design parameters and provide recommendations for:

- Samoa site seismic design parameters:
  - Since the site is likely to have a potential for liquefaction and be classified as a Site
  - Class F, a site-specific response spectrum per ASCE 7-16 requirements including
  - PGAm will be developed, including:
  - Establish a shear wave velocity profile for the upper 100 feet of the site
  - Determine the probabilistic maximum considered earthquake (MCE)
  - ground motion using 5% damped acceleration and a 1% in 50-year
  - collapse potential
  - Determine the deterministic MCE ground motion based on 84th percentile,
  - 5% damped spectral acceleration
  - Compare the probabilistic and deterministic ground motion to determine
  - the site-specific MCE ground motion (lower of the two at each period)
  - Determine the site-specific response spectrum
  - Determine the design response spectrum
  - Determine site-specific design spectral acceleration parameters
- Korblex sites: Typical seismic design parameters will be developed (assumes that a site-specific seismic hazards analysis is not required and exceptions for ASCE 7-16 apply)
- Allowable bearing capacity and lateral resistance based on the existing foundation details
- Liquefaction and seismic settlement estimates.

Following data review and field investigations, laboratory tests will be conducted on samples collected as appropriate. A geotechnical data report will be submitted to the District. The data report will summarize the findings of the investigations including geologic and fault maps, boring logs, seismic design parameters, allowable bearing capacities, liquefaction settlement estimates, liquefaction mitigation measures, and recommendations for tank foundations and anchoring. CAInc will coordinate with the design team during plan and specification development on geotechnical topics and review the plans and specifications prior to the 60 percent submittal.

Task 4 Deliverables:

- Draft Geotechnical Data Report
- Final Geotechnical Data Report

Task 5 – Preliminary Engineering Design

5.1 Prepare preliminary design documents to provide information needed for completion of the NEPA/CEQA process

Scope of work is included with Task 6.

5.2 Propose initial structural analysis of each reservoir, determining the current seismic requirements for each

DB Gaya, as a subconsultant to GHD, will measure shell and roof thicknesses for all three tanks. The thickness measurements will be used as part of the seismic analysis. The seismic assessment of the three tanks will be performed in accordance with the requirements of AWWA D100 and 2016 California Building Code (CBC). The seismic portions of the AWWA standards are derived from ASCE 7 and are based on the Maximum Credible Earthquake (MCE) for the tank location. MCE motion is defined as an event with a 2 percent probability of exceedance within a 50 year period (recurrence interval of approximately 2,500 years). Site specific ground acceleration values and response spectra for each tank site will be obtained from the USGS Earthquake Hazards Program website.

5.3 Design new foundations and the seismic hold down anchors

Following the seismic analysis conducted under Task 5.2, GHD will develop design calculations for foundations and anchors for the three tanks, as required.

5.4 Analyze the structural stability and design other retrofits required to resist seismic forces

Following the seismic analysis conducted under Task 5.2, GHD will document the various distress modes for the three tanks. GHD will then develop alternatives for retrofits including preliminary opinion of cost estimate for each option. The calculated deficiencies, retrofit options, and alternative analysis will be documented in a draft Basis of Design Technical Memorandum (TM). District comments will be incorporated and a final Basis of Design TM will be submitted including recommendations.

5.5 Create the 60% plans and specifications for the project

Using the TM as the basis of design, GHD will develop 60% design plans and specifications. See table below for planned deliverables including anticipated drawing sheets. After the District's review, GHD will conduct a 60% design review workshop to discuss the design progress and District's comments and facilitate consensus on the plans and specifications.

Task 5 Deliverables:

I	Draft Basis of Design Technical Memorandum	
II	Final Basis of Design Technical Memorandum	
III	60% Design Drawings	
	1	Title Sheet
	2	General Notes, Abbreviations
	3	Korblex Site Plan
	4	Samoa Site Plan
	5	Samoa Site Section
	6	Samoa Site Details
	7	Structural Notes, Design Criteria and Inspection Schedule
	8	1 MG Korblex Foundation Plan
	9	2 MG Korblex Foundation Plan
	10	1 MG Samoa Ground Improvement Plan
	11	1 MG Samoa Foundation Plan
	12	1 MG Korblex Typical Section
	13	2 MG Korblex Typical Section
	14	1 MG Samoa Typical Section
	15	2 MG Korblex Roof Plan
	16	1 MG Samoa Roof Plan
	17	Foundation and Anchor Details
	18	CP Notes and General Details
	19	1 MG Samoa CP Plan
IV	60% Design Technical Specifications	
		Steel Tank
		CP System
		Coating
V	60% Design Opinion of Probable Construction Cost	
VI	Structural Calculations	

