Exhibit A
City of Camas
North Shore Sewer Transmission System
Final Design Scope of Work
April 21, 2016

Project Understanding

This scope of work is for the final design of the North Shore Sewer Transmission System (NSSTS) and includes the development of 60 percent, 90 percent, and final Plans, Specifications, and Cost Estimates (PS&E), along with obtaining environmental and land-use permits.

The alignment, profile, and overall design will be based upon the preliminary design presented in the Preliminary Design Report and 30 percent design plans.

Scope of Work

Task 1 Survey and Mapping

Subtask 1.1: Topographic Survey

This task is for topographic survey to collect ordinary high water marks for culverts along Leadbetter Road, and to collect refined wetland flagging for the route areas outside of the roadway. It also includes contingency surveying for work requested, up to the fee associated with this task.

Subtask 1.2: Right of Way and Boundary Survey

This task is to collect right-of-way and boundary survey information.

- Research record survey information, (Plats, Surveys, Public Land Corners) along route.
- Calculation of centerline and right-of-way lines along routes.
- Locate all monuments within the construction zone
- Prepare and file a Preconstruction Record of Survey with Clark County
- Prepare and file an "Application for Permit to Remove or Destroy Survey Monument" with the WA Department of Natural Resources.

Deliverables:

- Copies of all survey records used to develop centerline and right of way lines;
- Copy of Preconstruction Survey (review and recorded);
- Copy of DNR permit (recorded).

Subtask 1.3: Easements

- Prepare temporary construction and permanent easements for the Lacamas Creek Community property, across the Camp Currie property, Pump Station 2 and Pump Station 3, the crossing through Lacamas Lake Park, and one additional property yet to be determined.

Deliverables:

- Legal descriptions with sketches for temporary and permanent easements.

Task 2 Environmental Services

Subtask 2.0: Project Management and Coordination

Harper Houf Peterson Righellis Inc. (HHPR) will support general project planning with the City via project team meetings, email, and teleconferences. This task also includes non-technical internal project activities, such as invoicing, throughout the project.

Subtask 2.1: Stream and Wetland Field Review and Report

Field/office data gathered and draft reports prepared during Phase 1 of this project will be used to prepare final a wetland delineation and stream OHWM report.

For this task, HHPR will:

Prepare one final wetland delineation report following USACE or Ecology format, as appropriate. This report will include:

1. Topographic map of the project area;
2. Relevant National Wetland Inventory mapping;
3. Clark County USDA soil survey mapping;
4. Site map showing wetland boundaries and the location of data points;
5. Complete set of field data sheets
6. Washington Natural Heritage Program data on rare plants and high quality wetlands;
7. WDFW priority habitat information.

Assumptions:

- The 30% design drawings and associated impacts will be used and no subsequent changes to design will change impacts or preliminary report.
- Final report will not exceed 25 pages (with required maps), not including appendices.

Deliverables:

- Final wetland delineation and stream OHWM report (one final electronic copy to Otak and the City).

Subtask 2.2: Joint Aquatic Resources Permit Application (JARPA) and Clean Water Act (CWA) Compliance

The draft Joint Aquatic Resources Permit Application (JARPA) and information from USACE meeting during Phase 1 of this project will be used to prepare the final JARPA for impacts to Waters of the US at up to six stream crossings will be prepared.

For this task HHPR will:

- Submit preliminary final JARPA (subtask 8.1) to USACE for review.
- Visit with USACE to review site and project.
- Finalize JARPA.

Assumptions:

- Engineering drawings, impact acreages and drawings showing same, Best Management Practices, and related design and construction information will be provided by Otak and other subcontractors.
- The 30% design drawings and associated impacts will be used and no subsequent changes to design will change impacts or preliminary report.
- Nationwide permit is applicable and Clean Water Act 401 is certified by Washington State Department of Ecology.
- Revisions to preliminary final by USACE will be minor in extent and editorial in character.

Deliverables:

- Visit with USACE to review site and project (preparation and site visit not to exceed 4 hours).
- Final JARPA (one final electronic copy to Otak and the City).

Subtask 2.3: Washington Department of Fish & Wildlife (WDFW) Hydraulic Project Approval (HPA)

The project plans to cross over the inlet to Round Lake; install new sewer line below several small streams along the route; and upsize up to six culverts under SE Leadbetter Road. The streams associated with those specific culverts will require a review for potential impacts to Waters of the State by WDFW.

For this task HHPR will:

- Submit final JARPA (subtask 8.2) to WDFW staff for a HPA.
- Email and telephone coordination with WDFW regarding submittal.

Assumptions:

- OHWM demarcations following Ecology's guidance are acceptable to WDFW.
- New and replacement culverts under the jurisdiction of WDFW will follow WDFW culvert criteria and no additional mitigation will be required.

Deliverables:

- Submit final JARPA (one final electronic copy to Otak, City, and WDFW).

Subtask 2.4: Endangered Species Act (ESA) Compliance

The draft ESA No Effect Letter prepared during Phase 1 of this project will be used to prepare the final No Effect Letter, which addressed all species listed for Clark County.

Assumptions:

- The listed species analyzed in the preliminary draft remain the same. No new listed species.
- No pre-consultation meetings with the agencies will be required.
- The project will result in no impacts to listed species, critical habitats, or Essential Fish Habitat, and a No Effect Letter will be sufficient to address ESA compliance.
- The 30% design drawings and associated impacts will be used and no subsequent changes to design will change impacts or preliminary report.
- Letter report will not exceed 10 pages (with required maps).

Deliverables:

- Final ESA No Effect Letter (one electronic draft to Otak, City, and USACE).

Subtask 2.5: Sole Source Aquifer Program Compliance

The draft EPA Sole Source Aquifer Checklist, based on supporting technical information or reports (such as, a hazardous materials report and hydraulic report) and project design information prepared during Phase 1 of this project will be used to prepare the final Sole Source Aquifer Checklist.

