



## NAPA SANITATION DISTRICT

GHD - TASK ORDER No. 50

Browns Valley Trunk Project – Design (CIP #14703)

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

Issued under Professional Services Agreement dated 8/5/14.

To: GHD

### Project Description:

Final Design of the Browns Valley Trunk project.

### Description of Scope of Services to be performed by Consultant under this Task Order:

See Attachment 'A' – Scope of Services

**Description of Services to be Provided by District:** See Attachment 'A' – Scope of Services

**Deliverables:** See Attachment 'A' – Scope of Services

**Consultant Project Manager:** Matt Winkelman, PE

**Consultant Quality Control Manager:** Greg Wantanabe, PE

**Schedule to Perform Services:** See Attachment 'A' – Scope of Services

**Time & Materials Not-to-Exceed Cost Limit:** \$980,278

See Attachment 'A' – Scope of Services

### APPROVALS:

**GHD**

By: \_\_\_\_\_  
Authorized Representative

\_\_\_\_\_  
Date

**NAPA SANITATION DISTRICT**

By: \_\_\_\_\_  
Purchasing Agent

\_\_\_\_\_  
Date

NSD Account No.: CIP 14703



## ATTACHMENT 'A'

March 30, 2016

Mr. Andrew Damron, P.E.  
Napa Sanitation District  
1515 Soscol Ferry Road  
Napa, CA 94558

Our Ref: 8412040

**RE: Proposal for Engineering Services – Browns Valley Trunk Project: Design Phase, Napa, CA**

Dear Mr. Damron:

GHD Inc. is pleased to submit this proposal and scope of work for the design and bid phases of the Browns Valley Trunk Project. The scope of work is based on the conclusions and recommendations from the project's 2014 Alignment Study and 2015/16 Predesign, including direction received at the March 22, 2016 project meeting, wherein the project includes approximately three miles of 18- to 54-inch diameter gravity trunk sewer (the Browns Valley Trunk; BVT) between South Coombs Street at the West Napa Pump Station (WNPS) and Browns Valley Road at Thompson Avenue.

### Project Understanding and Background

The objective of the project is to construct a new trunk sewer (BVT) in West Napa that will alleviate hydraulic deficiencies within the collection system. The BVT will intercept and convey flows from the collection system at selected locations to the WNPS. See the attached Figure 1 for an overview of the proposed trunk sewer project alignment. The BVT will be sized to handle predicted future peak wet weather flow conditions (10-year design storm). Design will incorporate some restriction of collection system flows at the selected tie-in locations to provide the District with operational flexibility to manage peak flows that are conveyed to the WNPS. GHD will utilize the District's hydraulic model to assist in the design process for restricting flows at the tie-in locations. At the completion of the project, sanitary sewer flows in West Napa will be conveyed to the WNPS via the BVT and the existing collection system.

GHD anticipates that the District will continue to investigate and reduce sources of infiltration and inflow (I/I) within West Napa, both during and following the BVT project, as part of the District's I/I Program. Following completion of the BVT, the District will assess the hydraulic performance of the BVT and the West Napa collection system to determine if additional capital improvements are appropriate to manage peak flows in addition to I/I reduction achieved through collection system rehabilitation.

The project is planned for construction in 2017 and 2018, with the goal to be completed ahead of planned City of Napa paving projects. Construction is anticipated to begin in South Coombs Street at the manhole in the street in front of WNPS and progress upstream. Community impacts from construction activities will be considered during design development, wherein the project team (District included) will conduct community outreach to communicate project information. Construction timing will also be assessed and constraints or sequencing requirements will be included in project documents to lessen impacts (i.e., timing for work in the vicinity of schools and the outlet mall).



The project will require encroachment permitting with the City of Napa and Caltrans. In general, GHD will prepare encroachment permit documents and facilitate the encroachment permitting process with both agencies. The District will attend meetings and review permit documents during the project.

Environmental review is included in a separate contract (GHD), wherein a Mitigated Negative Declaration (MND) will be prepared. Based on technical studies and preliminary environmental review for the project, the project will not be subject to resource agency permitting (i.e., California Department of Fish and Wildlife, Army Corps, Regional Water Quality Control Board), with the exception of the need for a construction Stormwater Pollution Prevention Plan (SWPPP). Project specifications will require that the contractor prepare a SWPPP to be used during construction. A Cal/OSHA tunnel classification will be required for the trenchless crossing of Highway 29.

Design documents will be submitted at the 50%, 90%, 100%, and final development stages. A buildability/constructability (BC) review will be conducted by a third party at the 90% design development stage. Comments from the BC team will be incorporated with District review comments.

Project funding may include State Revolving Fund (SRF) funds, which would require the preparation of application materials to be submitted to the State for review and approval. Depending on the funding terms, Value Engineering may be required by a third party. The scope of services includes optional tasks for assisting the District with the SRF process and Value Engineering.

## Subconsultants

GHD has teamed with the following subconsultants for this phase of the project. GHD will manage the work performed by its subconsultants and incorporate the findings and deliverables from each subconsultant into GHD's project deliverables. Subconsultants will each have a point of contact that will be directly responsible to GHD's project manager.

- ) McMillen Jacobs Associates (MJA): Geotechnical investigation and reporting
- ) Exaro Technologies (Exaro): Positive utility verification (potholing)

## Quality Assurance / Quality Control (QA/QC)

GHD will perform QA/QC review of all deliverables by our QA/QC Manager and senior engineering and construction management staff (constructability review) on the project team. QA/QC review time is incorporated into the various project tasks.



## Scope of Work

We are pleased to provide this proposal to the District for professional services on the Browns Valley Trunk Project. A detailed scope of work is provided below.