Task 6 – Environmental

6.1 Special Studies

GHD will perform special studies and prepare associated documentation required for CEQA and NEPA compliance. Based on anticipated project impact areas, GHD will conduct a site-specific sensitive plant survey, wetlands delineation, sensitive plant community mapping, and a cultural resource study of the project area in support of the CEQA permitting for the project. To document potential impacts, a wetlands, biological and cultural resource survey will be conducted of the Area of Potential Effect (APE), which will

be determined as a part of the Preliminary Engineering Design. The APE/survey area will consist of the anticipated disturbance area for the two tanks at Korblex Hill and the one tank on the Samoa peninsula.

Wetlands Delineation

A wetlands delineation will be completed for the Area of Potential Effect (APE). Utilizing Global Positioning System (GPS) capability on a high accuracy Trimble handheld Global Navigation Satellite System (GNSS) device, the GHD wetlands team will investigate the Project Area to map wetland boundaries that meet the definition of both the U.S. Army Corp of Engineers (USACE), and the California Coastal Commission (CCC, for the Samoa tank site only). The wetlands delineation will follow the CCC criteria (one-parameter approach) when inside the Coastal Zone, and the three-parameter approach from the USACE Wetlands Delineation Manual (USACE 1987) and Regional Supplement to the USACE Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (USACE 2010) throughout the project area. Vegetation and soil data will be collected at transects across the presumed wetland boundary with two plots (upland/wetland) per transect (intermediate plots may be placed without collection of data as appropriate). Soil pits will be dug to approximately 18 inches. Data on soil color, texture and redoximorphic features will be collected. Data on hydrologic conditions will be collected if observed.

Vegetation data collection will consist of listing the five dominant species at each plot. The species will then be classified as to whether or not they are wetlands indicators, using the most current standard reference for plant wetlands indicators: National Wetland Plant List: Western Mountains, Valleys, and Coast 2012 Final Regional Wetland Plant List (Lichvar 2012). The list classifies plants based on the probability that they would be found in wetlands, ranging from Obligate (almost always in wetlands), Facultative/wet (67% to 99% in wetlands), Facultative (34% to 66% in wetlands), Facultative/up (1% to 33% in wetlands) to Non-indicator (less than 1% in wetlands). Plants not listed are included in the uplands category. If 50% or greater of the dominant plant species at each plot are classified as either Obligate (OBL), Facultative/wet (FACW), or Facultative (FAC), the vegetative mix is determined to be hydrophytic (wetland plants).

A determination of the wetland boundary will be made based on soil, hydrology (if present), and vegetative parameters (three-parameter approach) as well as the presence of any one parameter (one-parameter approach) inside the Coastal Zone. This could result in separate wetland boundary lines for each of the jurisdictional agencies where the project is within the Coastal Zone (USACE, Coastal Commission). A determination of the wetland boundary will be made based on either soil, hydrology (if present), or vegetative parameters (one-parameter approach) or on all three (three-parameter approach), as applicable. Once wetland and upland characteristics are determined for each transect, data points will be collected on the wetland boundary. A wetlands delineation report will be submitted to the District.

Biological Evaluation

GHD will perform a biological evaluation and perform a database search, reconnaissance survey, and sensitive plant community mapping to evaluate special-status plants and wildlife species that may occur in the project APE according to the California Department of Fish and Wildlife's Natural Diversity Database (CNDDB), the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants, and lists provided by the U.S. Fish and Wildlife Service and National Marine Fisheries Service. The biological evaluation will focus on potential impacts to wildlife as well as the following key topics:

Sensitive Plant Community Mapping

GHD will consult the most recent version of the California Natural Diversity Database (CNDDB) for a list of sensitive habitat types/natural communities that may occur in the project area as provided by the California Department of Fish and Wildlife (CDFW). GHD will further evaluate potential sensitive habitat types within the project vicinity and map potential sensitive habitats using a GPS Trimble unit or tablet PC. These communities will be classified using A Manual of California Vegetation, by Sawyer, Keeler-Wolf, and Evens (2009). The mapped sensitive habitats can be used for basis of decision-making with regard to potential impacts associated with the project construction. Since the Samoa peninsula tank is in the Coastal Zone, this mapping and analysis will also cover Environmentally Sensitive Habitat Areas (ESHA). The biological evaluation will also consider if sensitive wildlife can be found in the APE. Protocol level wildlife surveys are not anticipated to be needed.

