

**TOWN OF CASTLE ROCK
SERVICES AGREEMENT
(Plum Creek Diversion Pump Station Design)**

DATE: _____ April 17, _____, 2018.

PARTIES: **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, 100 N. Wilcox Street, Castle Rock, Colorado 80104 (“Town”).

DEWBERRY ENGINEERS, INC., a New York corporation, 990 South Broadway, Suite 400, Denver, CO 80209 (“Consultant”).

RECITALS:

- A. The Town issued a Request for Proposals from qualified firms with expertise in professional engineering services.
- B. Consultant timely submitted its proposal.
- C. Town wishes to engage Consultant to provide the services more fully described in the following Agreement and Exhibits.

TERMS:

Section 1. Scope of Services. Consultant shall provide professional design services related to the Plum Creek Diversion Pump Station Project, in accordance with Consultant’s proposal attached as *Exhibit 1* (“Services”).

Section 2. Payment. Consultant shall invoice Town monthly for the Services rendered in accordance with the rate and fee scheduled identified in *Exhibit 1*. Town shall pay such invoices within 30 days receipt of such invoice. In no event shall the cumulative payment to Consultant exceed \$342,800, unless authorized in writing by Town.

Section 3. Completion. Consultant shall commence the Services upon execution of this Agreement and complete the Services not later than May 1, 2019. Consultant shall devote adequate resources to assure timely completion of the Services. Consultant shall perform the Services under this Agreement using a standard of care, skill and diligence ordinarily used by reputable professionals performing under circumstances similar to those required by this Agreement.

Town shall have the right to terminate this Agreement at any time with 30 days written notice to Consultant. In addition, this Agreement shall terminate on December 31, 2018 in the event funds to support payment under this Agreement are not appropriated for calendar year 2019. The Town’s only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination. Consultant shall turn over all work product produced up to the date of termination.

Section 4. Subcontractors. Consultant may utilize subcontractors to assist with specialized works as necessary to complete the Services. Consultant will submit any proposed subcontractor and the description of their services to the Town for approval.

Section 5. Assignment. This Agreement shall not be assigned by Consultant without the written consent of the Town.

Section 6. Notice. Any notice required or permitted by this Agreement shall be in writing and shall be deemed to have been sufficiently given for all purposes if sent by certified mail or registered mail, postage and fees prepaid, addressed to the party to whom such notice is to be given at the address set forth on the first page of this Agreement, or at such other address as has been previously furnished in writing to the other party or parties. Such notice shall be deemed given when deposited in the United States mail.

Section 7. Prohibition Against Employing Illegal Aliens. Consultant shall not knowingly employ or contract with an illegal alien to perform work under this contract. Consultant shall not enter into a contract with a subcontractor that fails to certify to the Consultant that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract.

Consultant has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under the public contract for services through participation in either the E-verify program or the Department program, as defined in C.R.S. §§ 8-17.5-101(3.3) and 8-17.5-101(3.7), respectively. Consultant is prohibited from using the E-verify program or Department program procedures to undertake pre-employment screening of job applicants while this contract is being performed.

If Consultant obtains actual knowledge that a subcontractor performing work under this Agreement for services knowingly employs or contracts with an illegal alien, Consultant shall:

A. Notify the subcontractor and the Town within three days that the Consultant has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and

B. Terminate the subcontract with the subcontractor if within three days of receiving notice required pursuant to this paragraph the subcontractor does not stop employee or contracting with the illegal alien; except that the Consultant shall not terminate the contract with the subcontractor if during such three days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

Consultant shall comply with any reasonable request by the Department of Labor and Employment made in the course of an investigation that the Department is undertaking pursuant to the authority established in C.R.S. §8-17.5-102(5).

If Consultant violates a provision of this Agreement required pursuant to C.R.S. §8-17.5-102, Town may terminate the Agreement for breach of contract. If the Agreement is so terminated, the Consultant shall be liable for actual and consequential damages to the Town.

Section 8. Insurance. Consultant agrees to procure and maintain, at his own cost, the following policy or policies of insurance. Consultant shall not be relieved of any liability, claims, demands or other obligations assumed pursuant to this Agreement by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

A. Consultant shall procure and maintain, and shall cause each subcontractor of the Consultant to procure and maintain a policy with the minimum insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to the Town. All coverage shall be continuously maintained from the date of commencement of services hereunder. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workers Compensation insurance to cover obligations imposed by the Workers Compensation Act of Colorado and any other applicable laws for any employee engaged in the performance of Work under this contract, and Employer's Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease-policy limit, and FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease-each employee.

2. Comprehensive General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS (\$1,000,000) each occurrence and ONE MILLION DOLLARS (\$1,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including for contractual and employee acts), blanket contractual, independent contractors, products, and completed operations. The policy shall contain a severability of interests provision.

3. Comprehensive Automobile Liability Insurance with minimum combined single limits for bodily injury and property damage of not less than ONE MILLION DOLLARS (\$1,000,000) each occurrence and ONE MILLION DOLLARS (\$1,000,000) aggregate with respect to each of Consultant's owned, hired and/or non-owned vehicles assigned to or used in performance of the services. The policy shall contain a severability of interests provision.

4. Professional Liability insurance with minimum limits of ONE MILLION DOLLARS (\$1,000,000) per claim and ONE MILLION DOLLARS (\$1,000,000) aggregate.

B. The policies required above, except Workers' Compensation insurance, Employers' Liability insurance and Professional Liability insurance shall be endorsed to include the Town, its officers and employees, as an additional insured. Every policy required above, except Workers' Compensation and Professional Liability insurance, if applicable, shall be primary insurance, and any insurance carried by the Town, its officers, or its employees, shall be excess and not contributory insurance to that provided by Consultant. The

additional insured endorsement for the Comprehensive General Liability insurance required above shall not contain any exclusion for bodily injury or property damage arising from completed operations. The Consultant shall be solely responsible for any deductible losses under each of the policies required above.

C. Certificates of insurance shall be completed by Consultant's insurance agent as evidence that policies providing the required coverage, conditions and minimum limits are in full force and effect, and shall be subject to review and approval by the Town. Each certificate shall identify the Project and shall provide that coverage afforded under the policies shall not be cancelled, terminated or materially changed until at least 30 days prior written notice has been given to the Town. If the words "endeavor to" appear in the portion of the certificate addressing cancellation, those words shall be stricken from the certificate by the agent(s) completing the certificate. The Town reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

D. Failure on the part of Consultant to procure or maintain policies providing the required coverage, conditions, and minimum limits shall constitute a material breach of contract upon which at the Town's discretion may procure or renew any such policy or any extended connection therewith, and all monies so paid by the Town shall be repaid by Consultant to the Town upon demand, or the Town may offset the cost of the premiums against any monies due to Consultant from the Town.

E. The parties understand and agree that the Town is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations (presently \$350,000 per person, \$990,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, §24-10-101, *et seq.*, C.R.S., as from time to time amended, or otherwise available to Town, its officers, or its employees.

Section 9. Indemnification. Consultant expressly agrees to indemnify and hold harmless Town or any of its officers or employees from any and all claims, damages, liability, or court awards including attorney's fees that are or may be awarded as a result of any loss, injury or damage sustained or claimed to have been sustained by anyone, including, but not limited to, any person, firm, partnership, or corporation, to the extent caused by the negligent acts, errors or omissions of Consultant or any of their employees or agents in performing work pursuant to this Agreement. In the event that any such suit or action is brought against Town, Town will give notice within ten (10) days thereof to Consultant.

Section 10. Delays. Any delays in or failure of performance by any party of his or its obligations under this Agreement shall be excused if such delays or failure are a result of acts of God, fires, floods, strikes, labor disputes, accidents, regulations or orders of civil or military authorities, shortages of labor or materials, or other causes, similar or dissimilar, which are beyond the control of such party.

Section 11. Additional Documents. The parties agree to execute any additional documents or take any additional action that is necessary to carry out this Agreement.

Section 12. Entire Agreement. This Agreement represents the entire agreement between the parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in writing signed by the parties. If any other provision of this Agreement is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Agreement shall continue in full force and effect.

Section 13. Time of the Essence. Time is of the essence. If any payment or any other condition, obligation, or duty is not timely made, tendered or performed by either party, then this Agreement, at the option of the party who is not in default, may be terminated by the non-defaulting party, in which case, the non-defaulting party may recover such damages as may be proper.

Section 14. Default and Remedies. In the event either party should default in performance of its obligations under this agreement, and such default shall remain uncured for more than 10 days after notice of default is given to the defaulting party, the non-defaulting party shall be entitled to pursue any and all legal remedies and recover its reasonable attorney's fees and costs in such legal action.

Section 15. Waiver. A waiver by any party to this Agreement of the breach of any term or provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by either party.

Section 16. Governing Law. This Agreement shall be governed by the laws of the State of Colorado.

Section 17. Independent Contractor. Consultant and Town hereby represent that Consultant is an independent contractor for all purposes hereunder. As such, Consultant is not covered by any worker's compensation insurance or any other insurance maintained by Town except as would apply to members of the general public. Consultant shall not create any indebtedness on behalf of the Town.