### Task 1 – Project Management

#### 1.1 Project Management

GHD will provide project management services during the project. The following summarizes our project management activities:

- ) Project coordination with the District and project team. Coordination will include meetings and progress conference calls as necessary to communicate key project issues as they develop during the course of the work.
- ) Project staffing requirements. Evaluate and assign staff as needed to meet project quality and schedule requirements.
- ) Project progress. Evaluate and track progress on scope, schedule, and budget. Prepare monthly project activity reports to be provided with each of our monthly invoices during the project. These reports will provide the District with a brief description of the activities completed during the previous month.
- ) Project Kickoff Meeting. GHD's project manager, project principal, and project engineer will attend a project kickoff meeting at the District to discuss the Project Work Plan.
- ) Project Work Plan. Develop a detailed Project Work Plan for the team to use as a basis for project execution. The Work Plan will be discussed with the District at the project kickoff meeting.
- ) Monthly Progress Meetings. GHD's project manager and applicable staff will attend a monthly progress meeting at the District. The purpose of the meetings is to discuss current and anticipated work items, project schedule, permitting coordination, etc. Some progress meetings may overlap with other planned project meetings (e.g., 50% review meeting).

#### Task 1 Deliverables

- ) Project Work Plan; Notes from the Kickoff Meeting; Monthly Progress Reports.

### Task 2 – Field Investigations

#### 2.0 Site Visits

Engineering staff will conduct detailed field visits as necessary for project scoping, design development, and to coordinate with District staff.

#### 2.1 Field Survey

GHD will conduct topographic survey of the project area and prepare a project base map for design development. In general, topographic survey will include the project corridor from South Coombs Street at West Imola Avenue to Browns Valley Road at Thompson Avenue. Surface features in the corridor located within the



back of walk will be captured as well as topographic features relevant to design, traffic handling, and community outreach beyond the back of walk (i.e., driveways; significant landscaping, trees, fences, grade breaks). Topographic survey will capture connecting roadways at intersections and features within parking lots relevant to traffic and pedestrian movements. Prior to the survey work, GHD will request that the District contact utility providers to field locate their facilities. The field survey will pick up visible utility markings. Ground shots will be taken at regular intervals along the project alignment to define the road profile. This information will be used to prepare typical road cross sections and further define the project corridor ground surface. Also prior to the field survey, GHD will research available survey point records at the City of Napa. These records will be incorporated into the plans and will be captured during the field work if the survey points can be reasonably located.

The following information will be referenced for the topographic survey: utility basemapping prepared during the project's Alignment Study; GPS survey of selected sewer manholes along the project alignment during the project's Predesign; and inventory of trees prepared by John Meserve as part of project environmental review.

Encroachment permitting and associated fees are not anticipated or included in project scope for topographic survey. GHD, or the District on GHD's behalf, will notify the City of Napa ahead of topographic survey work.

Horizontal and vertical control will be based on established Napa County benchmarks. Temporary benchmarks will be set at suitable locations along the project alignment for the Contractor's use during construction. Vertical datum will be NGVD 29. The conversion factor from NGVD 29 to NAVD 88 will be provided in the plans.

Field survey notes, including topographic survey notes will be kept on file at GHD. Topographic survey base mapping will be used for the preparation of various project deliverables and not provided as a separate deliverable.

## Task 2.1 Assumptions

- ) Topographic survey at locations with more traffic may necessitate nighttime / off-hours work and/or the assistance from the District for traffic control.
- ) This scope of services does not include boundary or record survey, setting of monuments and property corners.
- ) This scope of services does not include obtaining or review of title reports or other similar documents that would be used to define property and right-of-way boundaries.
- ) The effort included for this task assumes initial topographic survey of the project corridor and two follow up site visits during design development.
- ) Temporary and permanent easements are not required for the project. The Contractor will be responsible for securing temporary staging areas.

## 2.2 Office Survey

GHD will use the topographic information collected from the field survey and the noted reference information to prepare a project basemap. GHD will also send information request letters to various utility providers to submit record drawings delineating the location of utilities. Previously prepared utility basemapping will be provided to the utilities for reference; utilities may only provide information updated since records were obtained during the Alignment Study in July 2014. The basemap will be used by the design team to prepare various plan and profile drawings for the project. Utility maps will be kept on file at GHD. Electronic copies may be sent to the District upon request.



## 2.3 Positive Utility Verification

It is understood that information on existing utilities provided by utility owners may not be complete (for example, vertical location of certain utilities may not be available) and cannot be verified during design. Utility information provided by the owners of the utilities will be compared against information obtained during the field visits to approximate the location of the existing utilities on the plans.

GHD has subcontracted with Exaro Technologies Corporation (Exaro) to conduct positive utility verification (i.e., potholing) in selected locations throughout the project corridor. Exaro and GHD will seek to verify the locations of critical and pressurized utilities (i.e., buried high voltage power lines, fiber optic lines or ducts, gas mains, water mains); however, the Contractor during construction may be required to verify locations and adjustments or relocation of existing utilities may be required. This scope of services includes vacuum excavation of up to 78 pothole locations to confirm underground utilities per furnished drawings. Potholes are assumed to be located in the roadway, in asphalt pavement. Potholing and associated backfill and restoration for concrete areas (i.e., pavement, curb/gutter/sidewalk/driveway) are not included in this scope of services. Locations will be backfilled with Class II aggregate and the pavement repaired with hot mix asphalt permanent patch. The pothole locations will be selected by GHD, though coordination with the District, at project kick-off (April 2016).

Exaro will provide photographs and tabular data for field measurements at each pothole location. Potholing results will be integrated into the 50% design submittal.

Work is assumed to occur during daytime work hours and the average pothole depth is assumed to be 5 feet.

Caltrans encroachment permitting will be required for potholing within Caltrans right-of-way. City of Napa encroachment permitting will be required for potholing within City right-of-way. Task 3 includes this permitting effort.

## 2.4 Geotechnical Investigation and Reporting

GHD has subcontracted with McMillen Jacobs Associates (MJA) to conduct geotechnical subsurface investigations and reporting for the benefit of the design of the trunk sewer improvements. MJA will perform the following scope items:

### 2.4.1 Fault Research

Meet with and review recent and ongoing research by the USGS and/or the California Geological Survey (CGS) pertaining to the location of the West Napa Fault (the fault that ruptured area during the South Napa earthquake on August 24, 2014) relative to the project alignment. Review information provided by NSD regarding the condition of its pipelines in the area of the South Napa earthquake following the earthquake.

### 2.4.2 Highway 29 Crossing Research

Review maps, highway and overpass as-builts, and historical aerial photos of the Highway 29 crossing area from the USGS, CGS, Association of Bay Area Governments, and as provided by Caltrans and the City of Napa.