Assumptions:

- The project will not cause water quality impacts to the Troutdale Aquifer.
- The 30% design drawings and associated impacts will be used and no subsequent changes to design will change impacts or preliminary report.

Deliverables:

- Final Sole Source Aquifer Checklist (one electronic copy to Otak, the City, and USACE).

Subtask 2.6: SEPA Compliance

For this task HHPR will prepare a final Checklist based on the Phase 1 preliminary Checklist.

Assumptions:

- The City will act as lead agency and is responsible for processing of the SEPA checklist.
- The 30% design drawings and associated impacts will be used and no subsequent changes to design will change impacts or preliminary Checklist.

- All application and related fees will be paid by the City.

Deliverables:

- Final SEPA Checklist (one electronic copy to Otak and City and three paper copies to the City)

Subtask 2.7: Shoreline Master Program (SMP) Permit

A final Shoreline Application will be submittal to the City to address impacts to shoreline areas associated with Lacamas Creek and Lacamas Lake. The shoreline regulation incorporates elements of the Critical Areas and those will be addressed in the shoreline application, as applicable.

The Shoreline Substantial Development and Shoreline Conditional Use application will be based on supporting studies and reports including the wetland delineation report, ESA No Effect Letter, SEPA Checklist, hydraulics report, and geotechnical report. An application package, including the shoreline permit, JARPA, SEPA Checklist, detailed narrative, vicinity map, and development plans would be reviewed by the City and the Shoreline Management Review Committee, who will then forward a recommendation to Ecology for final approval.

Assumptions:

- Compensatory wetland buffer, habitat, or habitat buffer mitigation (including Oregon white oak) may be required and is expected to be related to the amount vegetation clearing and number and size of trees removed. Development of compensatory mitigation plans will be provided when impacts are defined (Phase 2).
- Final Checklist will not exceed 30 pages of text (without required maps), not including appendices.
- The City will act as lead agency and will be responsible for processing of the Shoreline application under its regulations. Additional effort to address and differentiate Clark County regulations and policies will be required.

Deliverables:

- Final Shoreline Application (one final electronic copy to Otak and the City and three paper copies).

Subtask 2.8: City and County Critical Areas and Significant Tree Permit

One final Critical Areas report, addressing both City and County ordinances, will be prepared for those resources impacted, but not addressed under the SMP. The Critical Area reports will addresses Significant Trees, for example CMC 18.31 identifies these as trees greater than 4 inches in diameter measured at the root collar and in critical areas (e.g., wetlands) or associated buffers as appropriate for the two jurisdictions.

Assumptions:

- Tree impacts between Wetland AB and the BPA easement will total less than 20 trees.

- Wetland buffers will end at the edge of the gravel road (per Clark County staff) along the Camp Currie alignment, thus none or very few (less than 10) trees impacted.
- Wetland buffers will end at the edge of the gravel shoulders of Leadbetter Road and NE 232nd Avenue, thus none or few (less than 10) trees impacted.
- The report will not exceed 30 pages (with required maps), not including appendices.
- City will act as lead agency and will be responsible for processing of the Critical Area application under its administrative process.
- Compensatory wetland buffer, habitat buffer mitigation (including Oregon white oak), or habitat is expected to be related to the amount vegetation clearing and number and size of trees removed. Development and processing of compensatory mitigation plans will be provided when impacts are defined (Phase 2).

Deliverables:

- Final Critical Area Report (one final electronic copy to Otak and City).

Task 3 Geotechnical Investigation

Task 3 identifies specific deliverables that the city of Camas at its discretion may elect to authorize Consultant to produce. Consultant shall only complete Task 7 if written (email acceptable) Notice to Proceed (NTP) is issued by the city Project Manager. The Not to Exceed (NTE) amount for completing this contingency task is only billable if authorized.

This task is for geotechnical engineering services that may be necessary to complete construction documents. It includes site reconnaissance, meetings, and reporting as requested, up to the fee included with this task.

Task 4 Cultural and Historic Resource Assessments

This scope of work is to perform additional cultural resource tasks prior to construction-phase tasks. The cultural resource studies are being done to meet Section 106 of the National Historic Preservation Act as the project will be reviewed by the U.S. Army Corps of Engineers (USACE). The archaeological studies will also need to meet compliance with the City's archaeological ordinance. The work will be done in accordance with Federal guidelines and Department of Archaeology and Historic Preservation (DAHP) standards.

Within the currently-defined project area it may not be possible to avoid some archaeological sites that were identified within the project Area of Potential Effect (APE) during cultural resources survey. Additional work will be needed in another area. Prior to issuing its permit, the USACE will request an inadvertent discovery plan (IDP) be prepared and approved. This task describes the three cultural resource tasks which will take place during Phase 2 of the project.

- Archaeological sites found along Leadbetter Road may extend within the construction area, based on survey-phase shovel testing. In-street probing of the adjacent areas under the pavement may allow a reduced monitoring effort during construction. The areas where monitoring or pre-construction testing in the road are recommended are at newly-recorded

sites 15/2366-9, -10, -11, -12, -14; and adjacent to previously-recorded sites 45CL944 and 45CL947.

- A portion of three archaeological sites cannot be avoided and the area of possible impact will need to be evaluated prior to construction. The three sites are in two different areas of the project.
    - Two newly-recorded archaeological sites are within Camp Currie, site 15/2366-1 and site 15/2366-7.
    - A newly-recorded archaeological site is within Lacamas Park, site 15/2366-16.
- An IDP and a monitoring plan, if monitoring will be recommended, will be requested by the USACE prior to issuing its permit, since the project crosses archaeological sites. Some of the sites are those we will recommend are not eligible for listing in the National Register of Historic Places (NRHP).