Section 18. No Third Party Beneficiaries. It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to Town and Consultant, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other third party on such Agreement. It is the express intention of the parties that any person other than Town or Consultant receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

ATTEST:

Lisa Anderson, Town Clerk

Approved as to form:

Robert J. Slentz, Town Attorney

TOWN OF CASTLE ROCK

Jennifer Green, Mayor

Approved as to content:

Mark Marlowe, Director of Castle Rock Water

CONSULTANT:

DEWBERRY ENGINEERS, INC.

By: _____

Its: _____



EXHIBIT 1
TO THE SERVICES
AGREEMENT

Town of Castle Rock

RFP NO. 2018-02

March 5, 2018



Delivering Client Service & Technical Expertise

Design Services for Plum Creek Diversion Pump Station Project & Castle Rock Reservoir No. 1 Evaluation

SUBMITTED BY:

Dewberry
990 S. Broadway
Suite 400
Denver, CO 80209

SUBMITTED TO:

Castle Rock Water
175 Kellogg Court
Castle Rock, CO 80109

This proposal includes information that shall not be disclosed outside of the Town of Castle Rock and shall not be duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of, or in connection with, the submission of this information, the Town of Castle Rock shall have the right to duplicate, use, or disclose the information to the extent provided in the resulting contract. This restriction does not limit the Town of Castle Rock's right to use information contained in this information if it is obtained from another source without restriction. The information subject to this restriction is contained on all pages that follow.

March 5, 2018

Mr. Matthew Hayes, Project Manager
Castle Rock Water
175 Kellogg Court
Castle Rock, CO 80109

Our engineering team has successfully completed over 34 pump station projects, including three for the Town of Castle Rock.

Design Services for Plum Creek Diversion Pump Station Project and Castle Rock Reservoir No. 1 Evaluation, RFP NO. 2018

Dear Mr. Hayes:

Dewberry is pleased to submit this proposal to the Town of Castle Rock (Town) for Design Services for the Plum Creek Diversion Pump Station Project and Castle Rock Reservoir No. 1 Evaluation. We believe that Dewberry represents the Town's best choice to execute the project for the following reasons:

Superior Technical Expertise. Dewberry is proud to have been providing professional engineering consultation services for Colorado Front Range communities for over 22 years. Building on that experience, we will meet the objectives of this project with milestones completed promptly, effectively, and efficiently. Our engineering team has successfully completed over 34 pump station projects, including three for the Town of Castle Rock (Town).

Proven Client Service. Dewberry is proud to have worked for the Town for over 17 years, successfully completing over 35 Town-projects. For continuity, our team consists of seasoned professionals that have a history of successful completion of Town projects supported by trusted and long-standing subconsultants that the Town knows, and bolstered with additional in-house qualified staff and resources to provide additional depth and capacity. Our team will be responsive and will meet the Town's objectives, budgets and schedules promptly, effectively, and efficiently.

Value. Dewberry's highly competitive cost structure allows us to dedicate more time to a project while keeping costs in-line with budgets and Town expectations. More time allows us to complete work products that are clear, consistent, and well-coordinated. This effort reduces project construction costs and the potential for construction conflicts, changes, and schedule impacts.

We appreciate the opportunity to submit this proposal and we look forward to working with you on this very important project. If you have any questions please contact me at 303-951-0628 or at dbutler@dewberry.com.

Sincerely,
Dewberry Engineers Inc.



Dave Butler, PE
Project Manager



David Vidikan, PE
Principal-in-Charge



Chad Weaver, PE
Project Engineer

Section 1

Project Team Qualifications

QUALIFICATIONS

Dewberry takes pride in providing practical and cost-effective engineering solutions. Combining a broad range of experience with the latest technical research and a flair for innovation, we develop solutions that are custom engineered to meet the requirements of each unique situation at an affordable cost. We have full service, in-house design capabilities including civil, mechanical, structural, HVAC, electrical, instrumentation and control engineering, CAD, and GIS services. The 52 professionals in our Denver office specialize in engineering services for planning, design, and construction of water and wastewater infrastructure including treatment plants, pipelines and pumping stations. The members of Dewberry's proposed project team have direct experience with the design, bidding and construction phase services for pump station design and reservoir evaluations.

PROJECT TEAM

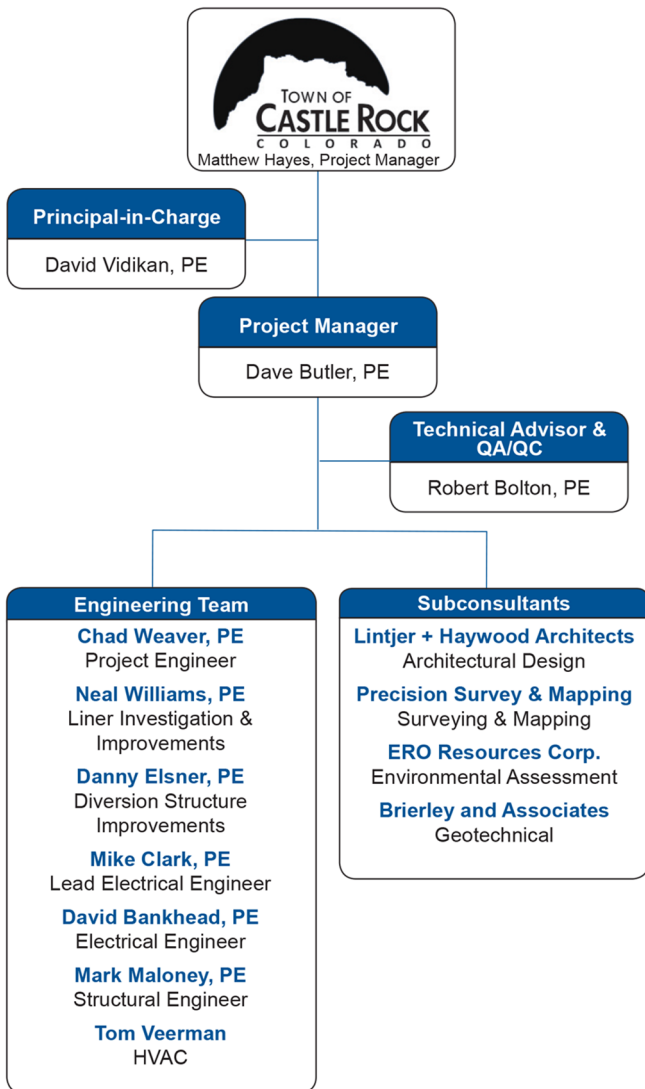
David Vidikan, PE - Principal-in-Charge

Role: David will provide leadership, guidance, and oversight to the project team and ensure that Dewberry's services meet the Town's expectations and remains on track. David will meet with you periodically to verify that project expectations are being met and exceeded.

Experience: 33 years and 25 pump station project designs

Relevant Project Experience:

- Valley Pump Station Condition Assessment & Improvements, Ken-Caryl Ranch WSD, CO
- Gun Club Road Pumping Station, City of Aurora, CO
- Broomfield Pump Station Modifications, Denver Water, CO



Dave Butler, PE – Project Manager

Role: Dave will lead the engineering design effort and manage subconsultant activities. He will be the primary point of contact for the Town, lead daily activities of the project, attend meetings, and will be responsible for work products, schedule, and cost. Dave is currently serving as the project manager for the Town's Founders Well Facility project.

Experience: 40 years and 30 pump station design projects

Relevant Project Experience:

- Reservoir WTP Improvements, City of Boulder, CO
- Wells A, A-16, H and K, Pinery Water and Wastewater District, CO
- Water Booster Pumping Facility, Colorado Springs Utilities, CO

Chad Weaver, PE - Project Engineer

Role: Chad will lead the pump station design efforts on the project. Chad is an expert in hydraulic modeling, transient analysis, pump curve development, and pump sizing and selection.

Experience: 12 years

Relevant Project Experience:

- Pine Valley Pump Station Refurbishment, Colorado Springs Utilities, CO
- Cedar Heights Pump Station No. 2 Replacement, Colorado Springs Utilities, CO
- Columbine West Pump Station Condition Assessment and Upgrade, Platte Canyon WSD, CO

Robert Bolton, PE – Technical Advisor, QA/QC

Role: Bob will serve in the role as Pump Station Technical Advisor and will provide QA/QC services on the project design and deliverables. Bob has evaluated, designed and overseen the construction of over two dozen water pumping stations and has been involved in many project designs for the Town.

Experience: 36 years

Relevant Project Experience:

- Pine Valley Pump Station Refurbishment, Colorado Springs Utilities, CO
- Cedar Heights Pump Station No. 2 Replacement, Colorado Springs Utilities, CO
- Cedar Heights Pump Station No.1, Colorado Springs Utilities, CO

Neal Williams, PE - Liner Investigation & Improvements

Role: Neal will lead the evaluation of the reservoir and reservoir liner system. Neal recently completed the evaluation of a pond liner system and led the design for the rehabilitation of the ponds and installation of a new pond liner system.

Experience: 21 years

Relevant Project Experience:

- Evaporative Pond Expansion, Deuel Vocational Institution, Tracy, CA
- VSEP Pilot Study, Deuel Vocational Institution, Tracy, CA
- Indian Hills Water Treatment Plant, Indian Hills, CO

Danny Elsner, PE - Diversion Structure Improvements and Channel Assessments

Role: Danny will perform evaluations to the Plum Channel, including CLOMR development and provide design support to desired improvements to the diversion structure.

