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Via E-Mail: gregory.johnson@state.co.us

Mr. Greg Johnson
Intrastate Water Management & Development
Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 721
Denver, Colorado 80203

Re: Florida Mesa Canal Companies – Canal Seepage Reduction Program

Dear Mr. Johnson:

The scope of services for the Florida Mesa Canal Companies – Canal Seepage Reduction Program is provided below. As previously provided, the proposed budgets for the Tasks are provided in Table 1 (attached) and the schedule is provided in Table 2 (attached), respectivly. Table 3 is also attached to provide additional detail on the task-labor matrix.

Water Activity Task: Design and Construction of Seepage Reduction Project

Purpose

The purpose of the ditch lining task is to:

1) Improve the efficiency of the canal conveyance system and reduce ditch loss.

2) Provide irrigation water at reduced operational expense to promote continued commercial agricultural uses.

3) Firming the agricultural water supplies through increased efficiency as opposed to developing additional water supplies (i.e. enlarging Lemon Reservoir).

4) Develop additional sources of water for other beneficial uses in the basin.

Need: Overall conveyance losses for the canals and ditches on the Florida Mesa have averaged 24 percent over the last seven years (the period of record for the FWCD water monitoring program). The losses have ranged as low as 18 percent per year and as high as 31 percent per year.

Previous studies: The Water Conservation and Management Plan and the USBR Rehabilitation and Betterment (R&B) Study. The Water Conservation and Management Plan and the USBR

R&B Study identified roughly $20 million of improvements including ditch lining and piping projects. The R&B Study calculated a reduction of over 4,100 AF in canal conveyance losses.

The scope of work and budget is summarized in Table 1 and includes the following tasks:

Task 1: Selection of Lined Sections Based on the Ditch Loss Study and Feasibility Study of Groundwater Impacts

Approach

Based on the findings and conclusions contained within the Florida Mesa Ditch Loss Study conducted in July 2009 priority ditch reaches will be selected for lining based on maximizing canal seepage reduction.

WWE will also identify potential impacts to groundwater source supplies based on the State Engineer's Office well database search and groundwater well distance off-sets to the canal sections.

Dam safety considerations at Pastorius Reservoir will be evaluated.

Deliverable

GIS based mapping will delineate selected canal reaches and illustrate off-sets to groundwater wells.

Letter report or Technical Memorandum assessing groundwater impacts due to canal lining.

Pastorius Reservoir Emergency Action Plan.

Task 2: Preliminary Environmental Permitting

Approach

Potential impacts to wetlands associated with canal seeps will be identified and preliminary archaeological database searches will be performed for candidate lined sections. More detailed archaeological survey may be performed to further assess select reaches.

Deliverable

GIS based mapping will illustrate identified wetlands and include identified archaeological resources.

Task 3: Preliminary Engineering Design

Approach

Typical canal lining materials and details will be evaluated based on available materials and contractor competences and standards of practice. This may include canal prism section(s), lining material(s), and underlayments including subgrade material and preparation. The potentiality of underdrains will be assessed.

Deliverables

Preliminary engineering AutoCAD sections and details, basis of design technical memorandum, and recommended product selection and product specifications.

Task 4: Final Engineering Design

Approach

From preliminary engineering details final design elements will be selected and finalized. Candidate canal sections will be surveyed to illustrate stationing with elevations specified to include top of liner and flowline inverts.

Deliverables

AutoCAD final design drawings will be prepared to indicate canal reaches, stationing, elevations with accompanying typical sections and details.

Task 5: Preparation of Project Plans and Specifications

Approach

The final design drawings will be packaged with Contract Documents and Technical Specifications developed to aid the selected bidders and guide the contractor during construction.

Deliverables

Contract Documents and Technical Specifications and Design Drawings Issued for Bid.

Task 6: Services During Bidding

Services during bidding will be incorporated in conjunction with construction funding.

CWCB Scope of Services Requirements

Payment will be made based on actual expenditures and invoicing by the applicant. Invoices from any other entity (i.e. subcontractors) cannot be processed by the State. The request for payment must include a description of the work accomplished by major task, and estimate of the percent completion for individual tasks and the entire water activity in relation to the percentage of budget spent, identification of any major issues and proposed or implemented corrective actions. The last 5 percent of the entire water activity budget will be withheld until final project/water activity documentation is completed. All products, data and information developed as a result of this grant must be provided to the CWCB in hard copy and electronic format as part of the project documentation. This information will in turn be made widely available to Basin Roundtables and the general public and help promote the development of a common technical platform.