A 6-meter (m) (20-foot [ft]) wide corridor will be needed for construction along the proposed alignment within Camp Currie and Lacamas Park. Along Leadbetter Road, the construction and staging corridor may include the entire 12-m (40-ft) wide road right-of-way.

Subtask 4.1: Archaeological shovel tests to be excavated within Leadbetter Road

AINW proposes to test subsurface conditions for archaeological sites within Leadbetter Road by cutting up to 20 holes into the road pavement adjacent to seven different archaeological sites. Once the pavement cap and base are mechanically removed, up to 20 shovel probes will be excavated beneath the pavement to a depth of at least 50 centimeters (cm) (20 inches [in]). These tests will be used to verify whether there are archaeological deposits in the road that may be intact. For this proposal, it is assumed that these shovel probes will confirm that where archaeological deposits are encountered, the sites will not be eligible for listing in the NRHP, and that no additional archaeological fieldwork will be needed.

The results of the shovel testing will be provided as an addendum report, which will be a supplemental document to the cultural resources survey planned to be completed in the next few months. After approval of the draft addendum report by the project team, the document will be submitted to the USACE for review and its submittal to DAHP and Tribes. To meet the requirements of the City's archaeological ordinance, the report will also be submitted to eight Tribes and to the DAHP via certified mail; the transmittal letter will note that the project is being reviewed by the USACE for cultural resource compliance. The report will also be provided to the City as a PDF.

Subtask 4.2: Archaeological testing and evaluation within three archaeological sites

Based on the survey data, AINW will recommend additional fieldwork—controlled excavations—of areas at these three sites that cannot be avoided to evaluate those portions of the sites for listing in the NRHP.

Field Excavations

The proposed archaeological testing and evaluation of sites 15/2366-1, 15/2366-7, and 15/2366-16 includes excavation of up to 22 square 50x50-cm (20x20-in) units (or combinations of these units to make larger units) in the proposed construction impact zone. Eighteen test units proposed within sites 15/2366-1 and 15/2366-7 will reach an average depth of 60 cm (2 ft) below surface, and the proposed four test units at site 15/2366-16 will reach an average depth of 90 cm (3 ft) below surface. Excavation of the square test units will total up to 3.6 m3 (127.1 ft3) of deposits in the proposed construction corridor.

Excavation of the units will sample the archaeological deposits in order to characterize the archaeological materials present in the portion of the site that cannot be avoided during construction. The units will be placed within the proposed construction corridor in areas where the soil appears to be intact and where shovel tests appeared to have the greatest density of artifacts.

Test units will be excavated to the base of the archaeological deposits, which lie above the decomposing bedrock substrate of Camp Currie and Lacamas Park. Excavated sediments will be screened using nested 6.4- and 3.2-millimeter (¼- and ⅛-in) mesh hardware cloth. The excavation units will be mapped using a Global Positioning System unit. The stratigraphy will be documented in the field, and if archaeological features are encountered, they will be appropriately excavated.

Laboratory Processing of Artifacts and Samples

Recovered artifacts will be collected and bagged by provenience and taken to the AINW laboratory in Portland for cleaning, identification, analysis, and data compilation. If charcoal is found in features during the fieldwork, samples of charcoal will be prepared for radiocarbon dating. If obsidian debitage and tools are present, they will be analyzed to determine raw material sources and assess hydration measurements to determine the relative age of associated site deposits. Artifacts will be prepared for curation at the Burke Museum. Field documents will also be curated at the Burke Museum.

- Up to 10 samples will be submitted for radiocarbon dating.
- Up to 22 obsidian artifacts will be submitted for sourcing and hydration analysis.
- Collection of up to 2,200 artifacts is anticipated.

Report

The field and laboratory methods and findings will be compiled as a single report. Based on the findings, recommendations will be outlined regarding whether the areas of the two archaeological sites investigated may contribute to the significance of the overall sites. Updated resource forms and technical reports for the outside analyses, if any are done, will be appended to the report.

Draft and final versions of the report will be submitted. AINW will revise the report to address comments from Otak and the City. The report will be provided as a PDF for the submittal to the USACE; AINW will revise the report to address the USACE's comments. The USACE will make a determination of effect and provide copies of the report to the DAHP and selected Tribes for their review and concurrence on the determination of effect.

To meet the requirements of the City's archaeological ordinance, the report will also be submitted to eight Tribes and to the DAHP via certified mail; the transmittal letter will note that the project is being reviewed by the USACE for cultural resource compliance. The report will also be provided to Otak and the City.

Subtask 4.3: Inadvertent Discovery Plan (IDP)

Typically the USACE requires this when archaeological sites are present within a project, and it is needed prior to issuing its permit. This document can be provided to supervisory construction personnel to guide them in case of a discovery.

The IDP will provide procedures to be followed if there is an archaeological discovery or if human remains are encountered during construction. The monitoring plan will address areas where agencies have requested archaeological monitoring during construction. The monitoring plan will provide background information about the project, outline the need and compliance requirements related to monitoring, provide maps showing the areas to be monitored, and provide steps and procedures to be taken for monitoring in specific areas. It also will (1) outline procedures in case of a discovery and (2) outline conditions—such as where excavations are entirely within a layer where no intact archaeological deposits would be found—when the monitoring can cease.

Appended to the monitoring plan and maps will be a section outlining inadvertent discovery procedures. The intent of the IDP is to have a process in-place to expeditiously deal with discovery of an archaeological site or burial during the course of project construction. Contacts and steps to be taken will be outlined. The document will be prepared to meet the Standards of the DAHP, and would also meet requirements of Section 106 of the National Historic Preservation Act.

Task 5 Public Involvement

This task will be performed by Otak and CH2M to support the City at one open house. This includes:

- Create up to six (6) exhibit boards.
- Provide up to two representatives at the open house.