### 2.4.3 Geotechnical Investigation – Open-Cut Trenching

Review maps, highway and overpass as-builts, and historical aerial photos of the Highway 29 crossing area from the USGS, CGS, Association of Bay Area Governments, and as provided by Caltrans and the City of Napa.

The proposed project includes approximately 15,680 lineal feet of open-cut trenching. This length would require 32 geotechnical test borings based on the standard 500-foot spacing of borings for studies of gravity sewer pipeline constructed by open-cut trenching. GHD has already completed a total of 10 test borings and/or piezometers to depths between 4.5 and 24.3 feet below ground surface at various locations along the project alignment. Six of these 10 test borings will be used in place of the six of the corresponding 32 geotechnical test borings. Accordingly, MJA will complete a total of 26 geotechnical test borings for open-cut trenching portions of the project alignment based on the locations and depths of GHD's completed borings and/or piezometers. The depth of each geotechnical test boring will extend to a minimum of 5 feet below the invert of the planned pipeline at the proposed location of the test boring and based on anticipated invert depths, which vary from 8 to 21 feet below ground surface. Therefore, geotechnical test borings will vary between minimum depths of 13 and 26 feet deep. Location for borings to be determined prior to commencing with City permitting. MJA will review available records for historic creek beds in consideration of positioning project borings.

Geotechnical exploration along open-cut trenching portions of the alignment is based on an assumed daily production rate of four 5-inch diameter continuous solid-stem flight auger borings to minimum of 5-feet below invert, to a maximum total of 80 vertical feet drilled in a day. Geotechnical exploration includes the following:

- ) Application for encroachment permit from the City of Napa.
- ) Application for drilling permit from Napa County.
- ) USA locates.
- ) Professional traffic control, assuming flasher-board equipment and one man dedicated solely to traffic control (not two dedicated flagman).
- ) Drilling, sampling, backfilling, and drill cuttings disposal.
- ) Physical laboratory testing (unit weight, moisture content, particle gradation, Atterberg limits, unconfined compressive strength, direct shear). The number and type of tests will depend on sample quality and soil type.
- ) Laboratory tests for soil corrosivity or environmental contamination are not included in this scope of services.

The daily unit cost for drilling the geotechnical test borings for the open-cut trenching portion of the project alignment is valid for the following assumptions, and will need to be increased during the investigation if exceptions to the assumptions are encountered:

- ) The City and County will allow four test boring locations to be included in one permit.
- ) No permits or rights of access are required other than County drilling permit and the City encroachment permit. Other permits, rights of access, or additional County or City inspection costs (including standby time for inspection or keys to unlock gates, etc.), if required, are not part of the scope and budget, and will need to be added.
- ) The daily rate for traffic control is based on the assumption that the City will require no more than one in three test boring locations be provided with professional traffic control during drilling, and that traffic





control at all other locations can be provided during drilling by the placement of a few static cones and signs by the field engineer/geologist logging the test borings.

- J Four test borings to 5-feet below invert, and up to a daily maximum of 80-feet, can be accessed, completed and backfilled using a rubber-tired, truck-mounted mobile B-24 drill rig using 5-inch diameter continuous solid stem augers in one 12-hour day (includes mobilization and demobilization).
- J Disturbed and "undisturbed" soil samples will be taken on average at 5-foot vertical intervals.
- J There is no sampling/drilling refusal (e.g., in manmade obstructions like concrete).
- J Drilling is permitted between 7:00 AM and 5:00 PM; however, City permitting may not allow for equipment start-up / excessive noise until after 7:00 AM.
- J Traffic control plans, if required by the City, can be photocopies of pertinent illustrations from the State Manual of Traffic Control Plans. Also see other traffic control assumptions described in the preceding list.
- J Contaminated soil or groundwater is not encountered. If any unusual vapors, odors, or visual contamination are noticed during the drilling, the drilling will stopped, backfilled with grout, and the suspected drilling cuttings will be drummed and labeled for the District.
- J At the end of drilling, the test borings can be backfilled with grout and capped with cold patch asphalt, non-shrink grout or cuttings as allowed by the permits. Saw cutting or hot patching, if required, is not included in this scope of services.
- J The removal of USA paint markings is not required.
- J Water will be made available by the District to fill drill rig water tanks.

#### 2.4.4 Geotechnical Investigation – Trenchless Crossing

Geotechnical investigation for the trenchless crossing of Highway 29 includes the following:

- J Two geotechnical test borings up to 50 feet deep; one at each end of the crossing.
- J Application for encroachment permit from the City of Napa.
- J Application for drilling permit from Napa County.
- J Second or "double" Caltrans permit for one of the two borings.
- J USA locates.
- J Professional traffic control, assuming flasher-board equipment and one man dedicated solely to traffic control (not two dedicated flagman).
- J Drilling, sampling, backfilling, and drill cuttings disposal.
- J Physical laboratory testing (unit weight, moisture content, particle gradation, Atterberg limits, unconfined compressive strength, direct shear). The number and type of tests will depend on sample quality and soil type.
- J Laboratory tests for soil corrosivity or environmental contamination are not included in this scope of services.

The following assumptions were made in developing the unit cost:

- J No permits or rights of access are required other than County drilling permit, City encroachment permit, and Caltrans (Caltrans for one boring location only). Other permits, rights of access, or additional City, County, and Caltrans inspection costs (including standby time for inspection or keys to unlock gates, etc.), if required, are not part of the scope and budget, and will need to be added.