Experience: 24 years

Relevant Project Experience:

- First Creek Restoration, Urban Drainage and Flood Control District, CO
- Resilient St. Vrain – Sandstone Ranch Reach, City of Longmont, CO
- City Park Drainageway, Urban Drainage and Flood Control District, CO

Mike Clark, PE – Electrical, I&C Engineer, Electrical Systems QA/QC

Role: Mike will lead the electrical instrumentation and control system designs, developing P&ID's, single line diagrams, equipment and instrument lists, wiring and network diagrams, panel layouts and schematics, PLC/DCS/SCADA/HMI program development, and start-up and commissioning. Mike will also provide QA/QC services on the electrical systems on the project.

Experience: 30 years

Relevant Project Experience:

- City of San Diego, Pump Station 1 (PS1) and Pump Station 2 (PS2), San Diego, CA
- Chevron Energy Technology Company, Questa Mine Electrical Design, Questa, NM
- St. Louis Tunnel Risk Mitigation, Atlantic-Richfield, Rico, CO

David Bankhead, PE – Electrical Engineer

Role: David will lead the design of the electrical equipment and systems on the project including power distribution, lighting, and motor controls.

Experience: 5 years

Relevant Project Experience:

- Evaporative Pond Expansion, Deuel Vocational Institution, Tracy, CA
- 100 S. Peoria and 6th and Airport PRV Vaults Rehab, City of Aurora, CO
- Consolidated Wastewater Treatment Plant, City of Evans, CO

Mark Maloney, PE - Structural Engineer

Role: Mark will provide structural design services for this project. He has more than 21 years of experience in the structural design and construction of pumping stations and water and wastewater treatment facilities as well as the evaluation and assessment of existing facilities. Mark has served as the lead structural engineer for all of our projects for the Town of Castle Rock.

Experience: 22 years

Relevant Project Experience:

- Pine Valley Pump Station Refurbishment, Colorado Springs Utilities, CO
- Cedar Heights Pump Stations No. 1 and No. 2, Colorado Springs Utilities, CO
- Columbine West Pump Station Condition Assessment and Upgrade, Platte Canyon WSD, CO

Tom Veerman – HVAC

Role: Tom will lead the design efforts for the HVAC systems in the new pump station facility

Experience: 32 years

Relevant Project Experience:

- Cedar Heights Pump Station No. 2 Replacement, Colorado Springs Utilities, CO
- Pine Valley Pump Station Refurbishment, Colorado Springs Utilities, CO
- Design & Construction at Central Clear Creek WWTF, Central Clear Creek Sanitation, CO

SUBCONSULTANTS

Lintjer + Haywood Architects

Architecture

LHA is a full service architectural firm with over 60 years of



combined experience designing numerous water and wastewater facilities throughout Colorado. Dewberry and Lintjer + Haywood have worked together for over fifteen years.

Precision Survey & Mapping

Surveying and Mapping



The Precision team has over 30 years' experience as professional land surveyors. Dewberry has worked with Precision on over 60 projects in the last 10 years.

ERO Resources Corporation

Environmental Services



ERO will perform the environmental services for the project. ERO Resources has consulted on water resource and environmental issues throughout the Front Range since 1981. Dewberry and ERO have teamed together for many projects throughout the Front Range.

Brierley Associates

Geotechnical Investigations

Brierley Associates is a privately held national tunnel, trenchless, geotechnical, and geo-structural design firm with offices strategically located in nine states. Brierley Associates has a long history of delivering recognizable value to our clients and projects by providing cost effective and constructible solutions.



Section 2

Response to Scope of Work

PROJECT UNDERSTANDING

As part of a long-term plan to ensure a sustainable water supply, the Town of Castle Rock (Town) recently purchased surface water diversion, pumping and storage facilities located on Plum Creek near Sedalia. The site is downstream from the confluence of East and West Plum Creek, which will allow the Town to make full use of water rights owned in both branches of Plum Creek with facilities at a single location. This project will provide the design for improvements to the diversion structure and a new pump station to deliver raw water to the Town's Plum Creek Water Purification Facility (PCWPF).

Existing facilities include a diversion structure, two pump stations and a storage reservoir. The diversion structure is reported to be functional, but in need of some improvements to facilitate operation. The pump stations include the Plum Creek Pump Station, which conveys water diverted from Plum Creek to the reservoir or to the second pump station. The second pump station, referred to as the Ravenna Pump Station, delivers raw water through a 12 mile pipeline to the Ravenna water treatment plant that serves residential development near Roxboro State Park. The reservoir, referred to as Castle Rock Reservoir No. 1, provides raw water storage for the Ravenna System. The Town owns and is responsible for operation of all of these facilities, including the 12 mile pipeline to Ravenna.

The objective of this project is to evaluate and develop bid documents (plans and specifications) for construction of the new raw water pump station plus improvements to the existing diversion structure and reservoir facilities to enhance operability and reliability. To meet the Town's projected water demands, The project design is to be completed in 2018 so construction can proceed in 2019 to have

facilities complete and ready for service in time for the high demand season in 2020.

APPROACH TO KEY TASKS AND TECHNICAL DESIGN ISSUES

This section presents Dewberry's approach to key technical design factors that need to be addressed to successfully achieve the project objectives. The existing facilities at the diversion site include the Plum Creek Diversion Structure, the Plum Creek Pump Station, Castle Rock Reservoir No. 1 and the Ravenna Pump Station. The following paragraphs describe these facilities and discuss key design elements.

Diversion Structure

The Plum Creek Diversion Structure diverts water from Plum Creek to the Plum Creek Pump Station. The structure includes a check dam, a side overflow weir to regulate flow into the box channel

that conveys the diverted flow to the Plum Creek Pump Station raw water influent pipes, sediment screens and several manually operated slide gates and stop logs to control flow through. The existing diversion structure was constructed in 2006 and was improved in 2012 to reduce sediment accumulation. From our observations during a visit to the site, the diversion structure appears to be in good condition and does not need major modifications or repairs. The stream channel upstream and downstream of the diversion structure appears to be stable, and the existing rip rap appears to be providing effective stream bank protection. Evidence of scour in the



Plum Creek Diversion Structure

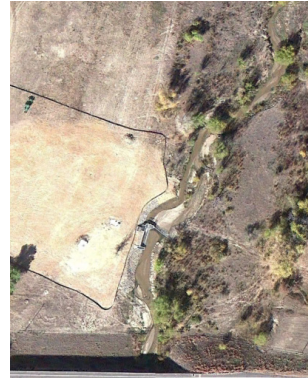
channel was not observed, and the size of the diversion compared to the overall floodplain depth and the apparent sand bars downstream of the diversion structure suggest the stream is not undergoing local scour due to a lack of stream flow or sediment supply. From review of past aerial photos, the stream has adjusted since the installation of the structure in roughly 2007 with some downstream sinuosity occurring since then. As discussed in the RFP, marking the existing banks and perhaps a site survey upstream/downstream of the area would be beneficial to get some data points on the reaction of the stream as additional base flow is removed. We will check the hydraulic conditions in the channel to confirm channel stability and possible sediment transport issues with the diversion operating at proposed new diversion rates. We will also check the basic hydraulics of the diversion structure to confirm that the facility has adequate capacity to meet the proposed diversion demands. Operational improvements will also be considered and incorporated into the design as appropriate. Available information indicates that when sediment loads in Plum Creek are high the sediment screens in the diversion channel need to be flushed frequently.

Currently, this is a manual operation that requires entering the stream channel to remove and replace stop logs. We will work with Town operations staff to

identify and evaluate options for improving the cleaning operation such as a spray nozzle



Plum Creek Stream Channel as of 2017. It appears stable, no apparent channel scour or degradation Photo: Google Earth



Plum Creek Stream Channel shortly of Diversion Structure Installation.

Photo: Google Earth



Plum Creek Stream Channel Prior to Diversion Structure Installation.

Photo: Google Earth

system and downward opening weir gates to eliminate the manual stop logs. Flow through the structure is controlled by several slide gates that are currently operated by manual hand wheel actuators. Replacement of the hand wheels with electric motor driven actuators will make it faster and easier for operations staff to regulate flow through the structure.

Plum Creek Pump Station

The Plum Creek Pump Station (PCPS) delivers water diverted from Plum Creek to the Ravenna Pump Station wet well. From there water is conveyed to the Ravenna water treatment plant or to the Castle Rock Reservoir No.1. The PCPS consists of two below grade vaults, one being the pump station and the other housing electrical power and control equipment. Pump equipment consists of two submersible pumps, isolation valves, pressure control valves, magnetic flow meter and pressure transducer. Information on the design capacity and condition of the pumps was not available at the time of preparation of this proposal. Location of a critical pumping facility and its associated electrical power and control equipment in vaults within the floodway leaves them subject to being flooded and out of service for an extended period of time. The RFP indicates that this pumping function will be incorporated into the new pumping facility with a design capacity of 6 mgd, expandable to 13

mgd. We anticipate that a predesign evaluation will support consolidating this pumping function into the new Plum Creek Diversion Pump Station. We will confirm the design capacity and desired pump operating modes with Town staff, perform necessary hydraulic analyses, pump selection, and facility layout to include this pump system, power and controls in the final design.