Assumptions:

- None

Deliverables:

- Design and printing of up to six (6) original exhibit boards

Task 6 Real Property Services

This task will include the acquisition of real property interests required to construct the proposed project improvements. Acquisition activities will be conducted in compliance with local, state and federal rules and regulations. This task will be conducted by EPIC Land Services with support from Otak and will include:

Subtask 6.1: Project Cost Estimate

- Perform market research and analysis for land and impacted improvements.
- Perform site visits and investigations on each affected parcel.
- Research property ownership data, addresses and other pertinent data for the development of the Project Cost Estimate worksheet.
- Complete internal QA/QC of findings, analyses and conclusions in preparation for project submittal.

Subtask 6.2: Valuations

- Secure title reports to confirm underlying ownership data for impacted parcels.
- Complete comparable sales packages for each property type impacted as basis for appraisal.
- Perform valuations and site visits for land and impacted improvements.

Subtask 6.3: Property Owner Negotiations and Payment Facilitation

- Prepare acquisition files, negotiations diaries, offer packages, required noticing and conveying documents.
- Initiate property owner negotiations via mail and in person, wherever possible, negotiate settlements, secure executed signatures on all agreements and conveyance documents.
- In the event of counter offers, prepare administrative settlement justifications, where necessary for City review and approval.
- Submit property owner executed documents to City for final processing and payment facilitation.

Assumptions:

- Assume no more than four (4) parcels will require fee acquisition
- Valuations are inclusive of four (4) individual parcels.
- City to pay all recording, escrow and/or other fees related to the closing process.
- City to process and deliver all property owner payments.

Deliverables:

- Four (4) Fee acquisition document packages.

Task 7 Land Use Permitting

Subtask 7.1: Pre-application Conference

The City requires a formal pre-application conference at which the applicant meets with representatives of the relevant departments to identify issues and requirements associated with the proposed development. The pre-application conference requires submittal of conceptual project details for review by the City departments before the meeting. At the pre-application conference, City staff provides a report describing the code and submittal requirements for review and approval of the City permits. The pre-application conference submittal package will include:

- The application form and project narrative. The project narrative will describe the project in detail, including planning and code provisions and development code requirements.
- Compile and submit the pre-application materials to the City and provide the pre-application conference date and location to the client.
- Attend one 1-hour pre-application conference
- Facilitate the pre-application conference.
- Meet with the client to review the summary report of the pre-application conference and review items in the summary report that will be used to finalize the site plan review applications.

Assumptions:

- A pre-application conference for the pump station located outside of city limits will be conducted by the city under a Memorandum of Agreement between the city and county.
- A separate pre-application conference with the county will not be required.
- Revisions to the draft pre-application conference narrative will be limited to one review by the client and one revision.
- Application fees will be paid by the client.

Deliverables:

- Draft and final pre-application conference application form.
- Draft and final pre-application conference narrative.
- Compilation and submittal of pre-application conference application.
- Preparation for and attendance by the project team at one 1-hour pre-application conference.
- Attendance by project team member at one 2-hour post-conference meeting with the client and design team to review pre-application conference requirements.

Subtask 7.2: Site Plan Review Applications

New development in the City that involve a change of use either to land or a structure require site plan review approval. The three pump stations will require site plan review approval from the City and County, with a separate site plan review application for each pump station. Site plan review is a preliminary review of the project by the City planning, engineering, fire, and building departments to ensure that the proposal meets the applicable City development regulations, or can meet the applicable regulations with conditions. Following preliminary site plan approval, building permit approval is required prior to construction.

The site plan review applications will be processed as an administrative Type II application. For the site plan review application, the project team will:

- Prepare the application narrative, describing the project and documenting how each pump station complies with applicable City ordinances.
- Work with the City to ensure that the application is processed efficiently and that appropriate review and conditions of approval are completed following submittal.
- Provide the staff reports and review with the client to ensure that, upon issuance, they reflect the project elements and anticipated conditions of approval.
- Coordination and resubmittal of any items necessary for the fully complete determination

Assumptions:

- The City will review the pump station located in the county, and a separate submittal to the county is not required.
- Fully complete review will include up to two submittals to the City.
- The site plan review applications will require one round of client review and one revision.
- Required environmental permit applications will be processed concurrently with the site plan application.
- Application fees will be paid by the client.

Deliverables:

- Site plan review application form for two pump station sites.
- Draft and final narrative for two pump station sites addressing site plan approval criteria.
- Complete site plan review application package for three pump station sites and submit to the City.
- Coordination and resubmittal of any items necessary for the fully complete determination for each site plan application.

Subtask 7.3: Building Permit Application

The pump stations will require building permit approvals. The project team will prepare the building permit application for each pump station and the required plans and submit to the City for review and approval.

Assumptions:

- One round of preliminary submittal and one round of final submittal.
- Application fees will be paid by the client.

Deliverables:

- Submittal of one set of preliminary and one final set of building plans to the City for two pump stations (two building permit application submittals).
- Securing two building permits (one for each pump station).

Subtask 7.4: Clean Air Permit

This subtask will be conducted by Otak and will include the preparation and submittal of applications for a Southwest Clean Air Agency permit (for backup generators). It will include one meeting with the SWCAA to discuss the application.

Assumptions:

- The Client will pay the required permit fees.

Deliverables:

- One draft and one final permit application for Client review (1 electronic copy).
- Submittal of permit application to the SWCAA.

Subtask 7.5: Utility Permits

This subtask will be conducted by Otak and will include the preparation and submittal of applications for the following:

- WSDOT Utility permit
- County Right-of-Way permit

Assumptions:

- The Client will pay the required permit fees.

Deliverables:

- One draft and one final permit application for Client review (1 electronic copy)
- Submittal of permit application to the County and WSDOT.

Subtask 7.6: NPDES/SWPPP Permit

This subtask will be performed by Otak and will include the preparation of a Stormwater Pollution Prevention Plan, and an NPDES Construction Stormwater Discharge permit application. Construction drawings will be developed showing recommended erosion and sediment control measures in accordance with City and County design standards and standard details.