- ) The District will provide the first or "parent" portion of the Caltrans double permit to which MJA will apply for the second or "double" portion of the permit.
- ) The two 50-foot deep geotechnical test borings can be accessed, completed and backfilled using truck-mounted drilling equipment.
- ) There is not sampling/drilling refusal (e.g., on boulders or manmade obstructions like concrete).
- ) Disturbed and "undisturbed" soil samples will be taken on average at 5-foot vertical intervals.
- ) Drilling is permitted between 7:00 AM and 5:00 PM; however, City permitting may not allow for equipment start-up / excessive noise until after 7:00 AM.
- ) Traffic control plans, if required by the City or Caltrans, can be photocopies of pertinent illustrations from the State Manual of Traffic Control Plans.
- ) Contaminated soil or groundwater is not encountered. If any unusual vapors, odors, or visual contamination are noticed during the drilling, the drilling will be stopped, backfilled with grout, and the suspected drilling cuttings will be drummed and labeled for the District.
- ) At the end of drilling, the test borings can be backfilled with grout and capped with cold patch asphalt, non-shrink grout or cuttings as allowed by the permits. Saw cutting or hot patching, if required, is not included in this scope of services.
- ) The removal of USA paint markings is not required.
- ) Water will be made available by the District to fill drill rig water tanks.

#### 2.4.5 Trenchless Memorandum

MJA will prepare a trenchless memorandum for the Highway 29 crossing. The memorandum will present trenchless methods and shaft types considered feasible for the crossing lengths, depth, and both current and historical site and ground conditions identified in the geotechnical investigation. The memorandum will provide recommendations for preferred shaft and trenchless construction methods.

#### 2.4.6 Cal/OSHA Tunnel Classification Support

MJA will compile a trenchless methodology write-up, geologic profile and geotechnical borings to accompany the District's Cal/OSHA application for a tunnel classification.

#### 2.4.7 Environmental Review Support

MJA will prepare a trenchless methodology write-up related to environmental issues. The write-up will consist of a method description; a summary of the type of equipment used for shaft construction; anticipated equipment noise levels from shaft and tunnel construction; equipment layout at shaft locations; and anticipated daily vehicle trips in support of the trenchless operations.

#### 2.4.8 Caltrans Encroachment Permit Application Support

MJA will provide a trenchless write-up based on Caltrans Encroachment Permitting requirements for construction. The write-up will include the following, where applicable:

- ) Drilling Fluid Management Plan
- ) Slurry Ports and Contact Grouting
- ) Product material, length, and diameter wall thickness



- ) Detailed casing calculations confirming ability of casing to withstand installation and service loads
- ) Composition of drilling fluids, viscosity, and density
- ) Drill fluid pumping capacity, pressures, and flow rates
- ) Type of tracking system (e.g., laser)

#### 2.4.9 Draft Geotechnical Investigation Analyses and Report

MJA will analyse findings from the geotechnical investigation and provide design recommendations for open-cut trenching and for the trenchless crossing of Highway 29.

*General* – Describe composition and consistency of soils sampled, and the geologic, groundwater, and seismic conditions and hazards of the project alignment such as liquefaction, fault rupture, ground shaking. Provide CBC seismic design site classification.

*Open-Cut Trenching* – Perform analysis and provide criteria and design recommendations based on planned pipeline depths, including anticipated ground behavior, safe temporary excavation slopes, preliminary Cal/OSHA soil classification, clearance from existing utilities and protection of existing utilities, shoring guidelines including preliminary shoring pressure and surcharge pressure diagrams and vibration impacts, construction design groundwater level and construction dewatering criteria, pipe bedding and trench backfill materials and compaction specifications, trench dams, suitability of native soil as trench backfill, backfill at existing utility crossings and the use of CLSM as pipe embedment and trench backfill, pipeline external loading, E'c for flexible pipe design, anticipated differential pipeline settlement and trench backfill settlement, ground improvement, if needed, and street repaving.

*Trenchless Crossing* – Perform analysis and provide criteria and recommendations for design of trenchless crossings based on (1) the required tunnel zone profile and elevations, and (2) the trenchless methods and the casing size and type selected by the design team, including anticipated tunnel zone materials, grain size distribution, shear strength, design groundwater level, Tunnelman's Ground Classification and anticipated ground behavior, mixed-face and change-in-face conditions. Provide conclusions and design recommendations regarding soil strength and ability to support trenchless equipment weight and vertical steering corrections, ground improvement along and below the tunnel zone, tunnel face stability, tunnel overcut limitations, systemic ground surface settlement estimate as a function of overcut, soil strength and cover depth, surface and subsurface settlement monitoring, contact grouting, minimum depth of cover and slurry/lubricant hydro-fracture risks, minimum separations from existing utilities and critical utility monitoring, shaft construction as a function of soil and groundwater conditions, break-in and break-out portal stability and ground treatment/dewatering at launching and receiving shafts, preliminary estimate of jacking forces, jacking thrust block and/or reaction wall design parameters, ground treatment behind reaction walls, shaft recompression settlement upon backfilling, and definition of obstructions for contract documents.

#### 2.4.10 Final Geotechnical Investigation Analyses and Report

MJA will perform final analyses and finalize the geotechnical investigation report for the new trunk sewer following the District's 90% review and by incorporating/addressing review comments collectively provided from the District and GHD. This scope of services assumes that report finalization is based on draft review comments from the District and GHD being predominantly editorial in nature and not resulting from significant material changes in the planned project such as alignment changes or changes in stationing. The final report, or a



portion thereof, is intended to be provided with the contract documents. The geotechnical information provided with the contract documents may or may not be formally part of the contract (i.e., it may be provided as information only). This will be discussed during design development.

#### Task 2.4 Deliverables

- ) Draft geotechnical test boring logs will be provided in meetings and in the draft geotechnical investigation report. Final geotechnical test boring logs will be provided in the final geotechnical investigation report.
- ) Trenchless memorandum.
- ) Trenchless methodology write-up to accompany the District's request to Cal/OSHA for a tunnel classification.
- ) Trenchless methodology write-up geared to the environmental review of the trenchless method.
- ) Trenchless write-up to address Caltrans requirements.
- ) Draft and final geotechnical investigation report.

Deliverables will be prepared using Microsoft Word, AutoCAD, Excel, or Adobe Acrobat. Contract deliverables will be provided in electronic format. MJA performs an internal QA/QC of deliverable documents during the design process.

### Task 3 – Permitting and Community Outreach

GHD will be responsible for preparing and submitting the City of Napa and Caltrans encroachment permit applications and community outreach activities.