Sensitive Plant Survey

A botanical survey will be conducted in the spring and summer (March, April and June, and/or July) by a qualified GHD botanist (two visits to each site is anticipated). The survey will entail a botanical site inventory of vascular plant species. The species inventory will be conducted by walking the site and recording plant species. The site visits will be conducted at an appropriate season to locate flowering individuals.

It should be noted that the Phase 1 grant deadline is March 17, 2021. However, there are many sensitive plant species that bloom after this date. To perform adequate botanical surveys to be used in completing the NEPA and CEQA processes, it is recommended to request a Phase 1 grant extension until July 15, 2021. This would provide sufficient time to perform the required surveys during the appropriate time of year and develop associated reports. Alternatively, if the District does not wish to pursue a grant extension, a report on initial survey results could be developed, with follow-up surveys and an additional report recommended at a later time.

6.2 Cultural Resources Investigation

Roscoe and Associates, as sub-consultant to GHD, will conduct a cultural resources investigation of the Area of Potential Effects (APE). The objective of this cultural resources investigation is to identify previously documented and undocumented cultural resources. This will be accomplished by conducting background historic research, correspondence with knowledgeable individuals and tribes, an intensive pedestrian field survey, and preparation of an Archaeological Survey Report (ASR) per professional reporting standards.

This project is subject to regulatory compliance with applicable CEQA and NEPA requirements and potential oversite from federal agencies which would require compliance with Section 106 of the National Historic Preservation Act (NHPA). This cultural resource survey is designed to satisfy these environmental requirements by identifying and recording cultural resources within the project APE and offering a preliminary significance evaluation of the identified cultural resources. If needed, recommendations will be designed to protect resources integrity.

Pre-field research will include conducting background and archival research at local libraries, historical societies, and any other repositories that might contain information about the project area. A formal

records check of the APE with a 1/2-mile radius will be conducted at the Northwest Information Center (NWIC), the regional office of the California Historical Resources Information System located in Rohnert Park, CA. All relevant documents will be reviewed and information pertinent to the project area will be included in the report. Roscoe and Associates will conduct consultations with the Native American Heritage Commission and local Native American tribes throughout the duration of the investigation.

The field survey will consist of an intensive pedestrian reconnaissance (10 meter transects) of the APE. All previously recorded and newly identified historic period or prehistoric cultural resources will be documented on DPR 523 series archaeological site records to a standard consistent with the Department of the Interior guidelines for recording historic resources. This is a Phase I – cultural resources investigation; no collecting and no ground disturbance exceeding ten centimeters below ground surface will be conducted.

An ASR detailing the regional prehistory, ethnographic/historic background, Native American consultation, study methods, findings and recommendations will be prepared. Maps will be provided showing the cultural resources survey area, any archaeological site locations, and historic imagery.

6.3 Hazardous Materials Investigations

Hazardous materials investigations will be performed as described below.

Limited Phase 1 Environmental Database Research (EDR) Review Memorandum

A limited Phase 1 investigation will also be conducted at the project sites to evaluate potential environmental impairment issues in connection with project. GHD will review provided Environmental Database Resource Inc. (EDR) reports generally consistent with the ASTM 15-13 Standard of Practice for a Phase I Environmental Site Assessment (ESA).GHD will review the following: Sandborne fire insurance maps, aerial photographs, and topographic maps to identify historical property use. A review of environmental cleanup liens and/or activity and use limitations (AULs) connected with the property will also be conducted.

The information generated from the above sources will be compiled into a memorandum (memo) describing any Recognized Environmental Conditions (RECs), Historical Environmental Conditions (HREC's), Business Environmental Risks (BERs) and related potential environmental impairment issues in connection with the Project Site. GHD will present findings resultant from the analysis in memo figures supporting EDR review results.

An ASTM compliant Phase I ESA is not resultant from this scope as GHD will not perform field site visits for this task, conduct interviews to investigate the history of the sites, perform a Freedom of Information Act (FOIA) request, or analyze provided data to independently assess or confirm the recommendations contained in the EDR reports.