Assumptions:

- ESC plans prepared for the 90% design phase will be included with the NPDES application.

Task 8 60 Percent Design Phase

This task will be performed by Otak and CH2M, and for scoping purposes it is assumed that the pump stations and pipelines will be bid in one package.

The purpose of this task is to utilize the conceptual decisions of the project that were made in the preliminary design phase, to complete and finalize the preliminary calculations, and to develop the project to a 60% level where all major design decisions have been made and all major design issues have been resolved. The design concepts will be "frozen" at the conclusion of this phase. Structures, equipment, major piping, pump station, site plan are all finalized during this phase to allow final detailing of the same in the next phase of design. Quality control review and approval will occur prior to the finalization of the work products from 60% design phase. Specific activities, and work products from this phase are described in the following subtasks.

Included in this scope is the design of a 12-inch diameter water line in Leadbetter Road from an existing waterline 450 feet west of Everett Street to NE 9th Street. It includes:

- Plan and profile
- New hydrants every 500 feet
- Valves located every 2,000 feet
- Air-vacuum valves at all high points
- Two tees with valves and 8-inch pipe extended to the north ROW line.
- A conduit to hold a fiber optic line design to be included in the same trench. This also includes coordination with the fiber optic company for details, junction box locations, and other design parameters.

It also includes the design of a gravity sewer line from the junction point outside the NE 23nd Avenue Pump Station to 9th Avenue, also for the school district. A separate cost estimate will be developed for the waterline, sewer, and fiber option.

Subtask 8.1: Utility Coordination

- Review utility as-built records and locations for all public and private utilities (water, sanitary sewer, storm sewer, electric, telephone, gas, etc.).

- Identify potential conflicts with other utilities and potential solutions. Review utility conflict with affected utility companies to obtain consensus on resolution of the conflict.

Assumptions:

- Two (2) meetings will be held with the utility companies.

Deliverables:

- Meeting minutes from two (2) coordination meetings.

Subtask 8.2: Potholing

- Otak will provide a subcontractor to pothole utilities at select locations.
- One pothole plan will be developed showing requested pothole locations, based on potential utility conflict areas.
- The pothole data will be complied, and a composite plan will be prepared and distributed to utilities.
- Issues regarding conflicts will be identified and a plan will be developed to resolve them.

Subtask 8.3: Pipeline

AutoCAD drawings will be prepared using Otak layering standards and drawing requirements. Plan and profile drawings will be developed based on 1-inch = 20 feet for full-size sheets. The 60 percent design set will include:

- Cover Sheet
- Sheet Index and Location Maps
- General Legend and Symbols
- Final horizontal alignment for the sewer and water pipelines
- Draft vertical alignment for the sewer and water pipelines
- Draft plans and sections for up to 4 culvert replacements
- Typical trench sections
- Air/vacuum vault locations shown in plan view
- Sheet layout for the site restoration drawings
- Sheet layout for the traffic control and ESC drawings
- Draft of contract specifications, bid list, and special provisions
- Cost estimate with 20 percent contingency

Subtask 8.4: Pump Stations

Goodwin Road Pump Station

- Olson Engineering is providing design for certain pump station components that will be donated to the City. The Final design will incorporate these features. Olson will be provided the 30% design for the Goodwin Road Pump Station, delineating work to be installed by developer vs. City. This scopes assumes that Olson Engineering (on behalf of developer) completes 100% design for the interim improvements, and CH2M will review Olson's design and conform the 100% design delineation to the final Olson pump station design. The scope for modifying the Goodwin Road Pump Station is assumed to include:
    - Re-use of wet well, pumps and variable frequency drives
    - Design of a canopy over new electrical panels,
    - Odor control system.
    - Site paving
- This scope also includes coordination with Olson Engineering on Olson's preparation of specifications for equipment and infrastructure that will be left in place for use in final pump station buildout.

Civil and Site Development

- Otak will perform civil/grading/site design. CH2M to design yard piping within 5 feet of wet well, and between wet well, valve vault, pig launchers, and surge tank to point of delineation with force main, and ductwork between wet well and odor control facility. Otak will design water service lines from water main to within 5 feet of foundation of CH2M-designed structures.
- Freeze civil design concept. Structures, road, and major site element horizontal locations are finalized. Structure floor/control levels and finished grades are finalized.
- Define demolition requirements and limits. Define contractor staging, storage, access, and off-site access corridors.
- Prepare preliminary site grading drawings.
- Set final building and structure elevations.
- Develop preliminary yard piping layouts. Identify corridors for smaller piping and other utilities.
- Finalize traffic flow, parking, and lay out road access to all buildings and structures. Coordinate handicap requirements with architectural discipline and local site plan regulations.

Architectural

- Develop performance specification for Contractor-design of wood canopy based on Clark Regional Wastewater District design standards.

Structural

- Coordinate with geotechnical engineer to establish foundation design criteria for proposed facilities. Review geotechnical report and discuss foundation design approach with geotechnical engineer and senior structural reviewer

- Preliminary elevation and section for canopy showing design parameters. Remainder of design will be specified to be completed by contractor and submitted to City for permitting review as deferred submittal.

- Prepare preliminary plans and sections for all major structures.

- Design level of effort is based upon the assumption that all buried concrete structures will be designed as precast concrete and all slabs on grade will be cast-in-place concrete.

Process

- Final major equipment sizing calculations.
- Coordinate with Instrumentation &Controls (I&CS) on completion of process and instrumentation diagrams (P&IDs).

- Coordinate with I&CS on development of process control narratives (flow control, liquid and vapor phase odor control operation, pig launching, and system flow management)

Mechanical

- Calculate the hydraulic profile hydraulic structures and pipeline. Establish maximum and minimum water surface elevations for wet wells.
- Prepare building and structure layouts (plans and major section(s)).
- Assemble catalog cuts for all major process equipment. Complete equipment data sheets or equipment list on all major equipment items.
- Coordinate with I&CS in the finalization of P&IDs
- Final ancillary equipment sizing and line sizing calculations.
- Final equipment selection (type, size, weight, arrangement).
- Select piping and pipe support materials.

