

NOTICE TO ALL PROPOSERS

Any Engineering Firm or Corporation wishing to enter into a contract with the Wyoming Water Development Commission must possess a Certificate issued by the Board of Registration for Professional Engineers and Professional Land Surveyors to practice engineering or land surveying in Wyoming. Geologists must possess a Certificate from the Board of Registration for Professional Geologists to perform work of a geologic nature.

Any Firm or Corporation wishing to enter into a contract with the Wyoming Water Development Commission must possess a Certificate of Good Standing issued by the State of Wyoming Office of the Secretary of State to conduct business in Wyoming.

Contracts will not be finalized until Firms have met these requirements.

Proposers should also pay particular attention to project deadlines in the Scope of Services as these may have changed from previous years due to Commission approved changes to project funding approval and consultant selection schedules.



WYOMING WATER DEVELOPMENT OFFICE

6920 Yellowtail Road
Cheyenne, WY 82002

Phone: (307) 777-7626
wwdc.state.wy.us

Matthew H. Mead
Governor

Commissioners

Nick Bettas	Kellen K. Lancaster
Karen Budd-Falen	Sheridan Little
David Evans	Jeanette Sekan
Gerald E. Geis	Larry Suchor
Clinton W. Glick	Rodney Wagner

Harry C. LaBonde, Jr., P.E.
Director

REQUEST FOR PROPOSAL NO. 18-5 MIDDLE BIG HORN RIVER WATERSHED, LEVEL I STUDY

SEALED NON-PRICED PROPOSALS, INCLUDING 10 PAPER COPIES AND 1 DIGITAL COPY IN PDF FORMAT ON A CD OR USB DRIVE, WILL BE RECEIVED by the WYOMING WATER DEVELOPMENT COMMISSION (Commission), 6920 Yellowtail Road, Cheyenne, Wyoming 82002 (82009 if shipping by means other than US Postal Service) until 1:00 p.m., March 30, 2018, at which time they will be publicly opened for PROFESSIONAL SERVICES required to conduct the Middle Big Horn River Watershed, Level I Study.

SEALED PRICE PROPOSALS, INCLUDING 1 PAPER COPY AND 1 DIGITAL COPY IN WORD FORMAT ON A CD OR USB DRIVE, shall also be submitted in a single separate sealed envelope containing itemized prices accompanying the copies of the non-priced proposals. These envelopes shall be opened after the firms to be interviewed have been selected and prior to the interviews. Neither proposal contents nor prices will be released at the proposal openings.

Any inquiries regarding this request for proposal should be directed to Dave Myer, Project Manager, Wyoming Water Development Office, 6920 Yellowtail Road, Cheyenne, Wyoming 82002, Telephone (307) 777-7626.

Your proposal shall be based on the following attachments "A", "B", and "C".

DATED THIS 5th DAY OF MARCH, 2018.

Harry LaBonde, Director
Wyoming Water Development Office

REQUEST FOR PROPOSAL NO. 18-5 (Cont'd.):

ATTACHMENT "A"

A. INFORMATION FOR PROPOSERS:

1. In order to be considered for an award, each proposal must bear the signature of the proposer or his authorized representative, the work must be supervised by a Wyoming licensed engineer/geologist, as appropriate, and the firm must be registered with the State of Wyoming.
2. Proposals received after the date and time specified will not be accepted or considered. **This requirement is strictly enforced.**
3. After the successful proposer is selected, the Commission will negotiate a final contract, scope of services, and contract price based on, but not limited to, the work items in Attachment "B". The Commission, at its sole discretion and through duly authorized contract amendments, may request the selected consultant to complete additional work or phases beyond the scope of services included in the initial contract.
4. After the final contract is negotiated and work begun, payment to the successful proposer shall be based on an itemized billing of work completed as derived from the approved hourly rate and reimbursable expenses price schedule approved by the Commission and contained in the contract for services. A total contract amount and an amount for each task will be specified in the contract. The total contract amount is controlling and shall not be exceeded without prior written consent of the Commission. Requests for payment must be made on forms provided by the Commission, or an approved equal, and must be properly executed. Payment will be made no more often than monthly.
5. The successful proposer shall furnish all materials, equipment and labor necessary to complete the study.
6. The State of Wyoming reserves the right to reject any or all proposals submitted.
7. The successful proposer shall be fully insured as to save the State of Wyoming harmless from any claims involving the employees or equipment used by the successful proposer and subconsultants while executing this service.
8. The successful proposer shall be familiar with all applicable state laws. The attention of prospective proposers is called to the requirements as to the conditions of employment to be observed and to all applicable laws affecting the work, particularly to the procurement procedures required by Section 9-2-1016 and Section 9-2-1027 through 9-2-1033, Wyoming Statutes.

9. No prospective proposer shall withdraw their proposal for a period of thirty (30) days after the actual date of proposal opening.

10. The Wyoming Water Development Office (Office) shall provide all possible assistance and cooperation to firms preparing proposals for this project. The proposer should understand that verbal comments may be subject to misinterpretation and are in no way binding on the individual, Office, or the Commission. If questions arise concerning any aspect of this request for proposals, the proposer should request clarification in writing. A copy of this request, as well as the written response, shall be provided to all firms receiving a request for proposals on the project.

11. The State of Wyoming hereby notifies all prospective proposers that it will affirmatively ensure that in any contract entered into pursuant to the advertisement, small or minority business enterprises will be afforded full opportunity to submit proposals in response to this invitation and will not be discriminated against on the grounds of age, race, religion, color, sex, national origin, or ancestry in consideration for an award.

12. The proposer hereby agrees that should they be awarded this contract, proposer shall not discriminate against any person who performs work thereunder because of age, race, religion, color, sex, national origin or ancestry.

B. PROPOSAL FORMAT:

The proposal shall be prepared and contain the following information:

1. Cover letter submitted with proposal.
2. Title page.
3. Table of Contents.
4. Introduction.
5. Scope of Services:

A detailed Preliminary Scope of Services is included in Attachment "B". State how you intend to conduct the activities presented in the Preliminary Scope of Services, and list all assumptions made in preparing the proposal. The proposed work/approach should be presented in the same format as in Attachment "B" and should address all the requirements contained therein.

6. Proposed Scope Alterations:

If you feel that the Preliminary Scope of Services (Attachment "B") may be improved by additions, deletions, or changes, please elaborate in this section. State your

alterations as specific task changes for the activities presented in the Preliminary Scope.

7. Qualifications:

- a. Briefly show your firm's capability for performing this project.
- b. List project team members and identify the project manager. As applicable, include a certification that the work conducted will be supervised by a professional engineer licensed in Wyoming as required by the provisions of WS 33-29-114 through WS 33-29-139 and a professional geologist licensed in Wyoming as required by the provisions of WS 33-41-101 through 33-41-121. Provide the Wyoming Board of Professional Engineer's license number of your firm.
- c. State which of your offices will perform the project work.
- d. Provide a resume for each key project member.
- e. Identify all proposed subconsultants, list the work to be performed by the proposed subconsultants, and provide statements of project specific qualifications for each subconsultant.