Asbestos and Lead Survey

GHD will conduct an asbestos and lead hazardous materials assessment (survey) of the tanks, piping, infrastructure, and foundations potentially impacted by planned project work. GHD will perform a single

limited sampling survey of suspect asbestos containing materials (ACM) and identified lead containing paints/coatings potentially impacted by project work. GHD will collect up to 100 asbestos samples and 60 surface coating samples (20 per tank) for laboratory analysis. Suspect samples will be collected, chain of custody forms will be completed, and laboratory analysis will be completed.

Asbestos and Lead Survey Assumptions:

- Safe access to all areas of the project site is to be provided by the District as needed, to complete this SOW within the specified time and number of site visits, with any required access arrangements being secured by the District prior to GHD's arrival onsite.
- The District will provide a boom lift (as required)
- Sampling of material(s) located in inaccessible areas is excluded, including, but not limited to material(s): encased in concrete, located within permit-required confined spaces, associated with energized/pressurized systems, and/or located underground.
- Sampling of other potentially hazardous materials, except those materials explicitly included in this SOW, is excluded from this scope and fee. Sampling of soil, naturally occurring aggregate, water, or soil vapor is excluded from this SOW.
- GHD will make a concerted effort to limit damage done to the tanks while collecting bulk samples; however, minor damage to some tank components will be unavoidable. GHD shall not be held responsible for minor damage and/or repairs potentially resultant from sampling.
- Any necessary regulatory permits, approvals, and/or notifications (including any applicable fees) are the responsibility of the District, thus are excluded from this SOW.
- Potholing (soil investigation) of tank subsurface soils for petroleum hydrocarbons is excluded from the current SOW.

GHD will produce a single written asbestos and lead assessment report based upon the data collected at the project site. The report will include a synopsis of the project, the assessment findings, site figure(s) noting locations of collected samples, a tabulated summary of any identified hazardous materials, and an overview of the applicable hazardous material regulations.

6.4 Environmental Documentation

Consistent with the phasing of the Project outlined in the Grant, CEQA/NEPA documentation will be developed as part of Phase 2.

Task 6 Deliverables:

- Draft and Final Wetlands Delineation Report
- Draft and Final Biological Evaluation Report
- Draft and Final Sensitive Plant Community Mapping Report

- Draft and Final Sensitive Plant Survey Report
- Draft and Final Cultural Investigation Report
- Draft and Final EDR Review Memorandum
- Draft and Final Lead and Asbestos Report

Additional Studies

Based on the current understanding of the nature of the project, no additional studies are anticipated to be required by the Coastal Commission, FEMA or CalOES. If additional required studies are identified during Phase 1, they will be completed during Phase 2.

Anticipated Permit Requirements

Based on the development of the configuration of the retrofit project and anticipated construction impact and the findings of the environmental process, the anticipated permit requirements will be identified. This identification step will be initiated in Phase 1 so that permit agencies can be engaged in the process early in Phase 2. The applications for required permits will be completed during Phase 2.

Professional Service Fee

GHD will provide the above-described scope of services at rates based on the rate schedule previously agreed upon between GHD and HBMWD on a time and materials basis per the summary of fee by task as shown below.

Task	Description	Cost
1	Project Management	$4,200
2	QA/QC	$6,300
3	Grant Administration	$6,500
4	Geotechnical Investigation	$66,200
5	Preliminary Engineering Design	$150,900
6	Environmental	$66,300
	Total	**$300,400**

Schedule

GHD proposes to complete the tasks associated with this project according to the following schedule assuming a contract execution date of September 24, 2020:

- Kick-off Meeting: October 1, 2020
- Site Recon and Shell Thickness Measurements: October 6, 2020
- Geotechnical field investigation: October 23, 2020
- Draft Basis of Design Technical Memorandum: November 13, 2020
- Draft Geotechnical Data Report: December 4, 2020
- Final Geotechnical Data Report: January 15, 2021
- Draft 60% Design Submittal: January 29, 2021
- Final 60% Design Submittal: March 10, 2021
- Environmental Studies and Reports: July 15, 2021.

It should be noted that the Phase 1 grant deadline is March 17, 2021. However, there are many sensitive plant species that bloom after this date. To perform adequate botanical surveys to be used in completing the NEPA and CEQA processes, it is recommended to request a Phase 1 grant extension until July 15, 2021. This would provide sufficient time to perform the required surveys during the appropriate time of year and develop associated reports. Alternatively, if the District does not wish to pursue a grant extension, a report on initial survey results could be developed, with follow-up surveys and an additional report recommended at a later time.