The following is based on review of available Caltrans right-of-way maps for the Highway 29 corridor:

- ) Old Sonoma Road and Freeway Drive: encroachment permitting will not be required for field investigations during project design; however, encroachment permitting will be required for construction activities (tunneling under Highway 29).
- ) 1<sup>st</sup> Street and Freeway Drive: encroachment permitting will be required for potholing field investigations during project design (not anticipated nor included in this scope of services for geotechnical field investigations); however, encroachment permitting will be required for construction activities (open cut construction through the southern portion of the intersection).

GHD will also prepare a Cal/OSHA application for tunnel classification for the trenchless crossing of Highway 29. Information prepared by MJA under Task 2.2 will be used to support the application.

GHD will assist the District with community outreach during design development. The scope of services is included in Task 3.2.

#### 3.1 Permitting

Encroachment permits will be required for the project as follows:

- ) During project design to facilitate field investigations for potholing and geotechnical investigation.
- ) During construction.



### City of Napa

For field work during design development, GHD's subconsultants will prepare encroachment permit (EP) application(s) for the City of Napa.

GHD and the District will be involved in the EP process with the City for field work during design development and in planning for the construction phase. GHD will begin coordination with the City for the construction contract at the 50% design development stage, with the intent to achieve concurrence from the City for the design prior to preparation of final contract documents. The selected contractor will be responsible for obtaining an encroachment permit for construction. GHD and a District representative will meet with the City to discuss design development, including meetings at the 50% and 90% design stages.

The District will sign and/or authorize the permit applications if necessary and provide fees associated with the permits (or fees will be waived by the City).

### Caltrans

Based on review of available Caltrans right-of-way maps during project scoping, this scope of services assumes that encroachment permitting with Caltrans will not be required for planned geotechnical investigation and potholing field work for the trenchless crossing of Highway 29.

Also based on review of available Caltrans right-of-way maps, this scope of services assumes that encroachment permitting with Caltrans will be required for planned potholing field work at the intersection of 1<sup>st</sup> Street and Freeway Drive.

Encroachment permitting will be required for construction activities within Caltrans rights-of-way.

GHD will begin coordination with Caltrans for the construction contract at the 50% design development stage, and the construction encroachment permit application will be submitted at the 90% design development stage. The District will sign and/or authorize the permit application and provide fees associated with the permit (or fees will be waived by Caltrans). GHD will prepare traffic control plans that are required by Caltrans for the EP application. One resubmittal is anticipated for the construction EP. GHD and a District representative will meet with Caltrans to discuss the construction EP application. MJA will assist GHD in addressing and preparing a response to review comments from Caltrans to the encroachment permit application for the trenchless crossing of the Highway 29 as submitted by GHD at the 90% submittal stage.

The Caltrans EP for construction is anticipated to be received following bid advertisement. The approved permit is anticipated to be included in the contract documents by issuance of an addendum during the bid phase. The selected contractor will use the District's EP as the basis for obtaining a double permit from Caltrans for construction.

## 3.2 Community Outreach

GHD will support the District for outreach to the community during design development, wherein the District is anticipated to take the lead for the outreach effort. The purpose of outreach is to inform the community of anticipated project timing and impacts. The following activities are included:

- ) Give up to two presentations to the District Board and the attending public to present findings from the design development. GHD will prepare presentation graphics.
- ) Attend up to three meetings with the public at locations to be determined during the project.



- )] Provide technical information to the District that could be posted on the District website, provided as a hard copy at the District office, or included in a District mailer.

Project specifications will include direction for the selected contractor to be proactive in community outreach prior to and during construction.

### Task 3 Assumptions

- )] Night work may be required by the City or Caltrans.
- )] Permitting will not be required for anticipated tree impacts along the project alignment. Anticipated tree impacts will be discussed with the City during design development and appropriate mitigation measures will be incorporated into the contract documents.
- )] Permitting with resource agencies (i.e., CDFW, USACE, RWQCB) is not included in the scope of services.

### Task 3 Deliverables

- )] Encroachment permit documents will be submitted to the District in electronic (PDF) format.
- )] Various documents and information for community outreach will be provided to the District as requested.

## Task 4 – Prepare 50% Contract Documents

GHD will prepare preliminary plans that will be used as the basis for the CEQA and permitting processes, and preliminary discussion with the City of Napa, Caltrans, and utilities. GHD will also prepare preliminary specifications, and a preliminary opinion of probable construction costs. MJA will review the trenchless-related plans and specifications and provide written review comments.

The latest sewer system hydraulic model will be used to define the hydraulic operating conditions at each of the six planned tie-in locations between the existing sewer system and BVT. Detailed design for each tie-in will be included with the 90% contract documents.

Preliminary plans will include plan and profile sheets for the trunk sewer alignment, preliminary details for the trunk sewer trench and manholes, typical road cross sections, and other preliminary information appropriate to define the scope of the project. Plans will show design intent, limits of work, and annotation for work items. Detailing for the various work items will generally not be included in the 50% submittal.

Preliminary specifications will include Division 2 specification sections; however, timing for receipt of the Draft Geotechnical Report may effect development of tunneling, shoring, soil stabilization, and dewatering specifications. Those specification sections will be completed for the 90% submittal.

GHD will meet with the District following submittal of the 50% submittal to discuss the project findings to date. The goal of this meeting is to receive District comments and reach concurrence on the design approach for the project. District comments will be consolidated into one review response document. Comments will be reviewed by GHD and incorporated into the deliverables for upcoming project tasks.



#### Task 4 Deliverables

- ) GHD will submit to the District three (3) hard copies and one electronic copy (PDF) of the 50% plans, preliminary specifications, and preliminary opinion of probable construction costs.
- ) MJA's Draft Geotechnical Investigation Report will be provided with GHD's 50% submittal.

#### Task 5 – Detailed Design

Task 5 includes the preparation of plans, technical specifications, and engineer's opinion of probable construction costs for the new trunk sewer within one contract document. MJA will review the geotechnical-related trenchless and open-cut related plans and specifications and provide written review comments for the 90%, 100%, and Final submittals.