8. Listing of current clients whose interests may compete or conflict with the project described herein.

9. Work Schedule. Assume a Notice to Proceed will be issued late-June. Provide a bar graph schedule depicting the duration on each work item and the proposed phasing of the work.

10. Previous Work for Sponsor. List any projects for which your firm has been under contract to the sponsor during the period of 2013 to 2017. This list should include individual project names, dates and contract amounts.

C. PRICE PROPOSAL:

Submitted with the non-priced proposal, but in a separate single sealed envelope, shall be one copy of the price proposal(s) in paper copy and one digital copy in Word format on a CD or USB drive. The envelope shall be labeled with the project name and shall indicate that it contains the price proposal(s).

Two price proposals may be submitted. One proposal, prepared in the format of Attachment "C", must give costs to perform the Preliminary Scope of Services as specified in Attachment "B". A second price proposal may also be submitted, in a format similar to Attachment "C", specifying costs for the Preliminary Scope of Services with Alterations as per Item B.6 (Proposed Scope Alterations). The

proposed hourly rate and reimbursable expenses price schedules for each firm involved shall be included in each price proposal, and shall be in Word format.

D. CONTRACTOR SELECTION PROCEDURES:

The Commission will conduct the selection process in accordance with Sections 9-2-1016 and 9-2-1027 through 9-2-1033, Wyoming Statutes.

For those firms requesting consideration, the Commission has evaluated current statements of qualifications and performance data on file with the Office together with any applications submitted, and has selected not less than three (3) firms (if available) considered qualified to perform the required professional services to submit proposals. Consideration in the selection process by the Commission is based upon the ability of professional personnel, past performance, willingness to meet time requirements, location, residency, current and projected workloads, the volume of work previously awarded to the firm by the Commission, and the equitable distribution of contracts among qualified firms.

The Commission will evaluate proposals submitted by the short listed firms and, based upon these proposals, select those firms that will be interviewed. The qualifications, experience, and expertise of the project team and contents of the work proposal will be considered in selecting firms to be interviewed. Price will not be considered in determining consultants invited to the interview process.

The Commission will interview not less than three (3) firms, if possible, selected from those that have submitted proposals to do the work. The interview shall be recorded and include discussion of each firm's approaches to the project, projections of project costs, qualifications, ability to furnish required professional services, use of alternative methods for furnishing required professional services, and an estimated fee based on the Commission's description of the work. The estimated fee and other information provided throughout this process may be used as a basis for selection by the Commission of the most appropriate firm for contract negotiations.

REQUEST FOR PROPOSAL NO. 18-5 (Cont'd.):

ATTACHMENT "B"

A. AUTHORIZATION:

It is anticipated that the Wyoming Legislature will authorize the Wyoming Water Development Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services.

B. PROJECT DESCRIPTION:

1. Location. The Middle Big Horn River Watershed as spatially defined for this study is located in Big Horn, Washakie, Hot Springs, and Park Counties. The watershed includes the primary stream system of the Middle Big Horn River from south of Worland to Greybull where the Big Horn River confluences with the Greybull River. Tributaries in the study area include Elk Creek, Fifteenmile Creek, Gooseberry Creek, Nowater Creek, and the East Fork Nowater Creek. The extent of the project's study area includes the following HUC 12 basins:

100800070804	Middle Nowater Creek
100800070604	Upper Buffalo Creek
100800070608	Hillberry Reservoir-Gooseberry Creek
100800071005	Schuster Draw-Fifteenmile Creek
100800071201	Tenmile Creek
100800071207	Alamo Creek-Bighorn River
100800071205	South Fork Elk Creek
100800070603	Mormon Creek-Gooseberry Creek
100800070802	Mud Creek
100800070702	Upper East Fork Nowater Creek
100800070905	Timber Creek-Fifteenmile Creek
100800070904	Dry Cottonwood Creek
100800071202	Slick Creek-Bighorn River
100800071204	Sixmile Creek-Bighorn River
100800071208	Antelope Creek-Bighorn River
100800071104	Little Gooseberry Creek
100800070602	Middle Creek
100800070606	Enos Creek-Gooseberry Creek
100800071004	North Fork Fifteenmile Creek
100800070607	Gillies Draw-Gooseberry Creek
100800070903	Big Draw-Fifteenmile Creek
100800070601	Deer Creek-Gooseberry Creek
100800070609	Blake-Denton Number 1 Reservoir-Gooseberry Creek

100800071002	Lower Middle Fork Fifteenmile Creek
100800071106	Horse Gulch-Bighorn River
100800070701	Joe Henry Fork
100800070704	Lower East Fork Nowater Creek
100800070703	Denver Jake Draw
100800070901	Enright Reservoir-Fifteenmile Creek
100800070902	Badger Creek-Fifteenmile Creek
100800070605	Lower Buffalo Creek
100800070801	Headwaters Nowater Creek
100800070803	Upper Nowater Creek
100800071003	Reservoir Creek-Fifteenmile Creek
100800070805	Lower Nowater Creek
100800071001	Upper Middle Fork Fifteenmile Creek
100800071203	Fivemile Creek
100800071206	Elk Creek

2. Purpose. To perform a Level I study for the Middle Big Horn River Watershed.
3. History. The South Big Horn Conservation District and the Washakie County Conservation District requested a watershed study to evaluate current watershed function, irrigation diversion/conveyance systems, and upland livestock/wildlife water management and rehabilitation opportunities. Surface water storage including enlargement and/or rehabilitation of existing water storage facilities, current condition of wetlands and riparian areas within the drainage, and geomorphic classification are also of interest. This information would provide baseline information from which the districts can pursue implementation of management practices that address the natural resource issues within the drainage. The service area for the South Big Horn Conservation District includes the lower portions of Middle Big Horn River Watershed that reside in Big Horn County. The service area for the Washakie County Conservation District includes the upper portions of the Middle Big Horn River Watershed that primarily reside in Washakie County, although some portions extend into Park and Hot Springs Counties. Existing reports that are relevant to this study include the following:
 - RESPEC. E. Coli Total Maximum Daily Loads for the Big Horn River Watershed. Prepared for Wyoming Department of Environmental Quality. October, 2013.
 - Western Heritage Consulting & Engineering. Hanover Irrigation District Master Plan, Level I Study. Prepared for Wyoming Water Development Commission. August, 2017.
 - U.S. Bureau of Land Management, Wind River/Bighorn Basin District. Environmental Impact Statement for the Westside Land Conveyance Project. January, 2011.

- WWC Engineering. Final Report, Westside Irrigation Project Business Plan. EDA Project Number: 05-86-04732. Prepared for U.S. Department of Commerce. February, 2010.
- Westside Irrigation Project. Various studies from the 1980s. Refer to WWDC's Project Reports website:
<http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html>

C. PROJECT REQUIREMENTS:

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief progress report monthly outlining the study status, progress, and results to date on or before the last working day of the month regardless of whether or not a billing statement is submitted.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer model or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed model names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital formats with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on that media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer models developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the model(s). All computer models, databases, and spreadsheets developed herein (written and digital formats) are due on the same date as the final report.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

* Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that report.