Transient Analysis

- Run transient model with 60 percent profile. Confirm air-vacuum vault locations and sizes, and surge system sizing.

Odor Control

- Prepare layouts (plans and major section(s)).
- Assemble catalog cuts for all major process equipment. Complete equipment data sheets or equipment list on all major equipment items.
- Coordinate with I&CS in the finalization of P&IDs.
- Final ancillary equipment sizing and line sizing calculations.
- Final equipment selection (type, size, weight, arrangement).
- Select piping, ductwork, and odor control facility materials.

Plumbing

- Coordinate with civil engineer for potable water supply and distribution. No fire protection design is included.

Instrumentation and Control

- Prepare preliminary I/O count and panel sizing..
- Summarize I&C system design philosophy for each major process in a process control narrative. Include a description of the field elements to be used for each application and preliminary set points for major I&C elements. Update/finalize control system block diagram. Finalize typical control diagrams/loop diagrams for each type of control scheme to be used.
- Coordinate with odor control and process engineer regarding control system requirements for all facilities.
- Define control interfaces for all package systems with local controls, including adjustable frequency drives.
- Design level of effort is based upon the assumption that the existing Angelo Pump Station facility will have the capacity (I/O, panels, MCC) to serve the needs of the remote odor control facility and no additional instrumentation and controls equipment will need to be added at the remote odor control facility

Electrical

- Determine number of motor control centers (MCCs) to be provided and location of MCCs, and equipment to be powered out of each MCC. Prepare preliminary one-line diagrams for proposed facilities. Coordinate with lead process engineers to size equipment motors.
- Prepare detailed electrical load calculations.
- Size electrical panel and prepare a preliminary layout of the major electrical equipment Determine equipment requiring uninterruptable power supplies (UPS) and locations of UPS equipment. Coordinate with I&C discipline to determine space requirements and locations for control equipment. Locate major I/O termination panels, terminal junction boxes (TJB's), and control panels.
- Define/document requirements and concepts for special systems: Telephone (including incoming service location, scope of supply, etc.), Data highway (control system), Data highway (LAN, office automation). Fire alarm design is not included.
- Submit load calculations and one-lines to Clark Public Utilities for review. Identify rights-of-way and routing methods for electrical conduit and tray. Lay out duct bank system (major runs/manholes). Locate incoming power service and primary power transformers. Coordinate with civil yard piping. Locate manholes and hand holes.
- Provide a new self-contained generator and integral fuel storage system for backup power for the new facilities, systems and components.
- Prepare preliminary site lighting layout.
- Define hazardous locations (NFPA 820) and document. Define corrosive locations and document.
- Design level of effort is based upon the assumption that the existing Angelo Pump Station facility will have the additional power capacity to serve the needs of the remote odor control facility and no additional electrical equipment will need to be added at the remote odor control facility.

Specifications

- Prepare first draft specifications for all sections. Confirm approach for integrating WSDOT General Conditions into Construction Specification Institute (CSI) formatted technical specifications.

Subtask 8.5: De-Pressurization Testing

De-pressurization testing will be conducted over an 8 hour period to support design criteria development for remote odor control facility. A single CH2M field technician will work with City

personnel to conduct the testing. Up to two test runs will be conducted, each with a duration of approximately 4 hours. Portable confined space fans will be provided by the City and connected to a temporary manhole lid (provided by City) for extracting air from the sewer headspace. A temporary stack (provided by CH2M) will be attached to each fan for measuring air flow velocity (air flow velocity instrumentation provided by CH2M). Portable pressure sensors will be deployed at specific manholes to measure sewer headspace pressure under specific air flow conditions. Manhole covers within anticipated zone of influence should be sealed by the City prior to testing.

CH2M will engage a temporary traffic control firm to provide temporary traffic control services related to CH2M staff work in the public right of way. This traffic control assistance assumes total of 8 hours of time in the field for a single flagger. Simple, temporary traffic control plans will be submitted to Public Works for notification. Alternatively, City staff may provide temporary traffic control, if staff are available.

City is expected to provide two staff members to support one 8-hour day of field testing. Staff will be required to open manholes, and operate and monitor air flow monitoring equipment.

The results of the depressurization study will be summarized in an Odor Control De-Pressurization Report. The draft report will incorporate the information derived from the site field testing and outline the recommendations and the basis for design decisions. CH2M project manager and odor control engineer (via phone) will conduct a review meeting with City staff at City offices. A final report will be issued after review comments from the City have been received and incorporated.

Subtask 8.6: 60 Percent Design Workshop

The design team will conduct a half-day design workshop to review the work products with the Owner's personnel and other key project staff. The review drawings provided to the Owner will be drawings with limited annotation.

Workshop minutes, documenting the key decisions and the work products produced through subtasks above will be prepared.

Meetings:

- 60 percent design review workshop (a joint pump station and pipeline design review workshop will be held).

Deliverables:

- Workshop meeting minutes
- 5 sets of Equipment cut sheets (pumps, odor control equipment)
- 5 sets of 11x17-inch 60 percent Construction Plans
- 5 sets of the 60 percent specifications
- 5 sets General Conditions with preliminary edits for alignment with CSI formatted Division 1 and Division 2 – 49 technical specifications

- 5 copies of the 60 percent cost estimate (AACE Level 3 estimate)

Task 9 Contract Documents

The purpose of this task is to develop the final contract drawings, specifications, and schedules for competitive bidding. Key activities during this phase will include:

Subtask 9.1: Ninety Percent Design

The 90 percent design set will include:

- The preparation of a log of client review comments from the 60 percent review, which will include the comment and the appropriate action for each comment.
- Finalize transient model based upon 90 percent pipeline profile. Confirm air-vacuum vault locations and sizes, and surge system sizing.
- Finalize specification front-end documents, including General Conditions, General Requirements, bidding documents, bonds, and Instruction to Bidders.
- Update the plans per the 60 percent review comments and prepare a 90 percent set of plans, specifications, and construction cost estimate. Lump sum cost estimates will be provided for the pump station sites, and the remote odor control site. Itemized estimates using WSDOT standards will be provided for the pipelines.