##### 5.1 Prepare 90% Contract Documents

Documents will be prepared for trunk sewer improvements. The following provides a list of the anticipated 55 plan sheets for the project, which is subject to change to meet project needs:

- ) General, including survey control: 5 sheets
- ) Civil (pipeline plan and profile): 33 sheets
- ) Civil Details: 8 sheets (including standard plans, details, profiles, enlarged views)
- ) Traffic Handling/Constraints: 9 sheets (plan over plan)

GHD will prepare 90% plans using the project basemap prepared for the 50% submittal. The 90% plans will be based on comments and recommendations provided by the District for the 50% submittal. The 90% submittal will be submitted to the District and the Buildability/Constructability (BC) consultant for review. These plans will also be used as the basis for encroachment permit submittal to the City of Napa and Caltrans.

It is assumed that the District will distribute 90% documents and return two consolidated comment review packages, one for the District review and one from the BC consultant. This scope of services does not include preparation of response documents for the District and BC reviews; however, GHD will provide confirmation that review comments have been reviewed and incorporated into the project if/as applicable.

Plans will be prepared at a scale of 1"=20' at 22"x34" (unless otherwise appropriate and/or approved by the District). Traffic handling/constraints plans will be prepared at a scale of 1"=40' at 22"x34" (unless otherwise appropriate and/or approved by the District).

Specifications for the 90% submittal will be formatted for consistency with the District's standard specifications. GHD will provide supplemental technical specifications.

The 90% submittal will also include an updated engineer's opinion of probable construction costs, as revised based on comments and recommendations provided by the District for the 50% submittal and GHD's findings for the preparation of the submittal.

The latest sewer system hydraulic model will be used to define the hydraulic operating conditions at each of the six planned tie-in locations between the existing sewer system and BVT. The model will be used to define standard operating conditions at each tie-in location, as well as options to adjust or modify flows. GHD will prepare a summary memorandum that describes handling of flows at each location.



GHD and MJA will meet with the District and BC consultant to discuss the 90% submittal review comments.

#### Task 5.1 Assumptions

- ) Road rehabilitation outside of the trench section is not included in the project scope of services. The City of Napa is anticipated to rehabilitate various streets within the project corridor following completion of the trunk sewer project.
- ) Work associated with surface features affected by construction activities (i.e., paint and thermoplastic marks and legends, raised markers, valve covers) will be noted on the plan and profile sheets.
- ) Technical specifications will follow the CSI 16-division format.
- ) The District will provide GHD with its standard / front end specifications in electronic format for use in preparing project specifications.
- ) The District will provide standard plans, drawings, figures, etc., to GHD in electronic format for use in preparing project plans.

#### Task 5.1 Deliverables

- ) 90% full-size (22"x34") plans, front end and technical specifications, and 90% engineer's opinion of probable construction cost (6 hard copies and 1 PDF electronic copy).
- ) Tie-in Location Flows TM (6 hard copies and 1 PDF electronic copy).

#### 5.2 Not Used

#### 5.3 Prepare 100% Contract Documents

Prepare 100% plans, specifications, engineer's opinion of probable construction costs, and revised Tie-in Locations Flows memorandum. Revisions will be substantially based upon comments and recommendations provided by the District and BC consultant for the 90% submittal.

#### Task 5.3 Deliverables

- ) 100% full-size (22"x34") plans, front end and technical specifications, 100% engineer's opinion of probable construction cost, and Tie-in Locations Flows memorandum (3 hard copies and 1 PDF electronic copy).
- ) MJA's Final Geotechnical Investigation Report will be provided with GHD's 100% submittal, in order to address comments provided for the 90% submittal review.

#### 5.4 Prepare Final Contract Documents

Prepare complete set of biddable contract documents and final engineer's opinion of probable construction costs. Revisions will be substantially based upon comments and recommendations provided by the District for the 100% submittal. This scope of services does not include any submittals subsequent to the Final Submittal.

#### Task 5.4 Deliverables

- ) Final stamped/signed full-size plans (2 bond copies), stamped/signed camera ready specifications (2 paper copies), final engineer's opinion of probable construction cost (2 paper copies), and a CD





electronic copy of the final plans, specifications (PDF for plans, Word for specifications, Excel for engineer's opinion of probable construction costs). The District is anticipated to use the electronic copy of the plans and specifications for reproduction of documents during the project bid phase.

## Task 6 – Bidding Phase Assistance

This scope of services assumes that the District will advertise and provide administration for the project bidding phase. GHD will provide support to the District as follows:

- ) GHD's project manager and MJA's geotechnical lead will attend one (1) pre-bid meeting to field questions from interested parties. It is assumed that the District will prepare a written record of attendance and items discussed.
- ) Respond to questions during bid. GHD will respond to up to eight (8) questions from plan holders and document the responses. A spreadsheet detailing RFI submittals, responses, and tracking will be maintained. Questions will be routed to GHD from the District during the bid phase.
- ) Prepare addenda. GHD will prepare technical information for the District's use to prepare addenda. This scope of services assumes that the District will prepare two (2) addenda during the bid phase.
- ) Prepare conformed construction documents. GHD will incorporate addenda into a conformed set of plans and specifications.

## Task 6 Deliverables

- ) Handwritten notes will be provided (scanned to PDF) for meetings.
- ) Responses to questions, addenda, and conformed construction documents will be provided in electronic format. The District will be responsible for preparing copies of the bid phase and contract documents as needed.

## Optional Task 1 – SRF Loan Assistance

The District may pursue State Revolving Fund (SRF) funding for the project. GHD will assist the District in applying for SRF funding as follows:

- ) *General Information Package:* This scope of services assumes that the District will prepare the General Information Package and GHD will provide input include an updated construction cost estimate.
- ) *Technical Package:* GHD will provide assistance on the additional items necessary to complete the Technical Package. Many items are assumed to not be required or are not applicable. GHD's primary assistance for the Technical Package will be to prepare the Project Report (T1). Other items would be prepared by the District.
- ) *Environmental Package:* GHD will prepare the Evaluation Form for Environmental Review and Federal Coordination and prepare attachments E1.1 through E1.13 based on the MND and associated CEQA information that will be prepared for the project under a separate contract. Attachments address the Clean Air Act (E1.1) Coastal Barriers Resources Act (E1.2), Coastal Zone Management Act (E1.3), Endangered Species Act (E1.4), Environmental Justice (E1.5), Farmland Protection Policy Act (E1.6), Flood Plain Management (E1.7), National Historical Preservation Act (E1.8), Magnuson-Stevens Fishery Conservation and Management Act (E1.9), Migratory Bird Treaty Act (E1.10), Protection of



Wetlands (E1.11), Safe Drinking Water Act / Sole Source Aquifer Protection (E1.12), and Wild and Scenic Rivers Act (E1.13).