* Maintain a project work file containing the materials used in project analysis. This file will be available for review by the

Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

* Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	\$ _____
Permitting and Mitigation	\$ _____
Title of Opinion	\$ _____
Acquisition of Access and Rights of Way	\$ _____
Pre-Construction Costs (Subtotal # 1)	\$ _____
Cost of Project Components	\$ _____
	\$ _____
Total Component Cost (Subtotal #2)	\$ _____
Construction Engineering Cost (Subtotal #2 x 10%)	\$ _____
Components and Engineering Costs (Subtotal #3)	\$ _____
Contingency (Subtotal #3 x 15%)	\$ _____
Total Construction Cost (Subtotal #4)	\$ _____
Total Project Cost (Subtotal #1 + Subtotal #4)	\$ _____

Note: Inflation costs, as determined by the consultant and project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for the draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a professional engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a professional geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan portion of an agricultural project will be financed at a 4% interest rate with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or USDA Rural Utility Service (RUS), and if required in the Contract Scope of Services, the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Commission may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES:

Throughout the course of this study, the Consultant shall remain mindful of the following objective statement that pertains to all Wyoming Water Development Commission (WWDC) Watershed Studies:

The objective of a Watershed Study is to evaluate an individual watershed's existing conditions and, from collaboration with landowners, stakeholders, and public outreach, develop a Watershed Management and Rehabilitation Plan and identify projects that are eligible for funding from WWDC and other sources that may improve or maintain watershed function and systems.

Task 1. Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsors with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsors and Office project manager. The scoping meeting shall be held jointly with both Sponsors in attendance.

Public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsors and all affected parties informed of progress. The Consultant should assume a minimum of two (2) public project meetings in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsors. All public project meetings shall be held jointly with both Sponsors in attendance. The Consultant shall prepare all notices and needed materials and prepare the meeting record. In addition to the public project meetings, several informal meetings with the Sponsors or Office project manager may be necessary during the course of the study. All meetings should be scheduled to coincide with fieldwork whenever possible.

The Consultant shall assist the Sponsors with public participation in terms of meetings and outreach that communicates the nature, status, and findings of this study. During the study, public outreach shall also occur as needed for information gathering and to help identify WWDC Small Water Program Projects (SWPP) and other WWDC water development opportunities. Public participation meetings and outreach are anticipated to involve local landowners, stakeholders, agencies, organizations, representatives of land

management activities, and any other interested parties. Outreach may take the form of flyers, postcards, postings, newspaper advertisements, mailings, etc. If determined to be valuable for the project by the Office project manager and Sponsors, the Consultant may utilize an existing website to facilitate information dissemination. If the Sponsors are willing to do so, the Consultant may coordinate with the Sponsors to provide information on the Sponsors' website. The website may provide information postings, project updates, mailing signups, and general information exchange/request for information from interested parties.

Task 2. Information Review

The Consultant shall gather and review existing background information available through any number of relevant sources, including, but not limited to: WWDC; Water Resources Data System (WRDS); Wyoming Department of Environmental Quality (WDEQ); Wyoming Game and Fish Department (WGFD); Wyoming State Engineer's Office (WSEO); Wyoming State Geological Survey (WSGS); Wyoming Oil and Gas Conservation Commission (WOGCC); University of Wyoming (UW); U.S. Geological Survey (USGS); Natural Resources Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); U.S. Army Corps of Engineers (USACE); Bureau of Land Management (BLM); local conservation districts; and other local agencies and local landowners as appropriate. Gathered and reviewed data may include published and unpublished literature, public records, research material, numeric data, spatial data, aerial photography data, topographic data, and existing river basin plans.

» Deliverables under this task shall include a bibliography or table of existing studies and descriptions of their applicability to the watershed. A map showing the general location of completed WWDC planning and construction projects and studies shall be provided.

Task 3. Inventory and Descriptions

This task of the Watershed Study involves an inventory, description, and in some cases, an analyses of the Physical, Biological, and Anthropogenic Systems within the watershed followed by the preparation of written descriptions, maps, charts, tables, GIS data, etc. of specific watershed topics or areas of concern. In some instances, further analyses may be needed in order to formulate conclusions on specific watershed topics. The overall intention of this task is to provide a snapshot of existing conditions within the study area. Intended deliverables for this task for each distinctive watershed topic are as specified within the outlined sections below.

Inventory: The inventory is intended as a data gathering effort on specific watershed topics. Overall, it includes the acquisition of information from any number of relevant sources either through remote gathering of various datasets or through field reconnaissance performed specific to this task or in conjunction with Task 5 efforts. Inventoried items and information are expected to be inclusive of, but not limited to historic reports, maps, and documents; interviews with the Sponsors, landowners and stakeholders; electronic files and website downloads; and any field reconnaissance

investigations and surveys that are conducted. As part of the inventory, the Consultant shall assess and evaluate each watershed topic to the degree necessary to formulate conclusions and recommendations with respect to fulfilling the objectives of the watershed study. Furthermore, the Consultant should remain cognizant of any previously inventoried features and avoid duplicating work efforts.

Descriptions: Written descriptions are expected to consist of narratives contained within the final report based upon the findings from the inventory. Although the narratives are envisioned to be brief, the Consultant may prepare each to the degree and detail necessary to accurately communicate the nature of each watershed topic. The Consultant shall generally describe the role of each topic in influencing the physical, biological and anthropogenic integrity of the watershed and draw conclusions as applicable.

Analyses: Analyses may be required on various watershed topics as agreed upon during the course of this study by the Consultant and the Office project manager. The intention of these analyses is to further refine the acquired information and formulate conclusions necessary to achieve the objectives of this study and subsequent preparation of a watershed plan and project recommendations. All analyses shall be conducted to the degree necessary to suit the nature of the topic and documented within the final report to fully support any conclusions, plans, or recommendations that are reached. Furthermore, the Consultant should remain cognizant of any previously analyzed topics and avoid duplicating work efforts.

Due to the nature and inherent complexity of topics contained within a watershed study, while conducting this task, the Consultant shall remain responsive to the likelihood of overlap in many of the categories, watershed topics, and issues in terms of inventorying, data collection efforts, written descriptions, and analyses. In addition, the Consultant should maintain a dynamic approach during the course of the study, recognizing limitations of what can be accomplished from a timing and budgetary standpoint, balancing efforts accordingly, and regularly coordinating with the Office project manager and Sponsors.

Table 1 presents an outline of the watershed systems, categories, and watershed topics. This outline is intended as a guide to help organize the following task objectives and steer the Consultant's focus and structure of the final report. Items within the outline as well as its structure are not intended to be all-inclusive and absolute. During the course of this study, the Consultant may propose additions to, deviations from, or combinations thereof, etc. to any items contained within the outline.