Ravenna Pump Station

The Ravenna Pump Station delivers raw water to the Ravenna water treatment plant north and west of the diversion site via a 12 mile long pipeline.

The existing facility consists of two



Ravenna Pump Station

vertical turbine canned pumps mounted above a precast concrete wet well. The pumps, discharge piping and electrical and control equipment are housed in a small prefabricated enclosure that lacks access space for operation and maintenance that is typical for such facilities.

The power supply transformer and an emergency generator housed in its own enclosure are located next to the pump enclosure. The pump motors are reported to be 150 horsepower. Discussion with Town staff indicated that the existing pump station will remain in service as it is for the time being but that consolidation into the new Plum Creek Diversion Pump Station could be desirable in the future. We will work with Town staff to incorporate space in the new pump station or provide for easy expansion of the facility to accommodate the Ravenna Pump Station function in the future.

Castle Rock Reservoir No. 1

Castle Rock Reservoir No. 1 (CRR1) is a 240 acre foot storage pond located on a terrace approximately 1,800 feet northwest of the



Castle Rock Reservoir Photo: Google Earth

Diversion Structure. The reservoir was constructed in 2007 primarily by excavation into the natural ground surface with fill placed on the east and north sides to produce a level crest. The available information indicates that the reservoir is approximately 50 feet deep with a working water depth of about 48 feet. The basin is lined with a synthetic liner system described as consisting of a woven synthetic liner covered with a spray-on adhesive to create an impermeable composite liner. Although total seepage has not been reported as excessive, a number of potential

Dewberry has recently completed a similar evaluation and rehabilitation project of an existing pond liner system in Tracey, CA.

problems were noted. Holes that appeared to have been gnawed by rodents were reported in the liner at the top of the slope and several locations were noted where earth movement had taken place under the liner either from erosion by water running under the liner or gravity slope failure. Prior to purchase of the existing diversion facilities by the Town, an assessment of the reservoir was performed. Completed in November 2016, recommendations included:

- Various physical attributes of the embankment and inlet, outlet and spillway facilities be confirmed and that a determination from the State

Engineer's Office regarding jurisdictional status be requested.

- A detailed records review including records that were not available at the time of the study.
- Liner replacement and subgrade mitigation in the near-term
- Specific evaluation of two identified damaged crest areas

We propose to conduct a comprehensive condition evaluation of the lining system that will include thorough inspection of the liner, condition of the interior impoundment slopes, and current slope stability. The Town has indicated that the reservoir can be drained during the fall and winter to permit a detailed visual examination and gathering of information on the condition of the interior basin slopes. We will perform a detailed reconnaissance of the unwatered reservoir and the surrounding area, observing surface runoff patterns and liner conditions. This will result in a detailed map of the reservoir showing areas of observed distress with appropriate notation. As it is likely the liner will soon need to be replaced, the evaluation will focus on subgrade, grading, drainage and slope stability issues. The reservoir inlets, outlets and other hydraulic facilities will also be evaluated and documented. Detailed topographic mapping of the unwatered reservoir and vicinity will be conducted. The sediment will be probed to supplement the survey. We propose to perform three geotechnical borings and complete them as permanent observation wells. Two borings will be located in the embankment and one will be located on the uphill side. We also propose to perform a few shallow test pits in the damaged crest areas to better understand the conditions there. The test pits will be backfilled with compacted soil. As suggested in the RFP, design of modifications will include:

- Revising inlet and outlet piping and optimizing reservoir grading to minimize

short circuiting, enhance mixing, reduce dead storage and mitigate the potential for sediment accumulation.

- Evaluate the need for liner system features such as underdrains, seepage collection, ballast (for wind and floatation).
- Select a new liner material and provide construction details and specifications for installation.
- Enhancements, if needed, for slope and liner stability.
- Perform hydrologic and hydraulic analyses and develop details and specifications for any improvements needed for the inlet and outlet facilities.
- Prepare an updated stage-storage curve and water level vs time plots for reservoir filling and lowering.
- At this time, we have assumed that the State Engineer's Office (SEO) will consider this a non-jurisdictional dam and thereby exempt from their requirements. Should this not be the case, we will meet with The Town to discuss requirements needed to comply with the SEO process.

New Diversion Pump Station

The key element of this project is the proposed new Plum Creek Diversion Pump Station intended to deliver water diverted from Plum Creek to the Town's water treatment plant, the PCWPF. The RFP indicates that the design capacity of the pump station will be 8 mgd, expandable to 15 mgd. We will work closely with Town staff to fully define the desired range of pumping rates, number of pumping units, type and size of pumps, the need for and desirability of variable speed pump controls. Our preliminary design evaluation will include planning for future expansion, consolidation of the existing Plum Creek Pump Station pumping function into this pump station, and provisions for the future relocation and/or incorporation of the Ravenna Pump Station pumping function.

Our design process will proceed from preliminary through final design and include:

- **Civil site improvements**, grading, fencing, drainage, and buried piping for connection to the raw water diversion and raw water delivery force mains.
- **Architectural design**, for the new pump station building, meeting the requirements of the Douglas County Building Department, including energy code compliance, and exterior finish suitable for the location. The building type and finish will be selected to cost effectively suit functional needs to house and operate the pumping equipment as well as meeting building code requirements.
- **Structural design** to suit building and site conditions in accordance with applicable building codes and Douglas County Building Department requirements.
- **Selection of pumping equipment**, to match the defined design conditions and provide reliability and redundancy, layout to provide proper accessibility and facilitate operation and maintenance. Design will include hydraulic analysis and calculations to determine pumping conditions and requirements for protection of piping and equipment from hydraulic transient pressure surges.
- **HVAC design** to provide adequate ventilation, heating and cooling to maximize equipment life and performance.
- **Electrical-Instrumentation and Control design** will include providing power to and control for pumping equipment, power and lighting for the building, and HVAC equipment. For consistency with current Town systems, new control equipment will be designed based on ControlWave PLC. Conversion of the Ravenna Pump Station controls to

the ControlWave PLC will also be included. Design and equipment selection will provide compatibility with the Town's SCADA system for remote monitoring and control.

Through recent project experience, we are very familiar with Douglas County's permitting and review process.

- **Backup power design** will include evaluating the existing generator currently at the PCWPF for its relocation to the new Diversion Pump Station.

Our proposed multi-disciplinary team provides all of the qualifications required to perform the necessary analyses and assessments to support sound decision making and complete design documents that contain sufficient information and detail to obtain approval and permits and for bidding and construction of the project by a qualified contractor. Our subconsultant, Precision Surveying and Mapping, will provide topographic surface mapping and utility locations. Brierley Associates will perform geotechnical investigation of the pump station site and provide recommendations for foundation and structural designs. We will assist the Town with project management approaches to expedite project delivery. We will evaluate and make recommendations regarding pre-purchase of materials and equipment to expedite construction. The Town may also consider pre-qualifying bidders during the design phase to expedite project delivery and may select a contractor to collaborate with the final design and pre-purchase equipment. We have extensive experience with alternative project delivery methods, including design-build and partnering with contractors during design that will make us highly effective participants in whichever arrangement the Town elects to pursue.

Approvals and Permitting

Construction of the proposed new Plum Creek Diversion Pump Station will require obtaining various approvals and permits. Our proposal includes preparing a permit log that identifies the required project permits and other compliance requirements, submitting the required documentation, and meeting with the responsible agencies to complete the various approval and permitting processes.

Douglas County. The Plum Creek Diversion facilities site is located in unincorporated Douglas County and, therefore, subject to Douglas County development rules, regulations and processes which we are very familiar with. For a project such as this one, these requirements typically include:

- Location and Extents Process which provides for open community review of public facilities to establish that planning and zoning requirements are complied with and make sure that all required documentation and submittals are made.
- Grading, Erosion and Sedimentation Plan provides for protective measures during construction to prevent severe erosion and sediment pollution of surface waters.
- Drainage Plan requires that any proposed development has adequate storm drainage improvements and complies with County drainage regulations.
- Building Permit issued to the Contractor when construction begins to document that the plans approved by the Building Department as building code compliant are followed by the builder.

Floodplain. The existing Diversion Structure, Plum Creek Pump Station and Ravenna Pump Station are all located within the Plum Creek floodway. The new Plum Creek Diversion Pump Station is also expected to be located in

the floodplain. To prevent damage during a major flood event, the pumps and electrical equipment will be located above the 100 year flood level elevation of approximately 5730, which may be practical if the new pump station is constructed within the natural terrace/berm on the west bank of Plum Creek, similar to the existing Plum Creek Pump Station vault. Regardless, a construction project sited within the floodplain or floodway that would change the base flood elevation or the floodplain boundary requires modeling of the floodplain at the proposed location to determine the impact of the project. If modeling indicates that the project will change the floodplain or floodway, an application for a Conditional Letter of Map Revision (CLOMR) must be made and approval received prior to project approval and construction. The Town has directed that, for purposes of this proposal, it is to be assumed that floodplain/floodway modeling and a CLOMR will need to be obtained for the pump station project. Based on recent experience, the CLOMR process will require approximately six months to complete.