Meetings:

- 90 percent design review workshop

Deliverables:

- Log of client review comments
- 5 copies of 11x17-inch 90 percent Construction Plans
- 5 copies of the 90 percent Specifications
- 5 copies of 90 percent Cost Estimate

Subtask 9.2: Final (Bid-Ready) Contract Documents

Comments received from the 90 percent review will be incorporated into the design. Final Plans, Specifications, and Engineers estimate will then be completed. The final, bid-ready submittal will include:

- Incorporated review comments from the 90 percent review set
- Stamped and signed blackline full-sized copy of final design plans for District signatures
- Final bid-ready specifications
- Digital copy of final design plans

- Digital copy of design files, special provisions, and the engineer's estimate

Assumptions:

- WSDOT's 2016 specifications will be used will be used for the pipeline. Special Provisions will be provided for bid items that do not have a general specification, or where the specification needs to be revised.
- A separate schedule will be developed for the waterline and associated activities.
- Site restoration drawings will consist of plan sheets and details. Street profiles will not be produced.
- The traffic control plans will be prepared that will include
- An overall project plan indicating the type of detour and road closures that will be allowed along the pipeline route.
- Advance area signage that will be installed and maintained for the duration, or throughout most of the project duration.
- A separate traffic control plan will also be prepared for the work conducted within the WSDOT right-of-way. This will include advance signage, cones and barrels, and potential detour routes and closures within the rest areas. Otak will work with WSDOT to identify the concepts for the traffic control plans and to identify specific areas for which special details will need to be prepared.
- The traffic control plans will meet the requirements of Clark County, City of Camas, WSDOT and the MUTCD (Manual of Uniform Traffic Control Devices) as amended by the state of Washington.
- Pavement restoration designs will be provided for utility construction within the public right-of-way. Construction drawings will be developed showing required restoration areas, along with applicable pavement sections. The design will be prepared in accordance with City and County design standards for restoration of pavement cuts for the purpose of installing utilities.
- Temporary irrigation will not be required.
- Up to 4 culvert designs will be produced, as requested by the city for replacing culverts that have deteriorated. The city will research the culverts and provide information on which they would like replaced. These culverts will be replaced with the same diameter or a larger size if requested by the city. No hydrologic or hydraulic calculations will be conducted for the replacement of these culverts.

Deliverables:

- 100 percent and bid-ready construction plans
- 100 percent and bid-ready specifications
- Final bid item list

- Final cost estimate without contingency. Escalation will be included to the midpoint of construction.

Subtask 9.3: Bid Support

This Subtask will include:

- Preparation for and attendance at a pre-bid meeting
- Responding to bidder's questions, and responding to questions regarding the technical aspects of the bid documents
- Attendance at a pre-construction conference
- Preparation of up to two (2) addendums

Task 10 Project Management

These tasks will be performed by the consultant team and will include:

Subtask 10.1: Project Management and QA/QC

The Project Team will plan, manage, and execute the tasks described herein in accordance with the schedule, budget, and quality expectations that are established. This project management task includes the following work activities:

- Quality assurance/quality control (QA/QC) plan
- Communication plan
- Scope change management procedures
- Decision making protocol
- Coordinate between tasks and team members. Document meeting decisions and action items, assign activities to team members, and follow up to ensure timely resolution.
- Manage the quality control review of all work activities and project deliverables.
- Preparation and ongoing maintenance of a comprehensive design schedule with individual task milestones, task duration, individual responsibilities of subconsultants and County staff, agencies, utilities, etc.
- Monthly progress reports to be submitted with billings. Monthly progress reports will reflect hourly/percent complete progress for each activity and identify budget status and tasks performed to date during the billing period.

Subtask 10.2: Project Meetings

- A project kick-off meeting to introduce the team players and discuss roles and schedule.

- Project team meetings at Otak's office or by phone throughout the project duration at appropriate intervals based upon design activities (Scope assumes 24 meetings).
- Project update meetings with the client project manager. Assume bi-weekly meetings through the duration of the project (Scope assumes 24 meetings).
- Up to six (6) workshops with city staff to review designs.
- Attend and present at City Council work sessions (Scope assumes two (2) meetings).

Assumptions:

- Contract is complete by May 1, 2017.

Deliverables:

- Meeting minutes from each meeting
- Action Item list, updated before each Client project manager meeting
- Monthly status reports and invoices
- Development and maintenance of the project schedule (Scope assumes four (4) updates).

Task 11 Camas North Shore School Design Support

The Camas School District (School District) is developing a school site in the Northern Shore area of Camas. Water and sewer service is not currently available for the school site and will be developed as part of the project by the City. Carollo Engineers, Inc. (SubConsultant) will conduct hydraulic modeling to support design of the water main for OTAK (Consultant).

The 12-inch water main will travel from the existing system near New Greg Booster Station west along SE 15th St and continuing northwest along SE Leadbetter Road continuing north along NE 232nd Ave to the school site. Previous hydraulic modeling has indicated the school site can be served by the Greg/NUGA 542 Zone. Detailed modeling in conjunction with design is needed to determine the best way to tie the new main into the existing system and confirm the Crown Road and New Greg booster pump stations can supply the required fire flows.