The Consultant is encouraged to become acquainted with the Wyoming Association of Conservation Districts (WACD) and review its mission statement (<http://www.conservewy.com/index.html>). In its capacity, the WACD has developed "Suite Water," an internet-based, online mapping and dataset tool for information dissemination (<http://suitewater.wygisc.org>). Suite Water can be described as a "free-GIS" with preloaded GIS data for use by Conservation Districts, landowners, and any other interested parties. Consultants are invited to explore this tool to possibly augment efforts in Task 3.

Table 1: Outline of Watershed Systems, Categories, and Topics

Systems	Categories	Topics
A Physical Systems	(I) Surface Water	a. Hydrography
		b. Water Quality
		c. Flooding
		d. Runoff
	(II) Geomorphology	a. Stream Classification
		b. Channel Structure and Stream Stability
		c. Sediment Transport
	(III) Groundwater	a. Aquifers and Springs
	(IV) Geology	a. Topography
		b. Soils
		c. Bedrock
	B. Biological Systems	(I) Fish and Wildlife
b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal)		
c. Sage Grouse		
(II) Land Cover		a. Riparian Areas
		b. Vegetation and Plant Communities
C. Anthropogenic Systems	(I) Agricultural Water Use	a. Irrigated Lands
		b. Irrigation Systems
	(II) Domestic, Municipal, and Industrial Water Use	a. Potable Water Systems
		b. Industrial and Mining
		c. Produced Water
	(III) Water Storage	a. Reservoirs
		b. Upland Water Storage
	(IV) Land	a. Land Use
		b. Land Ownership
		c. Land Management and Upland Water Resources
		d. Cultural Resources

A. Physical Systems

The Physical Systems within the watershed shall be cataloged as outlined below with respect to the following categories: Surface Water; Geomorphology; Groundwater; and, Geology.

(I) Surface Water

Specific watershed topics and their respective deliverables under the Surface Water category are described below. In the interest of maintaining consistency, the Consultant shall utilize the National Hydrography Dataset (NHD) as the foundation for all Surface Water inventories, descriptions, and analyses.

a. Hydrography: The Consultant shall establish a foundation for this study by utilizing existing information and sources to develop mapping of all pertinent surface water hydrology features within the watershed, including but not limited to river and stream networks, reservoirs, wetlands, ditches, etc. Inventory and briefly summarize the physical hydrology of the watershed. Utilizing existing information where available, the Consultant shall attribute and label streams accordingly as perennial, intermittent, or ephemeral. Coordinate with the Sponsors regarding mapping needs for wetlands and other hydrography features.

» Deliverables under the Hydrography topic are anticipated to consist of a narrative or description contained within the final report; referenced GIS data source(s) in the final report; and any necessary maps, charts, tables, etc. inserted into the final report.

b. Water Quality: Water quality for the watershed, including any relevant data associated with Clean Water Act Section 303d listed streams, will be mapped using existing data. Information available from WDEQ, conservation districts and other agencies will be used to develop this map. Wyoming Pollutant Discharge Elimination System (WyPDES) permits shall also be mapped. The latest Wyoming Surface Water Classification List available from the WDEQ-Water Quality Division should be obtained and presented.

» Deliverables for Water Quality are anticipated to consist of a written description and a single map and table inserted into the final report.

c. Flooding: The Consultant shall inventory and describe areas and occurrences of flooding within the watershed based on Sponsor input, in-field reconnaissance, or from discussions with landowners and other stakeholders. As appropriate, document any in-place Best Management Practices (BMP) that mitigate flooding and appraise their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement,

water quantity, water quality, economic stability, stream corridor or riverine stability. Document occurrences and effects of historic flooding on the main stem river that resulted from upstream reservoir releases. Suggest ways to mitigate such flooding problems as part of the Plan as discussed in Task 5.

d. Runoff: The Consultant shall inventory and describe areas with runoff or drainage problems within the watershed based on Sponsor input, in-field reconnaissance, or through discussions with drainage districts, landowners and other stakeholders within the watershed. Investigate areas with drainage issues, including areas that are washing out, problems with ponding, etc. As appropriate, document any in-place BMP that mitigate runoff, drainage, and stormwater issues and appraise their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability. Document any runoff or drainage problem areas and effects and suggest ways to mitigate them within the Plan as discussed in Task 5.

» Deliverables for both Flooding and Runoff are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; and any necessary maps, charts, etc. inserted into the final report.

(II) Geomorphology

Topics and deliverables under the Geomorphology category are projected to consist of the following elements and described individually or in some combination thereof:

a. Stream Classification: The stream systems within the watershed shall be classified using a Rosgen Analysis. In addition, any stream classifications relevant to geomorphology that have been developed by WGFD or WDEQ shall be acquired and presented. The intention of morphologic classifications is to better understand channel processes based upon channel form and, for example, to help identify which diversion improvement techniques, channel stabilization measures, and stream restoration or water development projects are appropriate for a particular stream segment. Floodplain connectivity may be mapped using Federal Emergency Management Agency (FEMA) floodplain data, empirical evidence, local input, etc., and integrated into Rosgen analysis to show the floodplain area still connected to the stream.

b. Channel Structure and Stream Stability: Channel structure, morphology, and stability of stream systems will be assessed where appropriate. Channel segments of specific interest will be identified for future study and mapped. Locations of headcuts, nickzones, geologic controls, man-made grade control structures and “hard points” shall be identified and mapped. Proper

Functioning Condition (PFC) and NRCS Stream Visual Assessment Protocol (SVAP) assessments may also be incorporated where applicable.

c. Sediment Transport: The Consultant shall inventory and describe occurrences of erosion and sedimentation primarily based on interviews with landowners and others or empirical evidence obtained during any in-field reconnaissance and public outreach. Opportunities for improvement shall be identified and mapped.

» Deliverables for all topics under the Geomorphology category are anticipated to consist of any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any applicable analyses and respective conclusions fully documented within the final report.

(III) Groundwater

The watershed topic and deliverables under the Groundwater category are anticipated to consist of the following:

a. Aquifers and Springs: In order to characterize the hydrogeology of the watershed and the groundwater utilization in the subwatersheds, aquifers will be described and mapped using existing data. Alluvial aquifers, general groundwater flow direction, bedrock aquifers, artesian conditions, spring locations, and groundwater usage shall be discussed and mapped as appropriate. Identify depth to groundwater, particularly in potential water development areas for drilling of wells for irrigation or stockwater. Assess the impact of groundwater quality within the watershed. More detailed analysis may be provided where geology or soils have a significant effect on watershed functions.

» Deliverables for Aquifers and Springs are anticipated to consist of written descriptions; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report; and any necessary analyses and respective conclusions fully documented within the final report.

(IV) Geology

Watershed topics and their respective deliverables under the Geology category are envisioned to consist of the following:

a. Topography: The Consultant shall provide a description of the topography within the watershed. The overall terrain, landforms, contours, relief, etc. within the study area should be characterized. Hills, valleys,

mountains, plains, plateaus should be described in order to provide a mental picture of the landscape. Provide information on land slope and slope stability relative to its potential effect on water development and storage projects.

