

Appendix A

Basic Services of Engineer

Section 1. Engineer's Rights and Duties.

- A. To furnish all labor, materials, equipment, supplies, and incidentals necessary to conduct and complete the Engineer's portion of the project as defined in the scope of work and to prepare and deliver to Billings all plans, specifications, bid documents, and other material as designated herein.
- B. Ascertain such information as may have a bearing on the work from local units of government, utility companies, and private organizations and shall be authorized to procure information from other authorities besides Billings, but shall keep Billings advised as to the extent of these contacts and the results thereof.
- C. Prepare and present such information as may be pertinent and necessary in order for Billings to pass critical judgment on the features of the work. The Engineer shall make changes, amendments or revisions in the detail of the work as may be required by Billings. When alternates are being considered, Billings shall have the right of selection.
- D. Engineer's work shall be in accordance with the standards of sound engineering and present City, State, and National standards and policies currently in use.
- E. Conform to the requirements of the Montana Code Annotated Title 18 "Public Contracts" and more particularly Sections 18-2-121 and 18-2-122, and all other codes of the State of Montana applicable to providing professional services including codes and standards nationally recognized.
- F. The Engineer shall certify with the submission of final plans that the plans are in conformance with applicable sections of Title 69, Chapter 4, Part 5, of the Montana Code Annotated as pertaining to existing utilities.
- G. To perform professional services in connection with the project and will serve as Billings' representative in those phases of the project to which this agreement applies.
- H. Where Federal funds are involved, the necessary provisions to meet all requirements will be complied with and documents secured and placed in the bidding documents.
- I. Submit an estimated progress schedule as to time and costs at the beginning of the work, and monthly progress reports thereafter until complete. The reports will include any problems, potential problems, and delays as foreseen by the Engineer. Reports will be submitted in a timely manner to permit prompt resolution of problems.
- J. Contract administration duties will include review of contractor certified payrolls for wage rate compliance. Discrepancies in certified payrolls will be resolved with the

Contractor. A signed Engineer's Payroll Check Sheet (included in the Standard Modifications to MPWSS) will be submitted as proof of this review with one copy of each payroll.

- K. Name a Task Director who shall be the liaison between Billings and the Engineer. For this project the Task Director designated for the Engineer is Craig Habben working under the Principal-in-Charge, Amanda McInnis.

Section 2. Billings Rights and Duties.

- A. To furnish all labor, materials, equipment, supplies, and incidentals necessary to conduct and complete Billings' portion of the project as designated in the scope of work.
- B. Name a Task Director who shall be the liaison between the Engineer and Billings. For this project, the Task Director designated is Will Robbins, working under the City Engineer, Debi Meling.

Section 3. Scope of Work.

The project consists of engineering services for the City of Billings W.O. 12-21 – Water Treatment Chemical Building/Disinfection Improvements. The purpose of the project is to evaluate upgrades to the existing Chemical Building and to evaluate disinfection options. In addition to the Chemical Building, the remaining portions of the chemical system will be evaluated to determine any needed improvements.

The scope of work is summarized below.

- Evaluate Chemical Building
 - Determine what equipment (piping, valving, instrumentation, etc.), if any, is or will not be in operation to allow for its removal.
 - Determine what remodel/replacement work should be done to improve energy efficiency of HVAC system, electrical, lighting, doors & windows, etc.
- Evaluate Chemical System
 - Review chemicals being used and recommend any changes.
 - Review Bulk Chemical Building to determine improvements required to meet needs of recommended chemicals and ability to meet code requirements associated with recommended chemicals.
 - Review remaining portions of the chemical system including piping, valving, instruments and feed locations to determine any improvements.
- Disinfection Options Evaluation.
 - Evaluate long-term appropriateness of continued use of chlorine gas in terms of cost, risk and availability.
 - Evaluate disinfection options beyond chlorine gas for primary and secondary disinfection.
 - Evaluate options for changing to a different disinfection system, in a short time frame, should chlorine gas suddenly be unavailable.