Assumptions

This proposal is limited to the tasks as outlined in the scope of work above. The following considerations and assumptions are included in our project proposal:

- Topographic survey, if required, will be conducted during Phase 2 of the Project
- Potholing for underground utilities, if required, will be conducted during Phase 2 of the Project
- Consistent with the phasing in the grant application, CEQA documentation will be prepared during Phase 2 of the Project
- It is assumed that site grading and paving design will not be required
- It is assumed that piping and below ground utility design will not be required
- Electrical and SCADA design for the tanks are not included
- Dive inspections of the tank will not be conducted as part of this Project
- See the Asbestos and Lead Survey assumptions provided in Section 6.3.
- Final grant closeout requirements will be addressed under Phase 2

We value our long-term relationship and look forward to the opportunity to assist the District with this project. If you have any questions, please do not hesitate to contact us.

Sincerely,

GHD

Steve McHaney, PE
Project Manager

Nathan Stevens, PE
District Engineer

September 14, 2020 Reference No. 11215127

Mr. John Friedenbach
Humboldt Bay Municipal Water District
P.O. Box 95
Eureka, CA 95502

Re: Proposal for Collector 2 Rehabilitation Project

Dear John,

We are pleased to submit this proposal to the Humboldt Bay Municipal Water District (HBMWD or District) to provide engineering services for the Collector 2 Rehabilitation Project. This letter contains the scope, fee, and schedule for the tasks associated with the project.

Background

The District is working on a phased rehabilitation of each collector and replacement of all the laterals in all of the collector wells and has successfully completed rehabilitation on Collectors 1/1A and 3. The District was awarded a $600,000 grant from the North Coast Resource Partnership, 2018/19 IRWM grant solicitation to focus on the next phase, which is rehabilitation of Collector 2. For Collector 2, up to four new stainless steel laterals will be projected from the existing caisson. Cores will be cut through the sides of the existing caisson so the new laterals can be projected out horizontally into the surrounding aquifer. For the Collector 1/1A and 3 projects, the location of the new laterals was determined through the use of a geophysical survey around the collectors, which was used to locate bedrock and give a picture of the various geological layers in the vicinity of the collector. Data from previous studies and geophysical surveys can be used in part for Collector 2 and can be supplemented with boring data gathered in the vicinity of Collector 2, but this data will need to be supplemented with additional, new geophysical/geotechnical data that is specific to the proposed new lateral locations. One of the issues with the Collector 1/1A and 3 projects was the need to collect of good, real world location and elevation information for the existing laterals and valves. This was supplemented with a diver survey of the collector as part of the Collector 1/1A project, and a survey of the various deck elevations, collector bottom and surrounding ground surface elevations. It is recommended that this be conducted on Collector 2 as well. This data will then be used to develop a Basis of Design Memorandum, and a bid package including drawings showing the locations for the proposed laterals and a performance specification for their installation. CEQA compliance and permitting consultation will also be required and is included in this scope of work.

Scope of Work

The following tasks define our scope of work.

Task 1 – Preliminary Design and Investigations

GHD will perform investigations to determine locations in the collector that would be well-suited for the new laterals, determine preferable projection angles for the laterals, and develop a Basis of Design Memorandum that summarizes the results of the investigation. All of this information will be used to develop preliminary design drawings to satisfy grant deliverable requirements.

Task 1.1 – Dive Survey

GHD will contract with MM Diving to perform a dive survey of Collector 2. Information to be captured will include distance from the valve deck to the floor, distances from the floor to the centerline of the laterals, horizontal measurements to the center of the laterals relative to the ladder, lateral diameters, presence and condition of valves, flanges, plugs, or other appurtenances, distance that pumps are off the floor, and locations of construction joints. It is assumed that the District will assist the dive crew with required access to the collector.

Deliverables:

- The information from the dive survey will be incorporated into the Basis of Design Memorandum and design drawings for the project.

Task 1.2 – Historic Data Review and Lateral Layout

GHD will review existing construction data, inspection data, previous geotechnical borings, previous groundwater modeling results, and any other existing available data to determine where there are potential locations to install additional laterals in Collector 2 in plan view and in elevation view. GHD will also determine lateral projection angles that will result in high production with minimal aquifer drawdown.

Deliverables:

- The results of this review and analysis will be incorporated into the Basis of Design Memorandum and design drawings for the project.