Environmental. The Plum Creek Diversion facilities site is located along Plum Creek in the riparian zone known to be the habitat of the protected Preble's Meadow Jumping Mouse and possibly other protected or sensitive species and wetlands. Our subconsultant, ERO, will provide the necessary

environmental assessment research and documentation and provide leadership and assistance with

navigating the potentially complicated environmental approval and permitting processes of several regulatory agencies including the U.S Army Corps of Engineers, U.S. Fish and Wildlife Service, and the Colorado Office of Archaeology and Historic



Preservation. ERO will identify sensitive species, wetlands, cultural resource and water resource issues that apply to the Plum Creek Diversion Pump Station site. The site is located in the Riparian Conservation Zone (RCZ) of Plum Creek and is within the area covered by the Douglas County Habitat Conservation Plan (DCHCP) which may facilitate the environmental assessment process. ERO will compile previously documented rulings and inventories related to these designations along with documentation associated with construction of the facilities currently existing at the site. ERO will meet with the various agencies, prepare and submit approval and permit applications on behalf of the Town, and obtain final approval documentation and permits. It is assumed that the Town is an active member of the South Platte Water Related Activities Program (SPWRAP) and that downstream water resource impacts have been evaluated and mitigated as part of the Town's decrees to Plum Creek water rights so that no additional work will be required to satisfy those requirements.

PHASED APPROACH

The project will be conducted in two general phases: Data Collection and Preliminary Design and Final Design. The preliminary design phase will assemble the information needed to support the design, including surveying and mapping, geotechnical investigation, environmental assessment, proposed transmission pipeline plans and schedules, development of general arrangement, layout and siting, for the new pump station and identification of improvements to be made to existing facilities including the Plum Creek Diversion structure, Ravenna Pump Station and Castle Rock Reservoir No.1. The final design phase will develop the preliminary design into construction contract documents, (drawings and specifications), and provide support to the Town through bidding and contractor selection.

Data Collection and Preliminary Design

- Information and data collection
- Topographic survey and subsurface utility investigations
- Geotechnical investigation
- Final site selection and development
- Pump station hydraulic analysis
- Pump station general arrangement
- Constructability considerations
- Plum Creek Floodway analysis

Survey. Dewberry's subconsultant, Precision Surveying and Mapping, will prepare mapping for the design project area defined by the Town in the RFP and refined during the initial alignment data review. This detailed survey will be the basis for the final design construction documents and will include:

- Topography (one foot contours)
- Horizontal & vertical project control.
- Existing surface improvements, facilities, and property pins
- Underground utility locations

Property acquisition and easements are not anticipated. The survey will conform to the following specific details:

- Vertical Datum: all elevations used shall be on the NAVD 88 Datum.
- Horizontal Benchmark and coordinates: the horizontal benchmark shall be specified. All surveys shall be in the State Plane NAD83, Colorado Central Zone coordinate system and include the coordinates of a known property corner on or adjacent to the site.
- Locate and/or replace all property pins needed to delineate property lines and easements to support final design and construction. A survey drawing shall be provided to the Town showing all applicable property information.

Geotechnical Investigation. Dewberry's subconsultant, Brierley Associates, will conduct the geotechnical investigation necessary to complete the final design of the project. The investigation will include field reconnaissance, soil borings, and laboratory analysis of soil material properties. Boring locations will be selected to facilitate evaluation of the proposed pump station location and establish slope stability conditions of the Castle Rock Reservoir No. 1 side slopes and liner. Results will be presented in a soils report with soil properties, potential for rock to be encountered, presence of groundwater and location of borings and boring logs and recommendations for structural foundation construction and reservoir slope stability and liner improvements.

Environmental Assessment. Early in the project, ERO will determine the environmental issues associated with the site. In addition to the Prebles Meadow Jumping Mouse, other sensitive or protected plant and animal species may be identified. Protected land types, such as wetlands, may also be present. The means necessary to provide protection to protected or sensitive species and land areas and the necessary approvals and permits needed for construction to move forward will factor into the decision making process for selecting the pump station site, the configuration of facilities, and construction methods and scheduling restrictions that may affect project duration and cost.

Preliminary Design. Pumping functions that will be incorporated into the new pump station will be finalized, pump numbers and design conditions and motor sizes will be finalized, and the general arrangement of the new pump station will be developed. The New pump station location will be finalized, taking into consideration numerous factors such as accessibility, flood

protection, constructability considering excavation depths, presence of groundwater, presence of rock, protection of sensitive species and other environmental protection factors. The preliminary design process will be conducted in close collaboration with Town staff so that priority needs and phasing desires are incorporated into the design. Key findings and decisions will be documented in a preliminary design memorandum and 30 percent complete design drawings that will be submitted to the Town for review and approval prior to moving ahead with final design.

The preliminary design phase will also include defining and initiating floodplain, environmental, and Douglas County approval and permitting processes. We will also work with Town staff to determine whether contractor prequalification or preselection would be beneficial and whether prepurchase of long lead time materials and equipment will reduce the construction period significantly.

Final Design

Building from the preliminary design, final design will prepare detailed construction drawings, specifications and contract documents for bidding and construction. This phase includes providing engineering support to the Town through the bidding phase. Plans will include General sheets (cover, general notes), Survey and Control, pipeline Plan and Profile sheets, Grading, Erosion and Sedimentation Control (GESC) plans and details, and Detail sheets. The GESC plans and a GESC report will be prepared in accordance with Town of Castle Rock GESC Manual requirements. Dewberry will develop technical specifications for

materials and equipment. The Town will provide bid forms, contract forms and general conditions. Dewberry will submit 60 and 90 percent complete documents to the Town for review and will incorporate comments to develop and deliver the 100

Dewberry will execute and design the project with an integrated and qualified team experienced with Town practices, procedures and jurisdictional requirements.

percent complete Bid Set. Dewberry will support the Town during the bidding phase by attending the prebid conference and assisting with explaining the project and answering questions. We will also prepare addenda, tabulate bids received, assist with review of bids and provide a recommendation of award for the selected contractor.

PROJECT MANAGEMENT

Dewberry's project management approach is to execute and design the project with a small, integrated, and qualified team that is experienced with both Town of Castle Rock practices and procedures and governing jurisdictional requirements. We utilize a highly interactive approach with ample, open communication to keep all stakeholders informed, active participants throughout the process. From our experience, this is the best approach in maintaining effective communications, high quality work products, and successfully meeting project objectives. The Project Manager will monitor progress and budget, maintain current schedules, and prepare monthly project status reports.

QUALITY ASSURANCE AND QUALITY CONTROLS

All Dewberry staff are responsible for the quality of work within their individual areas of performance. Project Engineers perform quality reviews on design activities and assure that design standards are followed. Designers perform quality reviews on CAD design activities and assure that CAD drafting standards are followed and are consistent with requirements. Prior to delivery, the Principal-in-Charge and Quality Manager will perform quality assurance reviews on work package deliverables and confirm that quality standards are upheld. Design processes and data are documented and filed along with QA/QC and other internal review information in case additional review is needed.

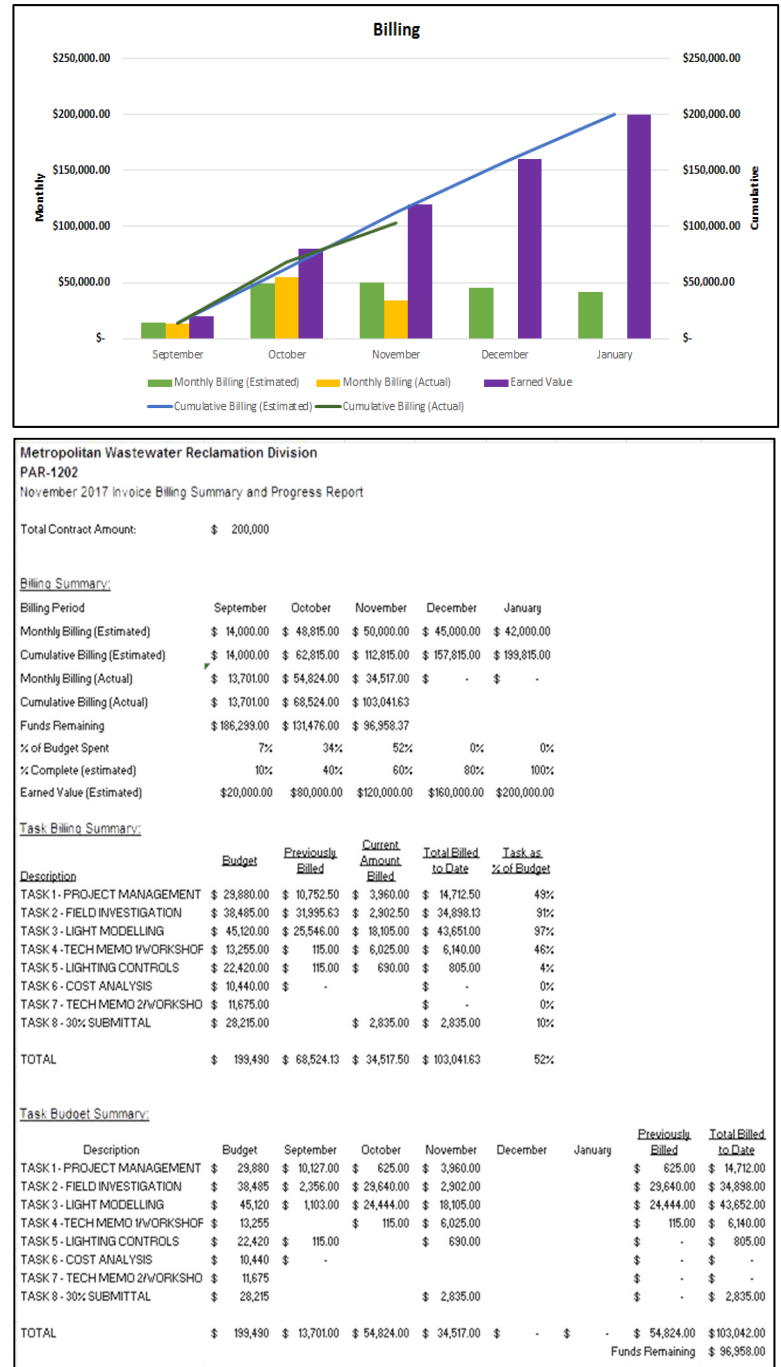


Figure 1 Sample of a project invoice billing summary that will be included in each monthly progress report for this project.