» Deliverables for Topography are anticipated to consist of a written description inserted into the final report along with any necessary maps, charts, tables, etc.

b. Soils: Soils within the watershed will be described and mapped using existing available data obtained from sources such as the NRCS Soil Survey, SSURGO, etc. More detailed analysis may be provided where geology or soils have a significant effect on watershed characteristics. Soil descriptions may be presented to help depict what plant community composition may exist in a given area.

c. Bedrock: Bedrock within the watershed will be described and mapped using existing available data obtain from sources such as the WSGS. More detailed analysis may be provided where geology or bedrock may have a significant effect on watershed characteristics.

» Deliverables for Soils and Bedrock are anticipated to consist of referenced GIS data source(s) in the final report; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

B. Biological Systems

The Biological Systems within the watershed shall be inventoried as outlined below with respect to the following general categories: Fish and Wildlife; and, Land Cover.

(I) Fish and Wildlife

Watershed topics and their respective deliverables under the Fish and Wildlife category are anticipated to consist of some combination of the following topics:

a. Fisheries: Fish distribution, fish passage barriers and all other relevant information shall be described and mapped. The Consultant should refer to WGFD or other applicable agencies. In addition, stream classifications that have been developed by WGFD as related to fisheries shall be acquired and mapped. Existing state-held instream flow water rights within the watershed shall be identified, mapped, and described.

b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal): Based on good science and the latest available mapping from WGFD (or other mapping sources) the Consultant shall summarize seasonal ranges and migration corridors for big game species as well as critical habitat and

birthing areas. The Wyoming Natural Diversity Database (WYNDD) may list many non-game species of concern that may be present within the study area, including fish, birds, amphibians, mollusks, mammals, and reptiles. Using the latest available scientific information, a review should be conducted to compile and summarize information on wildlife habitat distribution, sensitive, and endangered plant and animal species. The WYNDD should be queried to generate a list of Species of Concern based on good science that have been categorized as rare, endemic, disjunct, threatened or otherwise biologically sensitive in the watershed. In addition, species from the BLM or USFS Sensitive Species list will be identified. The most current iterations of the WGFD mapped seasonal, crucial, parturition, migration corridor and migration barrier mapping may be acquired and presented. Briefly describe these topics and provide maps as needed.

c. Sage Grouse: The Consultant shall describe and map the Greater Sage Grouse core area as recognized by WGFD. The Greater Sage Grouse is considered a species of concern and requires additional management consideration throughout the state. Greater Sage Grouse Core Area Mapping and applicable stipulation buffers as defined by Executive Order 2015-4 will be presented.

» Deliverables for the Fish and Wildlife topics are anticipated to consist of written descriptions; referenced GIS data source(s) in the final report; and any necessary maps or reference to online maps, charts, etc. described and inserted into the final report.

(II) Land Cover

For the Land Cover inventory, describe the influence of land cover on the hydrologic systems and its current conditions. Data may be compiled from the National Land Cover Dataset (NLCD), National GAP Analysis Program (GAP), Landscape Fire and Resource Management Planning Tools (LANDFIRE), and other sources as applicable. Overall, the Consultant shall describe the roles of riparian areas, wetlands, vegetation, and plant communities in enhancing water quality, reducing flood impact, streambank stabilization, and mitigating erosion activity and sediment transport. Topics and deliverables under the Land Cover category are envisioned to consist of the following:

a. Riparian Areas: The Consultant shall describe and map riparian zones within the watershed. Riparian plant and animal communities should be documented using any available data sources. All riparian features within the watershed should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of riparian areas in influencing the chemical, physical, and biological integrity of the watershed.

b. Vegetation and Plant Communities: Existing vegetative cover within the study area shall be assessed and mapped using available data sources such as LANDFIRE datasets to help describe existing vegetation types, existing canopy cover, and existing vegetation height. Describe the collective plant life within the study area. Vegetation features should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of vegetation and plant communities in influencing the chemical, physical, and biological integrity of the watershed.

» Deliverables for Land Cover topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

C. Anthropogenic Systems

The Anthropogenic Systems (or those systems relating or resulting from the influence of human activity) within the watershed shall be inventoried as outlined below in terms of the following categories: Agricultural Water Use; Domestic, Municipal, and Industrial Water Use; Storage; and, Land.

(I) Agricultural Water Use

Within the Agricultural Water Use category, the Consultant shall acquire any existing irrigated lands mapping and other relevant information pertaining to Agricultural Water Use available from WWDC River Basin Plans (<http://waterplan.state.wy.us/>) or completed WWDC irrigation district master plans (<http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html>). The Consultant should remain cognizant of previously mapped irrigation features and avoid duplicating work efforts. Supplemental data and any needed information pertaining to water rights and irrigated lands may also be obtained from the WSEO. Specific topics and deliverables under the Agricultural Water Use category are anticipated to be comprise of the following:

a. Irrigated Lands: The Consultant shall gather, review, and describe available irrigated lands mapping and then further evaluate, map, and describe significant changes in irrigated lands by using aerial photos or other remotely sensed data as applicable. Irrigation methods should be identified, mapped, and described according to center pivot, flooding, or other methods. The Consultant shall associate all irrigated lands mapping generated in this task with either a dry, average, or wet year in terms of streamflow hydrology. Methods to classify the dry, average, and wet years may be as defined in WWDC River Basin Plans or proposed by the Consultant.

b. Irrigation Systems: Irrigation water systems within the watershed will be described and mapped. Mapping should include diversions (greater than 2

cfs or as directed by the Office project manager) and their main conveyance systems (ditches, pipelines, etc.) for irrigation systems. Points of diversions and scanned plat maps of ditch locations and names may be sourced from water rights data obtained from the WSEO e-Permit system and its online plat viewer. Where applicable, the Consultant may utilize diversion records obtained from annual hydrographer records and the SEO Realtime Streamflow Data website (seoflow.wyo.gov). Reservoirs and wells that supply irrigation districts will be identified on the map. Trans-watershed diversions shall be identified, mapped, and quantified.

Based upon meetings with the Sponsors, stakeholders, and landowners, the Consultant may identify existing smaller irrigation systems and conduct subsequent evaluations. The Consultant shall acquire information necessary to ascertain any rehabilitation that may relate to improving water delivery along with annual or seasonal shortages of water supply or irrigation water delivery issues. Evaluations may define existing issues with water supply, erosion, conveyance losses, seepage, etc. Features such as headgates, diversion structures, and conveyance methods should be evaluated and mapped in the field as needed. Opportunities to improve diversion methods and reduce maintenance through the installation of grade control structures, channel stabilization efforts, or other in-stream improvements may be identified. Specific irrigation projects or systems that should be examined as part of this topic include the following:

Westside Irrigation Project. The Consultant shall review and summarize historic information regarding development of this potential irrigation project and provide a status report. Determine the standings of past studies and needs for additional studies that have been identified. Verify the existence of interest by local stakeholders and provide recommendations as warranted for project advancement into the Plan as discussed in Task 5. Identify potential issues with permits, land purchases, NEPA requirements, clearances, etc. that may or have been postponing or preventing further development of this project.