Task 1.3 – Topographic Survey

A limited topographic survey will be performed by Gutierrez Land Surveying to aid in the design for the project and provide a reference for documenting elevations of the existing lateral tiers and new lateral tier in Collector 2. Four monitoring wells (MW-1 through MW-4) were previously installed between Collectors 1 and 2. MW-4 is the closest to Collector 2 and was previously surveyed. It is assumed that either MW-4 or Control Point 501 from the annual Mad River Cross Sections Survey can be used for survey control. The topographic survey will determine elevations at the valve and motor decks for Collector 2, as well as ground shots near the collector. It is assumed that the District will assist the survey crew with required

access to the collector.

Deliverables:

- Topographic survey data will be incorporated into the design drawings for the project.

Task 1.4 – Water Disposal Assessment

The disposal of the drilling and development water (construction water) poses some technical and permitting issues that could have significant cost implications and influence the CEQA and permitting phase of the work. There are two general options for water disposal: creation of a detention/percolation pond in Park 1, or discharge into the Pump Station 6 forebay and flow through a silt curtain to a surface water discharge. Both options would require some type of sediment removal prior to discharge. It may be preferable to use the Pump Station 6 forebay for discharging clean water from the initial pump tests, but it is unclear whether the regulatory agencies will allow this. A percolation pond will be used for discharging sediment-laden construction water. GHD will review past performance of the percolation pond during the Collector 1/1A project to determine if discharging to the Pump Station 6 forebay will be required for this project. The next task is to evaluate feasibility, permitting implications, and associated costs for both options.

As a part of this task, GHD will research the applicable regulatory and permitting requirements to ensure we fully understand them prior to engaging the various regulatory agencies. We will then consult with California Department of Fish and Wildlife (CDFW) personnel to determine what option(s) they would likely permit and what the permitting requirements for them would be (potentially a 1600 Stream Bed Alteration Permit). We will also consult with the North Coast Regional Water Quality Control Board about the potential requirement for a 401 permit for the selected alternative, and with the Army Corps of Engineers about whether a 404 permit is required. We will schedule and facilitate a site visit with these permitting agencies if required.

Deliverables:

- The results of this assessment will be incorporated into the Basis of Design Memorandum as described below.

Task 1.5 – Basis of Design Memorandum

The information that is developed during the other Phase 1 tasks, as well as information gathered during the Geophysical Assessment (see Task 3), will be used to develop Draft and Final Basis of Design Memoranda that are limited to the following:

- Summary of dive survey results
- Summary of historic data review
- Evaluation of existing site data and previous project screen sizing to establish anticipated range of new lateral screen sizes.

- Evaluation of expected effects of lateral replacement on well yield and efficiency.
- Information regarding preferred locations and projection angles for new laterals in Collector 2
- Summary of the water disposal assessment and permit requirements
- Recommended water disposal plan
- Opinion of probable construction cost estimate

Deliverables:

- Draft Basis of Design Memorandum for District comment
- Final Basis of Design Memorandum

Task 1.6 – Preliminary Design Drawings

After completing the Basis of Design Memorandum, GHD will develop 30% design drawings consisting of a cover sheet showing project location, a site plan showing existing conditions and new lateral locations in plan view, and a section drawing showing existing conditions and new laterals in elevation view.

Deliverables:

- Two hard copies (11 x 17) and PDF version of 30% design drawings

Task 2 – CEQA Documentation & Permitting

GHD will prepare the required CEQA and permitting documents for the lateral installation at Collector 2. We are optimistic that a Notice of Exemption is all that will be required for CEQA, similar to when the laterals were installed at Collector 3 and Collectors 1/1A. The only uncertainty is whether CDFW would require a Mitigated Negative Declaration to issue a potential 1600 Permit/Stream Bed Alteration agreement. It is unclear whether we will need a 1600 permit, a Regional Water Quality Control Board 401 Water Quality Certification, or an Army Corps of Engineers 404 permit. These agencies will be consulted as a part of Task 1.4. If any of the above agencies feel that a permit is not required, we will attempt to obtain a letter from them to that effect. If any of the agencies feel that a permit may be required, we will request meetings to discuss the District's existing Habitat Conservation Plan and our understanding of the regulations. The District will be included in those meetings. If the agencies still feel that a permit is required, we will complete the applicable permit application(s). We will also clarify with CDFW whether they will be satisfied with a Notice of Exemption as the CEQA document for this project. GHD will also consult with the California State Lands Commission as a part of this task, but it is assumed that a permit will not be required from them.

GHD will perform a sensitive biological community and wetlands reconnaissance survey as a part of this task. This will be used to provide biological clearance for temporary piping and percolation pond construction.