DETAIL SCOPE OF SERVICES

The scope of services that will be utilized on the Billings Water Treatment Plant Chemical Building/Disinfection Improvements project is presented in the summaries for Tasks 100 through 400. The scope of services is organized as follows:

<u>Task Series</u>	<u>Description</u>
100	Project Management and Coordination
200	Chemical System Evaluation
300	Disinfection Alternatives Evaluation
400	Prepare Study Report

TASK SERIES 100

101– Project Initiation

The purpose of this task will be to review project goals and objectives, review project schedule and kick-off the project internally.

102 – Meetings with City Staff

During the design phases of the project, key members of the Consultant design team will meet with the City staff to review the project. Four meetings are planned.

103 – Project Management

Coordinate design team, monitor project status and prepare financial documents.

TASK SERIES 200 – CHEMICAL SYSTEM EVALUATION

In this task, entire chemical system will be evaluated to determine appropriate chemicals and ability of current facilities to meet current and future requirements and regulations. Specific tasks include the following:

201 – Provide Schematics of Chemical System

HDR will utilize existing schematics and new schematics to develop a complete set of schematics of the existing chemical system including disinfection. 6 schematics assumed. One for each chemical being used and two overall schematics.

Deliverable:

- Chemical system schematics.

202 – Chemical Facilities Summary

Summarize all the equipment, tanks, instruments and other components of the chemical system including disinfection components.

Deliverable:

- Summary tables of components for use in Report.

203 – Review Data

Obtain, compile and review raw water data, pretreated water data and finished water data.

Deliverable:

- Summary data.

204 – Evaluate and Recommend Chemicals

Evaluate existing chemicals and other chemicals for cost effectively meeting the treatment requirements of the raw water and for meeting safety and risk issues. Provide recommendations for City Staff review.

205 – Evaluate Facilities to meet Chemical System Criteria

Evaluate the Chemical Building, Bulk Chemical building and other chemical system components for meeting the needs of the recommended chemicals including code requirements. Building architecture, structure, HVAC and 120/240v electrical components will be evaluated. Tanks, pumps, instruments and other associated items will be reviewed.

206 – Determine Recommended Facilities and Estimated Costs

From evaluation in Subtask 205 develop recommendations for chemical facility improvements and the associated costs.

Deliverable:

- Recommended facilities and costs for inclusion in Report.

207 – Review Recommendations with City Staff

Review recommendations and costs with City Staff. Finalize recommendations.

TASK SERIES 300 – DISINFECTION ALTERNATIVES EVALUATION

In this task alternatives for disinfection facilities will be evaluated and costs compared.

301 – Develop Disinfection Alternatives

Compile relevant alternatives for primary and secondary disinfection for the WTP. Include advantages and disadvantages of each as they pertain to Billings. Evaluate provisions for a disinfection system that could be implemented in a short time frame if chlorine gas were no longer available. Coordinate with Montana Department of Environmental Quality as needed for evaluation of alternatives.

302 – Develop Budgetary Costs for Relevant Alternatives

For alternatives developed in Subtask 301 develop capital and O & M costs for each for comparison of present worth.

Deliverable:

- Recommended alternatives and costs for inclusion in Report.

303 – Review Alternatives with City Staff

Review recommendations and costs with City Staff. Finalize recommendations.

TASK SERIES 400 – PREPARE STUDY REPORT

In this task the previous work components will be summarized in a report that can be used for planning future chemical system improvements.

401 – Prepare Draft Report

Prepare a draft report summarizing the chemical systems, recommended chemical system improvements, recommended disinfection alternative and implementation sequence.

402 – Conduct Internal Review and Incorporate Results

A senior technical expert in chemical and disinfection systems will provide review of the recommendations and report. Applicable comments will be incorporated.

403 – Review with City Staff and Incorporate Comments

HDR will provide draft copies of the Report and review the Report with City Staff. From the review, final copies of the report will be completed.

Deliverables:

- Draft copies of the Report (5)
- Final copies of the Report (5)