Lower Hanover Canal. Based on previous reports, Sponsor input, in-field reconnaissance, or discussions with the Hanover Irrigation District, assess the Lower Hanover Canal in terms of its existing infrastructure condition, age, and operation. Summarize existing problems with the canal including maintenance issues, problems with erosion, and canal leakage. The Consultant should document the extent and degree of seepage and may estimate quantities. Identify and document potential solutions that have been proposed, and provide recommendations as warranted for advancement of canal rehabilitation options into the Plan (Task 5).

» Deliverables for Agricultural Water Use topics are anticipated to consist of written descriptions; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

(II) Domestic, Municipal, and Industrial (DMI) Water Use

Within the DMI Water Use category, the Consultant shall acquire any existing information from WWDC River Basin Plans (<http://waterplan.state.wy.us/>) or master plans that have been prepared (<http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html>). The Consultant should remain cognizant of previously mapped and described features and avoid duplicating work efforts. Supplemental data and any needed information pertaining to water rights may also be obtained from the WSEO. Specific watershed topics and deliverables under the DMI Water Use category are envisioned to consist of the following:

a. Potable Water Systems: Municipal, rural, or regional potable water transmission and distribution systems present in the watershed will be identified with key infrastructure features described and mapped. Mapping should include source water diversions, wells, and primary conveyance and storage features. Reservoirs and groundwater sources that supply municipalities, rural, and regional systems should also be identified.

b. Industrial and Mining: The Consultant shall identify, describe, and map industrial water users or mining activities within the watershed. Water use should be quantified as estimated from water right information obtained from the WSEO e-Permit system or other available sources. Briefly describe any water quality or environmental concerns that have been identified as the result of mining or other industrial activities. Information on active or abandoned oil and gas wells within the watershed should be presented as obtained from the WOGCC.

c. Produced Water: The Consultant shall identify, describe, and map the existence of any produced water sources from underground formations that are brought to the surface as a byproduct of oil and gas production. The volume of produced water from these wells over time should be estimated from available sources. If available from WDEQ or other state agencies, the chemical and physical properties shall be described.

» Deliverables for DMI Water Use topics are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; and any necessary maps, charts, tables, etc. inserted into the final report.

(III) Water Storage

Topics and their respective deliverables under the Water Storage category are anticipated to involve the following:

a. Reservoirs: The Consultant shall identify and map existing reservoirs based on aerial photography and WSEO data and examine any possible needs and opportunities for new or enlarged water storage facilities. Descriptions and mapping of existing water storage facilities greater than 500-acre-feet capacity should include an aerial mapping of the reservoir, water right permits, permitted capacity, end of month average storage, water use type, general condition as it relates to holding water (viable or non-viable), and where the stored water is used. Describe and quantify the permitted total storage at a HUC 10 subwatershed level.

The Consultant shall develop and present a complete and comprehensive document review of previous storage studies done for the proposed watershed study area and provide an evaluation of the outcomes of those studies. An evaluation matrix shall be prepared which summarizes pertinent attributes of each storage opportunity. Summarize the status of any ongoing projects.

» Deliverables for the Reservoirs topic are anticipated to consist of any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any applicable analyses and respective conclusions fully documented within the final report.

b. Upland Water Storage: Existing wildlife and livestock water sources and storage facilities, including but not limited to springs, stock reservoirs, tanks, ponds, and stock wells, etc. will be mapped, evaluated, and described. Such facilities will be mapped after confirmation of their existence and supplemented by a brief description of their general condition as it relates to holding water (viable or non-viable). Based on this inventory, an assessment of areas in need of additional watering facilities shall be identified, mapped, and described.

» Deliverables for the Upland Water Storage topic are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

(IV) Land

Specific watershed topics and their respective deliverables under the Land category are anticipated to be inclusive of the following:

a. Land Use: All land uses within the study area shall be described and mapped, including, but not limited to agricultural, urban, commercial, industrial, transportation, power systems, utilities, easements, etc. The Consultant shall acquire Land Use data sets from existing sources or provide reference to Natural Resource and Energy Explorer (<https://nrex.wyo.gov/>). The watershed shall be characterized according to its level of development, dominant land use type, and relative water use.

b. Land Ownership: The Consultant shall briefly describe and map Land Ownership within the watershed. The composition of federal, state, and private lands and the orientation and locations of ownership parcels should be discussed as related to future development or management strategies and project planning. Land ownership information may be obtained from available sources including the county assessor's office.

c. Land Management and Upland Water Resources: The Consultant shall identify, describe, and map or provide reference to Natural Resource and Energy Explorer (<https://nrex.wyo.gov/>) details about Land Management and Upland Water Resources within the study area. Ascertain where private and public grazing uses are located and identify grazing radius of influence from existing water sources or implementation of any upland water development.

Where requested by the landowner(s), evaluations should be conducted on existing upland water resources. Any potential enhancement and improved water distribution for livestock and wildlife that facilitates grazing management for range resource improvement should be documented. NRCS Ecological Site Descriptions (ESD) may be acquired and mapped as needed to help identify and describe common plant communities and other land cover characteristics of the watershed. The Consultant should identify potential benefits to the watershed through plant community invigorations, reduction of erosion, and stream channel stabilization achieved from water development projects strategically implemented within the watershed. Other issues and opportunities, such as making beneficial use of produced water and removal of high water demand invasive species, can be examined.

As appropriate, discuss any existing BMP for livestock grazing and ascertain their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

» Deliverables for the Land category are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; and any necessary maps, charts, tables, etc. described and incorporated into the final report.

d. Cultural Resources: The Consultant shall identify and produce a summary map of any Cultural Resources (or evidence of past human activity) that may exist within the study area. For instance, these may include pioneer homes, buildings or old roads; structures with unique architecture; prehistoric sites; historic or prehistoric artifacts or objects; rock inscription; human burial sites; and, earthworks such as battlefield entrenchments, prehistoric canals, or mounds. The Consultant should acquire or reference information on cultural resources from the Wyoming State Historic Preservation Office as well as the Natural Resource and Energy Explorer (<https://nrex.wyo.gov/>)

» Deliverables for the Cultural Resources are anticipated to consist of references to online map applications and any necessary maps, charts, tables, etc. contained within the final report.

Task 4. Streamflow Hydrology

The Consultant shall use previously prepared hydrologic models, existing flow estimates, newly collected gage data, or alternative applicable techniques to characterize streamflow in the watershed. The Consultant should draw upon any previous hydrologic models and sources to avoid unnecessary duplication of efforts. Existing sources may include the spreadsheet models created for WWDC River Basin Plans; WWDC planning and reservoir studies where more comprehensive models may have been developed; or WWDC instream flow hydrologic feasibility reports (<http://library.wrds.uwyo.edu/>). Coordinate with the Office project manager on availability of past hydrologic models or water supply analyses that may be useful for this task.