- J) *Financial Security Package:* GHD will assist the District with completing the Financial Security Package application requirements by providing technical information otherwise prepared for the project. The District will be required to provide and complete a majority of the package.

It is assumed that the State Water Resources Control Board Division of Financial Assistance would initiate consultation with applicable federal agencies.

This optional task also includes additional effort for incorporating SRF requirements into the contract documents and could be used to cover unanticipated effort regarding the SRF process or project funding.

GHD will not proceed with the work covered under this optional task without authorization from the District.

## Optional Task 2 – Additional Traffic Control and Field Work Activities

Additional effort may be required for planned field work during design development to address unforeseen field conditions, unanticipated traffic control requirements for geotechnical and potholing work, or other field work beyond the basic scope of services that is deemed appropriate to complete field work activities during design development.

GHD will not proceed with the work covered under this optional task without authorization from the District.

## Assumptions

- J) Corrosion design is not included in this scope of services.
- J) Preparation of a SWPPP is not included in this scope of services. The contractor will be required to prepare and administer a SWPPP during the construction phase.
- J) BVT will begin at the manhole in South Coombs Street in front of WNPS – SSMH No. 364. The pipeline downstream of this manhole that connects to the WNPS may be included in a separate, future project for the pump station.
- J) Plans will include general information and notes regarding bypass pumping. Technical specifications will provide anticipated bypass pumping flow rates from the latest hydraulic model, as well as various requirements for the bypass pumping systems. The selected contractor will be responsible for preparing and submitting detailed bypass pumping plans and calculations.
- J) Dewatering water is assumed to be discharged to the existing sewer system. The latest hydraulic model will be used to determine the available capacity for the existing sewer system. If anticipated dewatering flow rates would exceed the existing sewer system capacity, then dewatering water may be discharged to the new trunk sewer. Planning, permitting, and design for discharge to the stormwater system are not included in this scope of services.
- J) Trenchless construction at the intersection of Laurel Street / Kilburn Avenue / Freeway Drive may be recommended following review of information obtained during the 50% design stage. If recommended, trenchless construction would be intended to minimize impacts to utilities and traffic operations.
- J) Consultant is not responsible for damage to any USA member utilities not identified nor properly marked by USA at the ground surface.



- ) Geotechnical scope of work does not include corrosivity tests and corrosivity analysis of soil sampled from the test borings.
- ) The actual number and type of geotechnical laboratory tests will depend on the quality of soil samples retrieved during the geotechnical investigation. Additional tests would be an optional service.

## Services Not Included

The following services are not included in the scope of work:

- ) Preparing additional Bid Documents or Contract Documents for alternate bids or prices requested by the District for the project or a portion thereof.
- ) Determining the acceptability of substitute materials and equipment proposed during the bidding when substitution prior to the award of contracts is allowed by the Bid Documents.
- ) Assistance in connection with bid protests, rebidding, or renegotiating contracts for construction, materials, equipment, or services.
- ) Construction phase services.
- ) Other services performed or furnished by GHD not otherwise provided herein for in the scope of services.

## District Responsibilities

In addition to other responsibilities of the District as set forth in the scope of services, the District shall at its expense:

- ) Advertise and administer the bidding and award phases of the project. The District will attend the pre-bid conference, bid opening, partnering/pre-construction conference, and other job related meetings.
- ) Contract and administer the buildability/constructability consultant and review process.
- ) Provide labor compliance and funding administration as required by project funding, permit requirements, or other project requirements not provided in GHD's scope of services.
- ) Provide GHD with the findings and reports generated by the entities providing services to the District.

## Project Team

The following GHD Inc. personnel are assigned as project or technical leads for this project:

- ) Project Principal – Ted Whiton, PE
- ) Project Manager / Project Engineer – Matt Winkelman, PE
- ) Civil Engineer – Parastou Hooshalsadat, PE, PACP
- ) Quality Assurance / Quality Control (QA/QC) – Greg Watanabe, PE
- ) Geotechnical Engineer – McMillen Jacobs Associates (sub)
- ) Positive Utility Verification – Exaro Technologies (sub)

## Project Schedule

Engineering services will commence upon issuance of Notice to Proceed for this scope of work, which is anticipated on April 11, 2016 following the District's April 6, 2016 Board meeting. The estimated project



schedule is presented below. Note: timing for authorization to bid the project may precede receipt of the Caltrans EP for construction, which would necessitate issuance of an addendum during the bid phase.

Item	2016										2017				
	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	
NTP	★														
Potholing EP															
Geotechnical EP															
Topo Survey															
Office Survey															
Potholing															
Geotechnical Field Investigation															
Geotechnical Draft Report															
Update Utility Maps															
50% Design															
50% QA/QC															
Caltrans and City EP Coordination															
50% Submittal (with CEQA PD)				★											
50% Review															
Admin Draft CEQA MND Submittal					★										
Admin Draft CEQA MND Review															
Draft MND and 30-day Public Review															
90% Design															
90% QA/QC															
90% Submittal, incl. EP Submittals															
90% Review, incl. BC Review															
Receive Caltrans and City EP Comments															
Final MND Submittal															
Final MND Review															
100% Design															
100% QA/QC															
MND Approved															
100% Submittal, incl. EP Resubmittals															
100% Review															
Caltrans and City EP Received															
Final Design															
Bid Phase															
Construction NTP															
Construction (April 2017 - October 2018)															



## Engineering Fee

Compensation for services shall be on a time and materials basis for \$980,278, which is inclusive of basic and optional tasks. See the fee breakdown below and the attached detailed fee estimate. With a construction cost estimate of \$12.3 million, the engineering fee breaks down as a percentage of construction cost as follows:

Design Engineering, Surveying, and Bid Phase: \$485,549 (3.9% of construction)

Geotechnical, Potholing, Permitting, and Community Outreach: \$420,557 (3.4% of construction)

Optional Tasks: \$74,172

Project Total Fee: \$980,278 (8.0% of construction)

## Closing

It is assumed that upon approval of the scope of work for the engineering services for the Browns Valley Trunk Project, GHD and the District will enter into a contract after approval by the District Board at the April 6<sup>th</sup> meeting. The Notice to Proceed will be the date when the District signs the agreed-upon task order.