Section 3

Action Plan and Schedule

ACTION PLAN

Dewberry’s detailed work breakdown structure for preliminary and final design, shown below, describes the tasks and deliverables that comprise the engineering effort to complete the Plum Creek Diversion Pump Station project to meet the Town’s objectives.

Task 1.0 - Project Management

Task 1.1 – Project Management. Monitor work schedule and budget and provide general contract administration. Prepare monthly status reports with invoices addressing tasks completed, updates on cost and schedule controls, and deliverables.

Task 1.2 – 1.5 Project Meetings. Attend one project kick-off meeting and monthly (8 assumed) design progress meetings with Town staff and supply meeting notes to attendees. A review workshop will held to review the Basis of Design Report and the 30 percent complete design, and confirm decisions and direction going into final design. Project review meetings will be held after the 60 percent, 90 percent, and 100 percent complete submittals are made. When possible, project review meetings will be combined with project progress meetings for efficiency.

Task 2.0 - Preliminary Design Services

Tasks 2.1 – 2.2 Initial Research. Review available information and data, planning and design reports, record drawings and specifications, operating records, and documentation on environmental assessments and approvals and permits for existing facilities. Make visits to the site to confirm information obtained from document reviews and identify undocumented conditions and modifications.

Task 2.3 – Surveying and Mapping. Conduct field reconnaissance of the project site and identify existing above-ground structures, utilities and other site features and constraints, prepare topographic survey and develop base mapping for design in AutoCAD format. Survey soil boring locations. Set local controls, project benchmarks, and permanent Plum Creek stream bank markers. Develop base map for design.

Task 2.4 – Environmental Assessment. Conduct a document search and field inspection of the Diversion Pump Station site and nearby surrounding area to identify protected and sensitive species habitat and land types. Identify approvals and permits required for construction of the pump station and provide assistance with the needed approvals and permits.

Task 2.5 – 2.6 Geotechnical Investigation. Review available record drawings and documents and conduct field inspection of the dewatered Castle Rock Reservoir No. 1. Perform three geotechnical borings at the reservoir and develop them as permanent observation wells. Also excavate and backfill up to three shallow test pits to clarify the cause of damaged liner and slope areas. Provide a report detailing the investigation and findings, and recommendations for correcting deficiencies in the reservoir slopes and liner system. In addition to the reservoir evaluation, perform two geotechnical borings at the Diversion Pump Station site and provide a geotechnical engineering report.

Tasks 2.7 – 2.10 Preliminary Design. Develop pump capacities and operating requirements, pump station general arrangement drawings and identification of type and conceptual design for the building. Develop and submit a preliminary design technical memorandum documenting the following:

- Data collection, mapping and utility location
- Field reconnaissance information
- Hydraulic analysis results
- Geotechnical findings and considerations

- Environmental Assessment findings and considerations
- Recommendations
- Develop 30-percent complete design drawings
- Prepare 30-percent complete engineer’s opinion of probable construction cost

It is assumed that the design of the raw water pipeline to the PCWPF will proceed as a separate project in parallel with this project and that design plans will be available in sufficient detail when needed to permit accurate pump hydraulics and transient analyses.

Deliverables. The preliminary design effort will generate the following deliverables:

- Technical Memorandum with discussion of hydraulic analysis, pump capacities, pump station general arrangement, geotechnical design recommendations, environmental assessment findings considering site and development constraints. (PDF)
- 30% progress submittal drawings for Town review in accordance with Town Criteria (22”x34” printable on 11”x17”), including, at a minimum, conceptual level site plan, and pump station plan and sections. (PDF)
- Geotechnical Report (PDF)
- Environmental Assessment Report (PDF)
- Preliminary Opinion of Probable Cost. (EXCEL, PDF)
- Survey Base File (PDF & AutoCAD)

Task 3.0 - Final Design Services

Tasks 3.1 – 3.11 Final Design Drawings and Specifications, and Engineer’s Opinion of Probable Construction Costs. Prepare construction drawings and specifications in sufficient detail for competitive bidding with progress submittals at each successive completion milestone. Prepare and submit technical and “front-end” general and contractual specifications for competitive bidding at the 90-percent and 100-percent levels of completion. Prepare and submit bid form. Update and submit the engineer’s opinion of probable construction cost at each successive completion milestone. Hold 60-percent, 90-percent, and 100-percent completion meetings.

Deliverables. The Final Design work effort will generate the following deliverables:

- Bidding Documents (plans and specifications)
- (five paper copies, plans 11x17 and specifications 8.5x11, plus two CDs with PDF and Word/AutoCAD files)
- Geotechnical Engineering Report
- GESC Report, Storm Water Management Plan, and separate GESC Plan set (Word Document & PDF)
- Technical Specifications (PDF & Word Document)
- Engineer’s Opinion of Probable Cost (PDF & EXCEL working file)

Task 4.0 - Bid Phase Assistance

Task 4.1 - Bid Phase Assistance. Attend the pre-bid conference and assist Town staff with presentation of the technical and administrative requirements of the construction project. Respond to potential bidders questions concerning the construction documents. Prepare and submit two bid addenda in response to bidder

questions and provide clarification and interpretation of the construction documents. Tabulate bids, evaluate contractor bid submissions and prepare an engineer’s letter of recommendation of bid award.

Deliverables. The Bid Phase work effort will generate the following deliverables:

- 10 sets of hard copy bid documents (plans 11” x 17” half scale) and specifications
- Two addenda to bid documents (PDF and Word Document)
- Bid Tabulation and Recommendation Letter
- 5 sets of full size construction documents and specifications for the successful bidder

Task 5.0 Approvals and Permitting

Task 5.1 – Douglas County Location and Extents Review. Includes preparation and submittal of the application and associated documentation regarding intended land use and potential impacts on neighboring property. We anticipate meeting with County staff once at the beginning of the process and utilizing electronic communications to complete the review and approval process.

Task 5.2 – Douglas County Grading, Erosion and Sedimentation Control (GESC). Includes preparation of a GESC report outlining site conditions and Best Management Practices (BMPs) that will be used to mitigate erosion and sediment pollution of streams associated with construction of the proposed facilities. Also includes preparation of a storm water management plan for the pump station site. GESC drawings will be prepared showing the BMPs to be applied and standard details related to GESC mitigation measures. The drawings will be included in the project bid documents and will also be assembled into a separate set to be submitted to Douglas County.

Task 5.3 – Douglas County Building Department. Includes submittal of drawings to the Douglas County Building Department for building code and energy code compliance review and incorporating revisions needed so the contractor can obtain a building permit for construction.

Task 5.4 – Environmental Permitting. Includes meeting with Corps of Engineers, Fish and Wildlife, and other agencies to confirm approval and permit requirements (up to three meetings), submitting applications and documentation and obtaining the required approvals and permits.