Streamflow for each HUC 10 should be summarized on a monthly and annual basis for dry, average, and wet years. Methods to classify the dry, average, and wet years may be as used in any prior analyses or proposed by the Consultant. The resulting classification of dry, average, and wet years shall be presented in the final report. Based on the extent and suitability of available past hydrologic models that contain streamflow information, the Consultant may review and summarize that information, refine and update those models, or explore or supplement past efforts with other techniques such as regression equations based on specific basin characteristics like catchment area, elevation, and stream channel geometry. Concurrent discharge measurements and temporary gaging sites may also be considered in order to further quantify streamflow estimates. The methodologies ultimately selected should be fully described in the final report with all supporting data. All modeling input data, regression analysis techniques, assessment methodologies, results, conclusions and any assumptions or limitations therein shall be described and presented. Clearly stipulate whether the resulting streamflow data should be considered gage flow, synthesized flow, virgin flow, depleted or undepleted flow, etc.

Existing stream gage coverage and periods of record shall be assessed and mapped. A map of specific stream reaches and locations shall be labeled according to annual volume for dry, average, and wet streamflow conditions. Hydrographs shall be included in the report to illustrate monthly streamflow for dry, average, and wet years. Specific stream locations within the presented and delivered GIS mapping and files shall be attributed according to a monthly and annual streamflow basis for dry, average, and wet years. This should be done at a HUC 10 subwatershed level and at all gauge locations.

In terms of water supply, this task should also describe when and where water shortages may be an issue in the watershed and who or what is most likely affected by a dry water year. The Consultant shall explain and map areas that are commonly in regulation and when they typically go into regulation based on discussions with landowners, WSEO hydrographers, and review of annual Hydrographer reports.

Temporary Gaging: Should it be necessary to verify streamflows, the Consultant shall acquire and install stage monitoring equipment and develop a rating curve (stage-discharge relationship) for applicable streams. To establish each stream gage site, the Consultant shall choose the most suitable location possible. The Consultant will be responsible for landowner clearance, permitting, equipment acquisition, protocol, installation, operation, maintenance, development of rating curves, data collection, and all appurtenances associated with the operation of the stream gages during the life of the Contract. Gaging sites selected for this study shall be clearly identified within the final report by written description and displayed on maps.

Stage recording and data logging devices may be acquired from the Office for use in this project. The Consultant shall be responsible for providing all other required equipment, including data transfer units, laptops and computers for data upload and processing, software, and all equipment required for the physical installation of each unit. Based upon site requirements and proximities, the Consultant shall determine and install the proper number of pressure transducers to ensure proper calibration to barometric pressure at each stage recording site. Any equipment provided by the Office under this Contract and all data collected shall be the sole property of the Office and returned to the Office prior to close of Contract. Note that surcharges or rental fees of any kind shall not be billable within this Contract should the Consultant chose not to install equipment available from the Office.

As applicable, the Consultant shall be responsible for seasonal removal of all equipment to prevent its damage. Depending on weather conditions and site accessibility, it is anticipated that equipment may need to be removed for winter and reinstalled in spring.

» Deliverables for this task are anticipated to consist of any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report

accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any necessary analyses and respective conclusions fully documented within the final report.

Task 5. Development, Management, and Rehabilitation Plan

The Consultant shall prepare a Development, Management, and Rehabilitation Plan (Plan) that identifies specific project recommendations, opportunities, or suggestions to improve watershed condition and function and provide benefit for the public, wildlife, livestock, and the environment. Projects within the Plan may be prioritized and may be tailored to address any problems or opportunities identified in Tasks 3 and 4 and in collaboration with (or as requested by) landowners, stakeholders, land management agencies, and other interested parties. Interviews may be conducted to determine past and present management activities and to identify watershed development, management, and rehabilitation opportunities for inclusion into the Plan. The Plan may recommend improvements to land and water management practices with respect to private property and water rights.

The Plan shall recommend watershed development, management, and rehabilitation opportunities in relation, but not limited to, the following watershed functions and facilities:

- Surface water storage: The Consultant may evaluate the potential for new or increased water storage to address seasonal or annual shortages, augment late season streamflow to benefit riparian habitat and wildlife, address flood impacts and control, enhance recreation opportunities, or improve water quality and stream channel stability. Storage opportunities may be identified through discussions with the Sponsors, local stakeholders, irrigators, and landowners within the basin.
- Irrigation supply systems with emphasis on upgrades, operational improvements, and efficient management techniques including, but not limited to, issues with water quantity, erosion, conveyance loss, infrastructure, and seepage.
- Livestock/wildlife upland water such as development of stock ponds.
- Groundwater recharge: Where appropriate, identify areas for potential groundwater recharge projects.
- Stream channel condition and stability.
- Wetland development and enhancement.
- Grazing management.

The Consultant shall develop a summary table of projects identified within the Plan to serve as a guide for Sponsors in the selection and implementation of the Plan's project recommendations. For each item and as relevant, the Consultant should identify a Sponsor with respect to each Sponsors' interest, service areas, and ability to provide public benefit. Associated landowners, other entities of public benefit, agencies, etc., may also be listed. The following criteria may be used in the development of the summary table and any prioritization of projects within. The Consultant may propose alternate evaluation criteria for consideration.

- Project type as described above in watershed functions and facilities.
- WWDC program identification: (e.g., Small Water Project Program, conventional, other).
- Supply type: Identify projects as new water supply or rehabilitation.
- Practicality of implementation: Consider ownership issues, funding concerns, institutional issues, and project durability and sustainability.
- Estimated cost: Project cost estimates as described in Task 6 shall be considered and included in the Plan.
- Funding or financing opportunities: Funding/financing opportunities as identified in Task 7 shall be included in the Plan.
- Overall benefits to the watershed: (e.g.: riparian, wetland, water quality, wildlife, fish passage improvement, and other environmental and recreational purposes, etc.).
- Current public Sponsor: Ascertain whether a current public Sponsor exists to take the project to the next level.
- Anticipated permitting requirements: (e.g.: WSEO, USACE, WDEQ, NEPA, environmental reviews, etc.).

The Consultant shall identify all permits, easements, and clearances necessary for implementation of items within the Plan and any associated proposed projects or construction activities. This includes recognition of State of Wyoming Executive Order 2015-4, Greater Sage-Grouse Core Area Protection. The Consultant shall identify any potential issues with permits, easements, and clearances that may postpone or prevent implementation of a project.

For project recommendations in the Plan, the Consultant shall prepare conceptual-level designs as deemed necessary to provide further clarity or support funding applications. Designs should include a description of the project and its purpose and be of sufficient detail to estimate costs (Task 6) and identify fatal flaws, pipelines, transportation, energy transmission, and any cultural resources or socio-economic impediments to moving forward. The description should include information relevant to completing a WWDC project application.