Please don't hesitate to contact me if you have any questions regarding the scope of work. I can be reached by email at [matt.winkelman@ghd.com](mailto:matt.winkelman@ghd.com) or by mobile phone at (707) 292-9875. Thank you for the opportunity to serve the Napa Sanitation District.

Sincerely,

GHD Inc.

A handwritten signature in blue ink, appearing to read "Alex Culick", written in a cursive style.

**Alex Culick, P.E.**

Principal

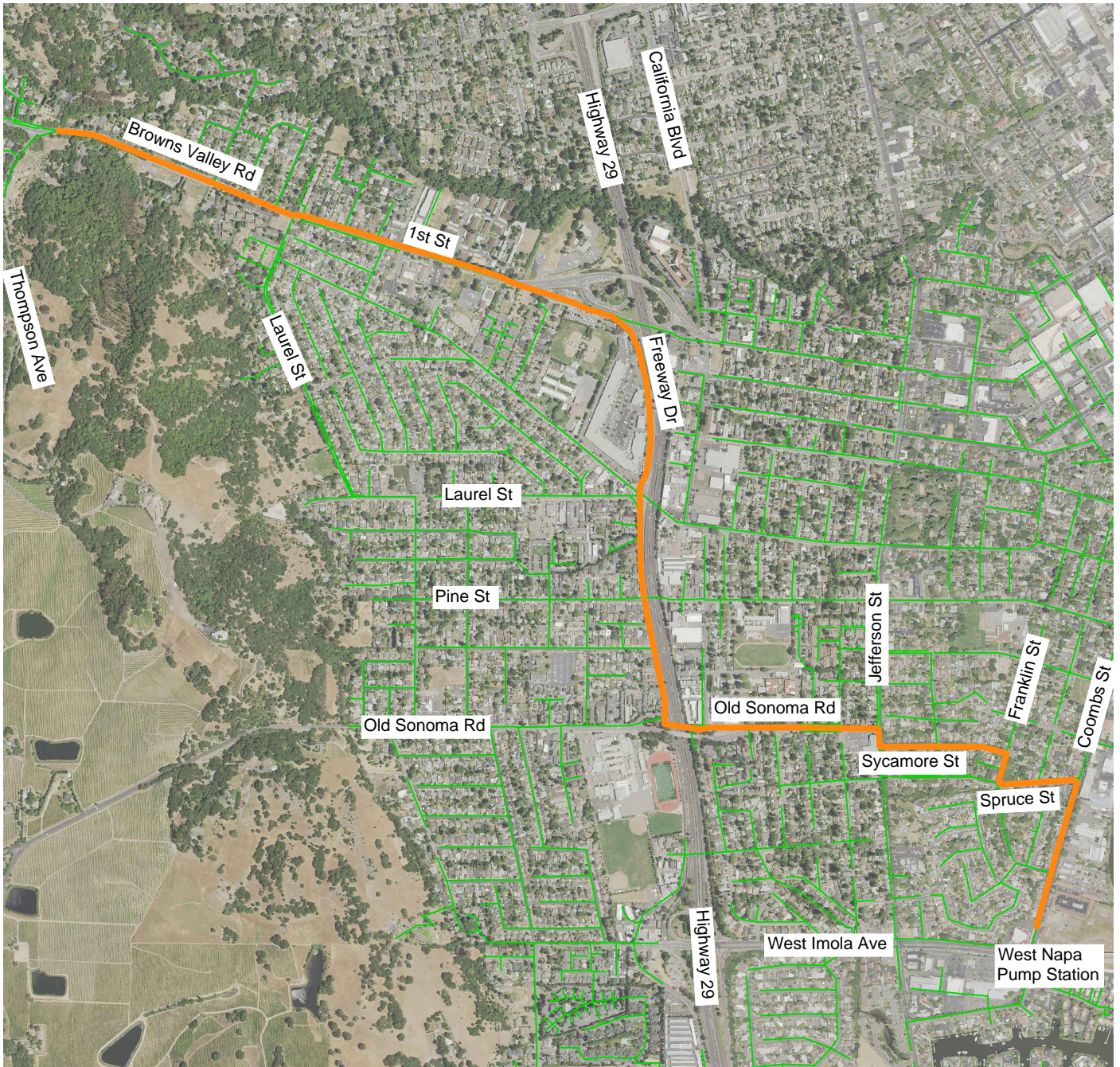
A handwritten signature in blue ink, appearing to read "Matt Winkelman", written in a cursive style.

**Matt Winkelman, P.E.**

Project Manager

Attachments:      Figure 1 – Proposed Trunk Sewer  
Fee Estimate Spreadsheet





### Legend

- Proposed Trunk Sewer
- Existing Sewer Pipes



Napa Sanitation District  
Browns Valley Trunk Project - Predesign

### Proposed Trunk Sewer

Job Number 8412040  
Revision  
Date March 2016

### Figure 1

2235 Mercury Way Suite 150 Santa Rosa California 95407 USA T 1 707 523 1010 F 1 707 527 8679 W www.ghd.com





**Client:** Napa Sanitation District

**Date:** March 30, 2016

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Job Number: 8412040

\*OTHER DIRECT COSTS include telephone, mileage, printing, photocopies and other miscellaneous direct expenses.



<b>Rates</b>		
Principal	Ted Whiton	\$ 265
QA/QC	Greg Watanabe	\$ 225
PM	Matt Winkelman	\$ 205
Senior PE	Matt Winkelman	\$ 205
PE	Parastou	\$ 150
Hydraulics PE	Adam Fisher	\$ 150
Transp. PE	Matt Wargula	\$ 150
Senior Scientist	Brian Bacciarini	\$ 140
LLS	Richard Maddock	\$ 145
CAD	Susan Dove	\$ 135
Admin	Elissa Overton	\$ 100