GHD's fee for the reconnaissance survey and for developing the CEQA Notice of Exemption will be

$8,000. If the permits mentioned above are required, the fee for this task could be increased up to $24,000. It is not anticipated that a Mitigated Negative Declaration (MND) will be required for CEQA. If a MND is required, GHD will negotiate an additional fee with the District for this work.

Deliverables:

- CEQA Notice of Exemption
- CDFW 1600, RWQCB 401, and Army Corps of Engineers 404 permits (if required)

Task 3 – Geophysical Assessment

A geophysical assessment will be performed by Norcal Geophysical Consultants. A combined approach of seismic refraction (SR), multi-channel analysis of surface wave (MASW), and electrical resistivity profiling (ERP) will be used to characterize the subsurface in the vicinity of Collector 2. Three 350- to 450-foot-long transects will be positioned near Collector 2 to gather subsurface information. It is assumed that District maintenance staff will perform brush clearing activities required for the geophysical assessment to take place.

Deliverables:

- Report describing the geophysical methods, procedures, and results. The report will include a site map and 2-D profiles showing subsurface data.

Task 4 – Develop Project Performance Monitoring Plan

GHD will develop a Project Performance Monitoring Plan that will include requirements for pre- and post-construction tests that will be used to gather data with respect to production capacity, drawdown, and turbidity. The plan will include goals and measurable objectives. It is assumed that the tests and associated reporting will be performed by the contractor and District staff.

Deliverables:

- Project Performance Monitoring Plan

Task 5 – Final Design Plans and Specifications

This task will consist of developing drawings, specifications and a bid package for the installation of laterals. We will develop construction drawings consisting of a cover sheet showing project location, plan and section view showing Collector 2, proposed lateral installation locations, and a site plan showing access, laydown, and construction/development water collection and disposal areas. We will then work with the District and use our past experience to develop the specifications and contract documents for the lateral installation. We are not proposing to develop a specialized drilling methodology, but will develop specification language that ensures that the laterals are installed in such a method to ensure they stay horizontal within one pipe diameter and meet water production capacity and quality criteria outlined in the specifications.

Deliverables:

- Two hard copies (11 x 17 for drawings) and one PDF version 90% plans, specifications, and contract documents for District review
- Two hard copies (11 x 17 for drawings) and one PDF version “Issued for Bid” plans, specifications, and contract documents for Board review and approval prior to issuing for bid.

Task 6 – Bid Phase Services

This task will consist of GHD providing assistance in the bidding and bid review process as well as contract awarding to the selected construction contractor. GHD will issue the bid package, providing copies to the Humboldt County, Shasta, and Sacramento Builders Exchanges, online services such as the CSDA website, and selected contractors. We will maintain a plan holders list, respond to contractor questions during the bid period, and issue any necessary bid addenda. GHD will facilitate the bid opening and review and prepare a recommendations memo on the final contract awarding for submittal to the Board. GHD will then assist in the contract award process and will prepare draft Notice of Award and Notice to Proceed documents for the District to submit to the selected Contractor. GHD will also work with the District and the contractor to obtain all the necessary bonds, insurance, and other contracting documents.

Deliverables:

- Electronic version of contract documents to Humboldt, Shasta, and Sacramento Builder’s Exchanges and selected contractors
- Plan holders list
- Bid addenda
- Final Award Recommendation Memo
- Notice of Award
- Notice to Proceed

Task 7 – Construction Management and Inspection

GHD will provide construction inspection and management services for construction of this project. We will organize and facilitate a construction kickoff meeting including scheduling the meeting with the contractor and District staff. GHD will prepare the agenda, lead the meeting, and prepare and distribute meeting minutes. GHD will also oversee and facilitate construction meetings throughout the construction process. It is anticipated that bi-weekly construction meetings will be held with the GHD project engineer, construction manager, contractor, and applicable District staff. GHD will prepare agendas and distribute meeting minutes. GHD will also provide onsite construction inspection throughout the construction process. It is anticipated that approximately half-time construction inspection will be required. GHD will document quantities and oversee construction to facilitate contractor conformance with the plans and specifications. GHD will also oversee and work with the selected contractor to help confirm their

compliance with project permitting and regulatory compliance. Field notes and photographs will be collected throughout the construction process and submitted to the District upon project completion. GHD will also review, respond, and track contractor submittals and requests for information (RFI) and will prepare and submit field work directives as necessary. GHD will also prepare, review, and track change orders and pay requests. We will also perform construction close-out services including preparing and overseeing the completion of the project punch list and recording the Notice of Completion.