Within the final report and as part of the Plan, the Consultant shall include a description of the SWPP and the steps necessary to take a project from the application phase to final payment. This shall include a listing of the Sponsors' responsibilities for permitting, design, and project completion. The Consultant may refer to and summarize the information provided on WWDC's SWPP webpage (http://wwdc.state.wy.us/small_water_projects/small_water_project.html).

» Deliverables for this task shall include the necessary narratives to describe the Plan and items within, the aforementioned summary table of projects identified within the Plan, and a supporting map that shows the location of each project. In addition, a user-friendly, stand-alone document shall be prepared so Sponsors, landowners, or other stakeholders can quickly identify and gain a synopsis of each specific project within in the Plan. These "project summary sheets" are further intended to aid funding applicants (either from SWPP

or other relevant agencies) and serve as a quick reference for any interested parties. One project summary sheet shall be prepared for each item within the Plan, incorporating such things as a brief description, key information, permitting requirements, cost estimates (Task 6) and financing opportunities (Task 7). The Consultant shall coordinate with the Sponsors and Office project manager on the format, contents, template development, etc. of this product. GIS deliverables should contain information from the Plan such as the location of each project, a project identifier, project type, associated WWDC funding program, alternative funding sources, water supply type, overall benefits, and cost estimates (Task 6).

Task 6. Cost Estimates

The Consultant shall develop cost estimates for watershed development, management, and rehabilitation opportunities identified within the Plan (Task 5). Costs shall be calculated and presented by both the total project cost and as unit costs. Costs shall be structured to allow the Sponsors to evaluate proposed project recommendations and shall identify those components that are both eligible and non-eligible for WWDC or SWPP funding. The estimates should be based on the year this study is completed. The Consultant shall then apply an appropriate inflation factor to the current year's total cost and project any costs into the future with respect to any temporal prioritizations within the Plan. Total project costs shall be incorporated in the Plan summary table and the project summary sheets as discussed in Task 5.

Cost estimates for small scale projects, such as those eligible for SWPP grants, shall be inclusive of the above and take into account the project component average costs.

Cost estimates for large scale projects, such as those eligible for WWDC Level III construction grants/loans, shall also be inclusive of the above and may include operation and maintenance costs, administrative costs, debt retirement, repair and maintenance account funding, and the cost(s) for water. Cost estimates for each large scale project shall be prepared as outlined in Attachment B, Section C.3.

Task 7. Project Financing

Project funding and financing are critical aspects associated with the implementation of watershed development, management, and rehabilitation projects identified within the Plan (Task 5). For each project identified in the Plan, it is the primary intention of this task for the Consultant to provide local, state, and federal information on potential funding sources as well as application and eligibility requirements with respect to funding agency criteria and conditions. As required, the Consultant shall further identify the types of Wyoming entities eligible to apply for funding from these sources and discuss the process of forming each eligible entity along with the benefits of becoming an eligible entity.

The Consultant may need to generate funding and financing recommendations based on annual financial commitments of potential project Sponsors needed to cover construction costs and meet operation and maintenance obligations. For projects requiring extensive

engineering and design and for the relevant Sponsor associated with a particular project, the Consultant may need to provide an ability to pay analysis that may include the following:

- A financing plan.
- An annual operation cost estimate.
- Identification of sinking fund requirements.
- A determination of the eligibility requirements and level of assistance available for implementation.

Under these situations, it may be useful for the Consultant to perform a more detailed economic analysis to help demonstrate economic benefits to Sponsors, the public, or the State of Wyoming. Depending on the nature of individual projects, the Consultant may propose the extent of economic analyses to be performed in coordination with the relevant project Sponsor and Office project manager.

Project financing information shall be incorporated in the Plan summary table and the project summary sheets as discussed in Task 5. The availability or likelihood of financing options may be used to help prioritize projects within the Plan. The Consultant should work with the Sponsors to possibly combine individual projects to optimize funding applications to WWDC or other funding sources.

Task 8. Discretionary Task

The Consultant may elect to set aside available study funds not in excess of \$10,000 for discretionary purposes as this task may be included to accommodate changes in the scope of work as the project develops or as new issues are discovered. All other tasks should be considered before determining whether or not to include funds for this task. Should the Consultant set aside funds for discretionary purposes, no work will be initiated or funds spent for this task without authorization from the Office project manager.

Task 9. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of the draft report and five (5) hard copies of the stand-alone project summary sheets as described in Task 5 no later than August 16, 2019. Four (4) CD, DVD, or USB drive copies containing the draft report and project summary sheets in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). Each pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

From the above copies, the Office project manager will provide the Water Resources Data System (WRDS) with both a hard copy and pdf copy of the draft report and project summary sheets for comparison purposes. Issues discovered by WRDS during this

comparison are the responsibility of the Consultant to correct. Upon completion of the quality-assurance process, WRDS will assign an URL for the online posting of the final report.

After submittal of the draft package, the Consultant shall present the draft findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a possible meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 10. Final Report and Deliverables

After incorporation of the Office's and the Sponsors' review comments on the draft package, the Consultant shall submit one (1) final report, one (1) executive summary, and one (1) stand-alone document of the project summary sheets in hard copy along with one (1) CD or DVD or USB drive containing the final report, executive summary, and project summary sheets in a text-recognized Adobe Acrobat (pdf) format to WRDS for final comparison purposes. The Consultant shall allow 1 to 2 weeks prior to the final deadline and shall also provide a verbal or electronic confirmation of this transmittal to the Office project manager. At the Office project manager's discretion, a draft of the executive summary in hard copy or electronic format shall be submitted to and reviewed by the Office project manager prior to final delivery. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include cost estimates. The summary should not exceed ten (10) pages. Any final reports submitted in three-ring notebook format shall have spine labels that clearly identifying the project, Consultant, and date. Each pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by WRDS between the hard copies and electronic copies during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by WRDS, the Consultant shall submit all final documents and materials to the Office on or before November 15, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary and twelve (12) hard copies of the stand-alone project summary sheets (Task 5). This count is inclusive of the copies previously submitted to WRDS and shall be coordinated with the Office project manager.
- Four (4) CD, DVD, or USB drive copies containing the final report, executive summary, and project summary sheets in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to WRDS and shall be coordinated with the Office project manager. Each pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.
- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.
- Three (3) CD, DVD, or USB drive copies of any hydraulic model project files and all associated files shall be provided if applicable. In addition to the above, one (1) electronic copy of any hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.
- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.
- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the “WWDO GIS Framework Data Plan” and the accompanying “GIS Standards Technical Memorandum.” Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

GIS data shall be composed and delivered according to the “WWDO GIS Framework Data Plan” and the accompanying “GIS Standards Technical Memorandum.” A link to these two documents is available from the WWDC home page (<http://wwdc.state.wy.us/index.html>) under “Agency Products.” Consultants are strongly recommended to attend a future webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow

Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is **not** expected to apply these standards to the Sponsors' **existing** GIS data but rather, ensure that any **newly collected or developed datasets** adhere to these standards as well as the following:

Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