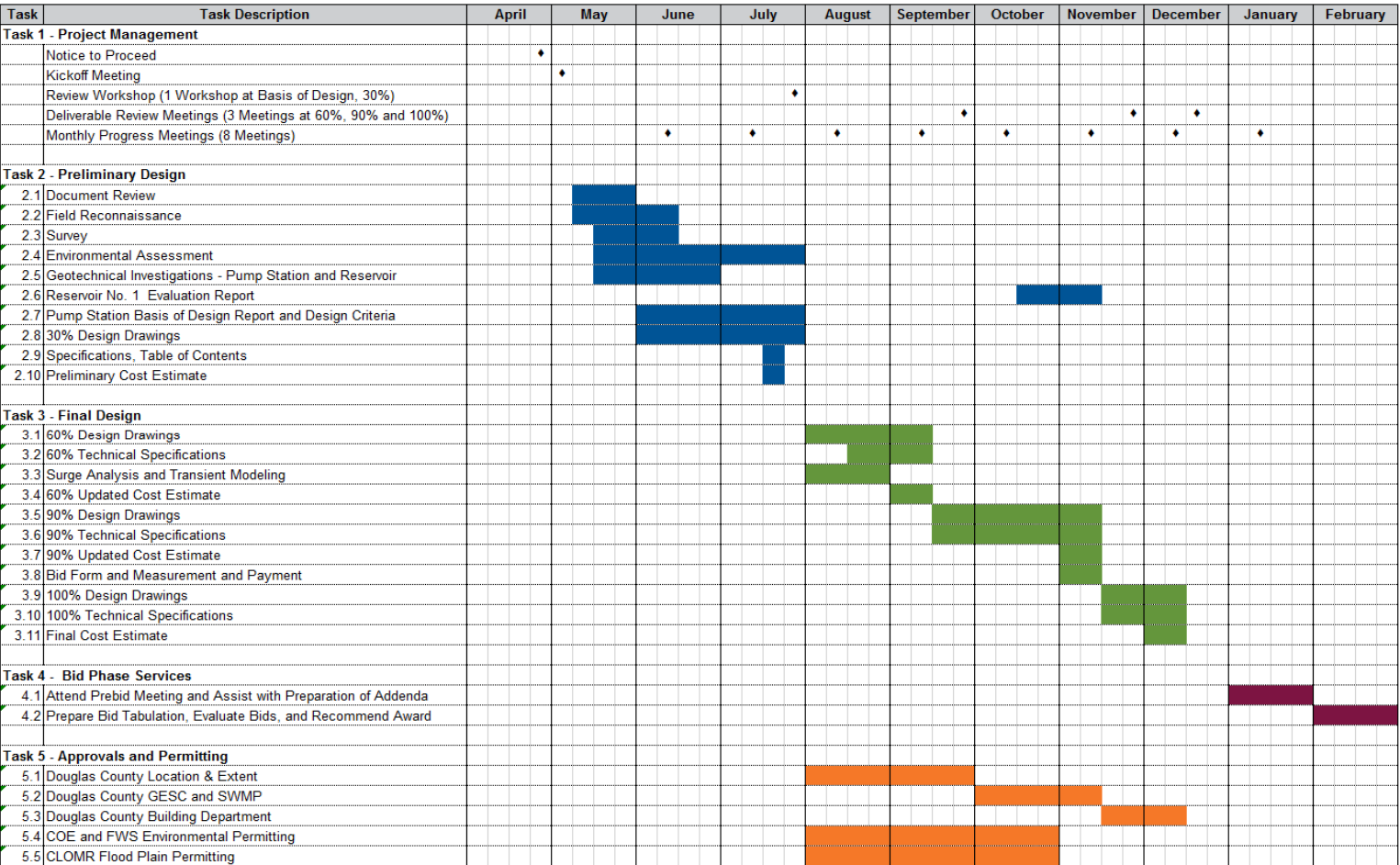
Task 5.5 – Flood Plain Permitting. As directed by the Town, our approach assumes that a Conditional Letter of Map Revision (CLOMR) will be required for flood plain permit approval. This effort includes the open channel computer modeling to determine the impacts of constructing the proposed Diversion Pump Station, preparation of the necessary documentation and submitting the application for review and approval.

Engineering Services During Construction

In accordance with the RFP, this proposal includes only design and bidding phase services. Construction phase services scope and fee will be negotiated near the end of the design phase. As a full service firm, Dewberry can provide complete or selective engineering services during construction. Contract administration services can include conducting a pre-construction meeting, review and approval of material and equipment submittals and shop drawings for verification of compliance with specified project requirements, interpreting contract documents, responding to requests for information (RFI), review of monthly pay requests, processing change orders, assisting at final inspection, generating project punch lists, producing project close out documentation, and preparation of as-constructed record drawings. We can also provide full-time or part-time on-site construction observation and documentation services as needed. Our electrical design group has the capability and expertise to step in late in the construction phase and provide PLC programming, SCADA interface, and start-up assistance.

SCHEDULE

Dewberry’s proposed project schedule assumes award of a professional services contract and Notice to Proceed in April 2018 with the design complete and ready for bid by the end of 2018 to facilitate construction in 2019.



- The preliminary design phase will begin immediately with initial data and information gathering and review, surveying and mapping, initial environmental assessment work, and geotechnical work associated with evaluation of Castle Rock Reservoir No. 1.
- Preliminary design for the new Plum Creek Diversion Pump Station will be completed within 90 days, with submittal of the Basis of Design Report and 30 percent complete design by July 2018.
- 60 percent design will follow following review of the preliminary design with completion scheduled by September 2018.
 - This phase will include geotechnical work associated with the new Plum Creek Diversion Pump Station and work on environmental, and floodplain (CLOMR) approvals and permits.
- 90 percent and 100 percent design stages will follow review of the 60 percent design with completion scheduled for November and December 2018 respectively.
 - Inspection of the dewatered Castle Rock Reservoir No. 1 is projected to occur in late October 2018 with submittal of the Reservoir Evaluation Report in November 2018.
- The bid phase will proceed following final revision of the bid documents with the bid opening at the beginning of February 2019 and bid evaluation and contract award at the beginning of March, with construction start immediately thereafter.

Section 4

Summary of Two Similar Projects

Pine Valley Pump Station Refurbishment, Colorado Springs Utilities, CO

Dewberry performed a comprehensive condition assessment and designed improvements to the Pine Valley Pump Station to improve system reliability, enhance operations and maintenance, and extend the useful service life of the facility. The condition assessment included: site civil, structural, pumping equipment, piping and valves, HVAC equipment, and electrical and controls. Improvements included replacement of 4 horizontal split-case pumps each having a 300 HP motor and producing 2,000 gpm at 380 feet TDH, replacement of pneumatically controlled ball valves, and replacement of medium voltage motor control center. Dewberry performed a constructability review, developed demolition, construction sequencing, phasing plans and developed construction cost estimates.



After the preliminary design was finished, Dewberry prepared the final design, construction drawings, technical specifications, and design data handbook. Dewberry designed temporary mechanical bypassing and temporary electrical power feeds to support operation during construction. We also developed commissioning and start-up operation plans and held workshops and constructability reviews with Owner’s staff. During construction, Dewberry is providing contract administration and part time construction inspection services including shop drawing reviews, coordinating third party materials testing and inspection services, and providing technical support.

This project has consistently met budget and schedule goals.

Completion:
Design - December 2016
Construction - Phase 1 Improvements, January 2018

Key Personnel: Chad Weaver, Mark Maloney, Robert Bolton, Tom Veerman

Contact: Mike Guinn, mguinn@csu.org, 719.668.4970

Cedar Heights Pump Stations, Colorado Springs Utilities, CO

In 2010, the Dewberry team performed a comprehensive condition assessment of 28 existing water pump stations of all sizes throughout the Colorado Springs Utilities service area. Work included an evaluation of each pump station for hydraulic, mechanical, electrical, structural, and site conditions. We developed improvement programs based on risk and criticality of each facility and determined firm capacity for each pump station in the year 2010 and for projected 2030 conditions.



Cedar Heights No. 1 Pump Station was identified for immediate repairs, and Dewberry provided design and construction phase services to replace the existing below grade canned pump station with a new at ground level pump station equipped with two 125 HP vertical turbine pumps with capacities of 500 gpm. Design of the new Cedar Heights No. 2 Pump Station proceeded in 2016 and included two 450 gpm, 125 hp pumps housed in a new pump station building. Dewberry’s designs included civil, structural, mechanical, electrical, and instrumentation and controls. For both facilities, the design included replacement of an obsolete existing backup generator with a new, self-contained diesel generator housed in a sound-attenuated weatherproof enclosure.

In addition to design, Dewberry provided engineering support services during construction including contract administration, conducting progress meetings, submittal reviews, scheduling and managing third-party soils and materials testing services, weld inspection services, and cathodic protection services, provided commissioning and start-up services, and prepared record drawings. We also provided part-time resident inspection services throughout the project.

The project condition assessments and Cedar Heights No.1 improvements were completed on time and within budget. Cedar Heights No. 2 is under construction with completion scheduled to be on time and under budget.

Completion: Pump Station No. 1 - May 2013
Pump Station No. 2: April 2017 (Design), May 2018 (Construction)

Key Personnel: Chad Weaver, Mark Maloney, Robert Bolton, Tom Veerman

The following table presents a sampling of additional pump station projects completed by our proposed project team personnel and the Denver Dewberry office.