Subtask 11.1: Confirm Existing System Capacity

Confirm existing system capacity based on City conducted field testing and adding pump specific data into the hydraulic model. The following data is preferred:

- Required fire flow for school site.
- Pump curves for Crown Road Booster Station, New Greg Booster Station, Butler Booster Station, and Angelo Booster Station
- Hydrant test near SE 262nd Ave and SE 15th St with New Greg Booster Station (no Crown Road Booster Station).

- Hydrant test near SE 262nd Ave and SE 15th St with Crown Road Booster Station (no New Greg Booster Station).
- Hydrant test near SE 262nd Ave and SE 15th St with two hydrants using both Crown Road Booster Station and New Greg Booster Station.

City to monitor static pressure, flow, and residual pressure during hydrant testing. Identify operating conditions at pumping stations, including suction pressure, discharge pressure, and pump speed. Report reservoir levels and sources of supply.

Update and calibrate hydraulic model using above data. If available, allocate demands using demand projections from the ongoing Water System Plan Update.

Subtask 11.2: Modeling Analysis

Analyze providing service to the school site using the updated model for a short−term and a medium−term planning horizon. Determine water main tie−in location in the existing Greg *f* NUGA 542 Pressure Zone and required infrastructure. If required, determine distribution system or booster station improvements needed to provide service to the school site, including planned CIP projects. Provide system curves, maximum velocity, and maximum pressures to aid in water main design. Attend and facilitate meeting to review modeling results, required main routing, and any required improvements with Otak and City.

Subtask 11.3: Modeling Documentation

Develop draft and final technical memorandum (TM) documenting modeling results and recommended infrastructure. Develop maps and tables to support design and City review of the hydraulic modeling.

Provide GIS based location data for the proposed main infrastructure. Incorporate any comments from Otak or City into final TM.

North Shore Sewer Transmission System
Fee Estimate
Summary of Otak, Inc. and and subconsultants
Otak Project # 17628A

Task	*Description*	Otak	CH2M	HHPR	AINW	GRI	EPIC	Carollo	*Total Hours*	*Total Budget by Task*
1	**Survey and Mapping**									
1.1	Topographic Survey (Contingency)	328							**328**	**$ 27,240**
1.2	Right of Way and Boundary Survey	396							**396**	**$ 37,080**
1.3	Easement Preparation	90							**90**	**$ 10,910**
										$ -
2	**Environmental Services**									**$ -**
2.1	Stream and Wetland Field Review and Report	4		13					**17**	**$ 2,322**
2.2	JARPA and CWA Compliance	18		22					**40**	**$ 4,504**
2.3	WDFW HPA Approval	4		4					**8**	**$ 876**
2.4	ESA Compliance	4		5					**9**	**$ 956**
2.5	Sole Source Aquifer Program Compliance	4		4					**8**	**$ 871**
2.6	SEPA Compliance	10		12					**22**	**$ 2,258**
2.7	Shoreline Master Program Permit	18		60					**78**	**$ 8,954**
2.8	Critical Areas and Significant Tree permit	6		34					**40**	**$ 3,940**
										$ -
3	**Geotechnical Investigation (Contingency)**					100			**100**	**$ 15,800**
										$ -
4	**Cultural and Historic Resources (Contingency)**									**$ -**
4.1	Archaeological shovel tests - Leadbetter Road				324				**324**	**$ 23,130**
4.2	Archaeological testing and evaluation - two sites				1942				**1942**	**$ 158,133**
4.3	Inadvertent Discovery Plan (IDP)				31				**31**	**$ 2,995**
										$ -
5	**Public Involvement**	24	24						**48**	**$ 6,464**
										$ -
6	**Real Property Services**									**$ -**
6.1	Project Cost Estimate									**$ -**
6.2	Valuations									**$ -**
6.3	Property Owner Negotiations and Payment Facilitation						84		**84**	**$ 7,500**
										$ -
7	**Land Use Permitting**									**$ -**
7.1	Pre-Application Conference	12							**12**	**$ 1,352**
7.2	Site Plan Review Applications	20							**20**	**$ 2,376**
7.3	Building Permit Applications	20							**20**	**$ 2,376**
7.4	Clean Air Permit	20							**20**	**$ 2,376**
7.5	Utility Permit	16							**16**	**$ 1,312**
7.6	NPDES/SWPPP Permit	48							**48**	**$ 4,288**
										$ -
8	**60 Percent Design**									**$ -**
8.1	Utility Coordination	12							**12**	**$ 1,160**
8.2	Potholing	16							**16**	**$ 2,016**
8.3	Pipeline	800							**800**	**$ 87,600**
8.4	Pump Stations	240	1304						**1544**	**$ 238,224**
8.5	Design Workshop	8	52						**60**	**$ 12,326**
										$ -
9	**Contract Documents**									**$ -**
9.1	90 Percent Design	1308	1049						**2357**	**$ 298,975**
9.2	Final (Bid Ready) Contract Documents	828	572						**1400**	**$ 173,137**
9.3	Bid Support	168	388						**556**	**$ 77,422**
										$ -
10	**Project Management**									**$ -**
10.1	Project Management and QA/QC	184	180						**364**	**$ 72,101**
10.2	Project Meetings	80	96						**176**	**$ 34,919**
										$ -
11	**Camas NUGA Waterline Modeling**									**$ -**
11.1	Confirm Existing System Capacity							20	**20**	**$ 2,644**
11.2	Modeling Analysis							67	**67**	**$ 9,378**
11.3	Modeling Documentation							48	**48**	**$ 6,636**
	Total Labor Cost	$506,066	$592,424	$19,845	$184,257	$15,800	$7,500	$18,658		***$1,344,550***
	Direct Expenses	$25,000	$14,650	$500	$34,208		$6,750	$2,280		***$83,388***
	Subconsultant Administration	$44,844								***$44,844***
	Project Total	$575,910	$607,074	$20,345	$218,465	$15,800	$14,250	$20,938		**$1,472,782**