Deliverables:

- Kickoff and regular construction meetings agendas and minutes
- Contractor submittal and RFI reviews and responses
- Contract change orders
- Field work directives
- Contractor payment request review and recommendations
- Construction observation field notes and photographs
- Contractor's project completion punch list
- Notice of Completion

Task 8 – Grant Reporting and Close-out

GHD will develop quarterly reports describing the work that has been completed, challenges, and strategies for reaching remaining project objectives. We will also use contractor plan sheet markups to prepare record drawings of the construction. GHD will also develop a final close-out report that includes a compilation of record drawings, construction photos, and other construction documentation limited to meeting agendas and minutes, construction observation reports, contractor pay requests, requests for information, change orders (if any), and field work directives.

Deliverables:

- Quarterly reports
- Final close-out report.
- Two sets of full-size record drawings in hard copy format, one electronic version in PDF format, and one electronic version in AutoCAD format in accordance with GHD's AutoCAD standards.

Professional Service Fee

GHD will provide the above-described scope of services at rates based on the rate schedule previously agreed upon between GHD and HBMWD on a time and materials basis per the cost estimated below. GHD has provided a breakdown of the total compensation into tasks, and such breakdowns are estimates only. GHD may reallocate funds between tasks. The breakdown of fee by task is summarized in the table

below:

Task	Description	Cost
1	Preliminary Design and Investigations	$60,000
2	CEQA Documentation & Permitting	$8,000[1]
3	Geophysical Assessment	$45,000
4	Develop Project Performance Monitoring Plan	$15,000
5	Final Design Plans and Specifications	$33,000
6	Bid Phase Services	$15,000
7	Construction Management and Inspection	$130,000
8	Grant Reporting and Close-out	$15,000
	Total	**$321,000**

Schedule

GHD is available to begin this scope of work upon receipt of a signed Professional Services Authorization from the District and will complete Tasks 1 through 5 by March 1, 2021. GHD will facilitate advertising the project for contractor bids and will perform other bid period services (Task 6) in March 2021 and will provide construction management services (Task 7) in accordance with the selected contractor's schedule.

Assumptions/Exclusions

This proposal is limited to the tasks as outlined in the scope of work above. The following assumptions and exclusions apply to this proposal:

1. GHD will not be providing any services not specifically mentioned in the above scope of work.
2. No new groundwater modeling will be performed as a part of this scope.
3. GHD will not be providing design services for new pumps, motors, or electrical equipment as a part of this project.
4. A Notice of Exemption will satisfy CEQA requirements for this project.
5. Permits will not be required from the California Department of Fish and Wildlife, the North Coast Regional Water Quality Control Board, the Army Corps of Engineers, or the California State Lands Commission.

[1] It is anticipated that the following permits will not be required: CDFW 1600 permit, Regional Water Quality Control Board 401 Permit, Army Corps of Engineers 404 permit. However, if these permits are required, the fee for this Task could increase from $8,000 to $24,000.

6. Vegetation clearing is a covered activity under the District's existing permitting documents with regulatory agencies, and no additional permits will be required for these activities.
7. The District will be responsible for any permit fees that may be required.
8. The District is exempt from obtaining a Humboldt County grading permit.
9. A permit will not be required from the State Lands Commission.
10. This scope does not include any reporting that may be required by regulatory agencies.
11. A cultural resources investigation will not be required.
12. No new geotechnical borings will be installed.
13. The accuracy of the geophysical assessment findings will be subject to specific site conditions and limitations inherent to the techniques used. The processes rely on measured responses to provide indications of physical conditions in the field and can be affected by onsite conditions beyond the control of the operator such as, but not limited to, buried metallic objects, soil types, soil moisture, and/or groundwater table depth.
14. Project performance monitoring and the associated report will be performed by the contractor/District.
15. GHD will not be responsible for any tasks related to the development of a Labor Compliance Program.
16. The budgets for construction management/inspection and grant reporting are given assuming a four-month construction schedule.
17. The District will administer the grant and submit reimbursement requests to the granting agency.
18. Services for this project including, but not limited to grant reporting and construction management/inspection will be performed from the execution of a contract through the completion of construction for the project.

As always, we appreciate the opportunity to assist you with this project. If you have any questions, please do not hesitate to contact me.

Sincerely,

GHD

Nathan Stevens, PE
District Engineer

cc: Chris Harris & Dale Davidsen, HBMWD
Patrick Sullivan, GHD