Client	Project Name	No. of Pumps	Pump Type	Station Capacity gpm	TDH, ft	Station hp	Notes
Castle Rock	Milestone PS	2	HSC	3,000	300	400	New PS
Castle Rock	Diamond Ridge 1 PS	6	VC	3,302	325	171	Upgrades to existing PS
Castle Rock	Diamond Ridge 2 PS	7	VC, HSC	3,715	254	340	New PS
Aurora Water	Blackstone PS	5	VC, HSC	9,810	160	605	New PS
Broomfield	South Boulder Diversion PS	1	VT	4,500	25	40	New PS
Colorado Springs Utilities	Bear Creek PS	5	VC, HSC	4,550	410	800	New PS
Colorado Springs Utilities	Cheyenne Canyon PS	4	VT	4,670	300	440	Upgrades to existing PS
Colorado Springs Utilities	LVWWTP NPPS	2	VT	6,940	224	500	Upgrades to existing PS
Colorado Springs Utilities	Highway 83 PS	5	HSC	10,400	250	800	New PS
Colorado Springs Utilities	SDS High Service PS	6	HSC	41,664	334	5,400	Planning and conceptual design of new PS
Colorado Springs Utilities	SDS Reduced Northfield PS	10	HSC	63,200	391	6,000	Planning and conceptual design of new PS
Colorado Springs Utilities	Wolf Ranch PS	7	HSC, VC	6,975	172	450	Planning and final design for new PS
Colorado Springs Utilities	SDS FW PS	7	HSC	53,956	675	11,250	Planning and conceptual design of new PS
Colorado Springs Utilities	Northgate PS	4	HSC	10,720	275	1000	Upgrades to existing PS
Colorado Springs Utilities	FWPS Condition Assessment	87	VC, HSC, VT	--	--	--	Condition Assessment for 28 PSs
Colorado Springs Utilities	Cedar Heights 1 Replacement	2	VT	1,000	620	250	New PS
Colorado Springs Utilities	JD Phillips NPPS	14	VT	17,150	480	2605	New PS
Ken-Caryl Ranch WSD	Valley Pump Station Improvements	5	HSC	6,200	455	1,550	Upgrades to existing PS
Left Hand WD	Highway 287 PS	3	VC	460	160	33	New PS
Left Hand WD	Eastern Region Phase II PS	2	VC	1,400	140	40	New PS
Longmont	Wade Gaddis PS	4	HSC	23,200	100	800	Upgrades to existing PS
Parker WSD	NWRF AWT Non-potable PS	4	VT	3,608	34	60	New PS
Parker WSD	Rueter-Hess PS	3	VT	4,500	75	225	New PS
Parker WSD	Cherry Creek PS	5	VT	38,598	388	4750	New PS
Parker WSD	Hess 1 PS	3	VT	2,400	518	450	New PS
Parker WSD	Hess 2 PS	3	VT	2,400	273	225	New PS
Parker WSD	Reata PS	2	VT	800	270	100	New PS
Parker WSD	Nue Town PS	3	VT	1,350	300	150	New PS
Parker WSD	Regency PS	3	VT	900	231	90	New PS
Parker WSD	Regional PS	7	VT	10,556	294	800	New PS
Platte Canyon WSD	Columbine West PS	4	VT, HSC	2,700	97	105	Upgrades to existing PS

Abbreviations
HSC - Horizontal split case
VT - Vertical turbine
VC - Vertical centrifugal

Dewberry recently evaluated water storage pond liner installations and designed rehabilitation improvements which included new water storage pond membrane liners.

Dewberry Engineers Inc.
Cost Detail Worksheet
Town of Castle Rock Plum Creek Diversion Pump Station Project Reservoir
RFP-2018-02

Task	Task Description	Total Cost	Subconsultants								Other Direct Costs	Labor Cost Subtotal	Total Hours	Dewberry Engineers Inc.									
			Total	Markup	Subtotal	Lintjer Haywood	ERO	Precision Survey	Brierley	Engineer IX (PIC)				Engineer VI (PM)	Engineer VII (Stormwater & QA/QC)	Engineer V (PE)	Engineer V (Structural)	Engineer III (Electrical)	Engineer III	Senior CAD Designer	CAD Designer	Admin III	
Dewberry Billing Rate (\$/hour)																							
\$ 210	\$ 165	\$ 185	\$ 155	\$ 155	\$ 130	\$ 125	\$ 125	\$ 110	\$ 90														
Task 1 - Project Management																							
1.1	Project Management	\$ 5,040	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,040	32	8	16							8		
1.2	Kickoff Meeting	\$ 3,060	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20	\$ 3,040	20		4		4		4	4				
1.3	Review Workshop (1 Workshop at Basis of Design, 30%)	\$ 2,320	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20	\$ 2,300	16		4		4		4	4				
1.4	Deliverable Review Meetings (3 Meetings at 60%, 90% and 100%)	\$ 7,180	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 60	\$ 7,120	48			12	4		8	12				
1.5	Monthly Progress Meetings (8 Meetings)	\$ 10,840	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 160	\$ 10,680	72			24			24	24				
	Subtotal	\$ 28,440	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 260	\$ 28,180	188	8	60	8	44	0	16	44	0	0	8	
Task 2 - Preliminary Design																							
2.1	Document Review	\$ 1,820	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 40	\$ 1,780	12		4		4			4				
2.2	Field Reconnaissance	\$ 3,040	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ 3,040	20			4	4		4	4				
2.3	Survey	\$ 8,660	\$ 8,000	\$ -	\$ 8,000	\$ -	\$ -	\$ 8,000	\$ -	\$ -	\$ 660	4		4									
2.4	Environmental Assessment	\$ 15,660	\$ 15,000	\$ -	\$ 15,000	\$ -	\$ 15,000		\$ -	\$ -	\$ 660	4		4									
2.5	Geotechnical Investigations - Pump Station and Reservoir	\$ 39,300	\$ 37,400	\$ -	\$ 37,400	\$ -	\$ -	\$ 400	\$ 37,000	\$ -	\$ 1,900	12		4			8						
2.6	Reservoir No. 1 Evaluation Report	\$ 3,190	\$ -	\$ -	\$ -					\$ 50	\$ 3,140	20		4		16							
2.7	Pump Station Basis of Design Report and Design Criteria	\$ 7,560	\$ 1,200	\$ -	\$ 1,200	\$ 1,200		\$ -	\$ -	\$ 50	\$ 6,310	44	2	4		16	2	2	16		2		
2.8	30% Design Drawings	\$ 23,580	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -	\$ 80	\$ 23,500	178		16	4	16	4	40	32	40	24	2	
2.9	Specifications, Table of Contents	\$ 760	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 760	6					2	4					
2.10	Preliminary Cost Estimate	\$ 1,660	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,660	12		2			2	4	4				
	Subtotal	\$ 105,230	\$ 61,600	\$ -	\$ 61,600	\$ 1,200	\$ 15,000	\$ 8,400	\$ 37,000	\$ 220	\$ 43,410	312	2	46	8	64	8	52	64	40	24	4	
Task 3 - Final Design																							
3.1	60% Design Drawings	\$ 59,660	\$ 7,300	\$ -	\$ 7,300	\$ 7,300		\$ -	\$ -	\$ 200	\$ 52,160	400	2	16	8	16	32	140	64	40	80	2	
3.2	60% Technical Specifications	\$ 7,040	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,040	52		4	4	4	4	8	24			4	
3.3	Surge Analysis and Transient Modeling	\$ 4,570	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,570	34		2		8			24				
3.4	60% Updated Cost Estimate	\$ 1,865	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,865	13		1		4	2	4	2				
3.5	90% Design Drawings	\$ 49,160	\$ 4,600	\$ -	\$ 4,600	\$ 4,600		\$ -	\$ -	\$ 200	\$ 44,360	340	2	16	8	16	32	80	64	40	80	2	
3.6	90% Technical Specifications	\$ 12,960	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12,960	96		4	4	16	8	24	32			8	
3.7	90% Updated Cost Estimate	\$ 1,295	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,295	9		1		2	2	2	2				
3.8	Bid Form and Measurement and Payment	\$ 925	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 925	7		1				2	4				
3.9	100% Design Drawings	\$ 19,970	\$ 2,000	\$ -	\$ 2,000	\$ 2,000		\$ -	\$ -	\$ 250	\$ 17,720	134		8	4	8	16	24	32	16	24	2	
3.10	100% Technical Specifications	\$ 2,810	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,810	20		2	4	2	2	2	4			4	
3.11	Final Cost Estimate	\$ 675	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 675	5			1			2	2				
	Subtotal	\$ 160,930	\$ 13,900	\$ -	\$ 13,900	\$ 13,900	\$ -	\$ -	\$ -	\$ 650	\$ 146,380	1,110	4	56	32	76	98	288	254	96	184	22	
Task 4 - Bid Phase Services																							
4.1	Attend Prebid Meeting and Assist with Preparation of Addenda	\$ 1,660	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,660	12		4					8				
4.2	Prepare Bid Tabulation, Evaluate Bids, and Recommend Award	\$ 1,330	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,330	10			2				8				
	Subtotal	\$ 2,990	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,990	\$ 22	\$ -	\$ 6	\$ -	\$ -	\$ -	\$ -	\$ 16	\$ -	\$ -	\$ -	
Task 5 - Approvals and Permitting																							
5.1	Douglas County Location & Extent	\$ 4,160	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100	\$ 4,060	28		8		8			12				
5.2	Douglas County GESC and SWMP	\$ 4,580	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100	\$ 4,480	32			8				24				
5.3	Douglas County Building Department	\$ 2,960	\$ 1,200	\$ -	\$ 1,200	\$ 1,200	\$ -	\$ -	\$ -	\$ 100	\$ 1,660	12					4	8					
5.4	COE and FWS Environmental Permitting	\$ 11,820	\$ 10,000	\$ -	\$ 10,000		\$ 10,000	\$ -	\$ -	\$ -	\$ 1,820	12		8					4				
5.5	CLOMR Flood Plain Permitting	\$ 21,690	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ 7,350	\$ 14,340	112			12				80		16	4	
	Subtotal	\$ 45,210	\$ 11,200	\$ -	\$ 11,200	\$ 1,200	\$ 10,000	\$ -	\$ -	\$ 7,650	\$ 26,360	196	-	16	20	8	4	8	120	-	16	4	
Project Total		\$ 342,800	\$ 86,700	\$ -	\$ 86,700	\$ 16,300	\$ 25,000	\$ 8,400	\$ 37,000	\$ 8,780	\$ 247,320	1,828	14	184	68	192	110	364	498	136	224	38	