Sincerely,

WRIGHT WATER ENGINEERS, INC.

By _____
Peter R. Foster, P.E.
Project Manager

By _____
David W. Foss, P.E.
Project Engineer

Attachments
- Table 1: Task Cost Breakdown
- Table 2: Project Schedule
- Table 3: Labor Breakdown

Table 1
Project Budget

Florida Mesa Canal Companies Water Loss Reduction Project			
Task	Labor and Direct Costs	Match	Total Project Costs
Engineering Design and Services During Contracting	$225,000		$225,000
Define project sections from ditch loss study, assess feasibility			
Preliminary Environmental Permitting - Wetlands Delineations, Archeological Surveys			
Preliminary Engineering Design			
Final Engineering Design			
Preparation of project plans and specifications			
Services during bidding			
Florida Mesa Canal Companies Water Loss Reduction Project - Phase 1		$100,000	$100,000
Acquisition of Water Rights		$19,700	$19,700
Sub-Total			**$344,700**
Florida Mesa Canal Companies Water Loss Reduction Project - Phase 1 ($100,000 CWCB Contribution)			$100,000
Matching Funds - FWCD Expenditures - Previous 9 Months			$19,700
Sub-Total Matching Funds			$119,700
Total Requested Funds			**$225,000**
Total Matching Funds as a Percent of Total Project Costs			35%

Table 2
Project Schedule

Schedule of Work and Task Completion

	2009				2010				2011			
	Jan-Mar	Apr-Jun	July-Sep	Oct-Dec	Jan-Mar	Apr-Jun	July-Sep	Oct-Dec	Jan-Mar	Apr-Jun	July-Sep	Oct-Dec
Engineering Design and Services During Contracting												
Define project sections from ditch loss study, assess feasibility				X	X							
Preliminary Environmental Permitting - Wetlands Delineations, Archeological Surveys					X	X	X					
Preliminary Engineering Design					X	X	X					
Final Engineering Design						X	X	X				
Preparation of project plans and specifications						X	X	X				
Services during bidding (TBD)												

Table 3

Canal Seepage Reduction Program
Wright Water Engineers, Inc. Labor Breakdown

Tasks	Description of Services	Internal Project QA/QC	Project PM (Foster)	WWE Eng Mgr (Foss)	WWE Hydrol	WWE Engineer	WWE Sub (Survey)	WWE Sub (Geotech)	WWE Sub (Environ)	WWE Envirn (Clark)	ACAD/ Graphics	Word Process	Total WWE Task Manhours	Total Fees by Task
1	**Ditch Sections/Groundwater/Pastorius EOP**													
	Evaluate groundwater Impacts	8	12	20	60	20					40	12	172	$20,876
	Identify ditch lining candidate reaches	8	12	20	20	35		$2,500			30	30	155	$20,750
	Pastorius EOP	8	12	20	20	40					20	28	148	$17,524
2	**Preliminary Environmental Permitting**													
	Wetlands& Archeological	8	12	30					$7,000	85	30	30	195	$33,340
	Evaluate other Permitting Aspects	2	12	12		12						8	46	$6,164
3	**Preliminary Engineering Design**													
	Preliminary Design	12	20	20		20					40	10	122	$16,098
4	**Final Design**													
	Final Design	8	22	80	30	145	$12,000	$11,000			165	36	486	$81,258
	Specifications & Contact Documents		8	30		40						40	118	$13,292
5	**Services During Bidding**													
	SDB schedule tbd												0	$0
	TOTAL MANHOURS	54	110	232	130	312	$12,000	$13,500	$7,000	85	325	194	1,442	
	HOURLY RATE	$174	$174	$150	$112	$112				$150	$114	$73		
	SUB TOTALS	$9,400	$19,100	$34,800	$14,600	$34,900	$12,000	$13,500	$7,000	$12,800	$37,100	$14,200	$209,400	$209,302
													Contingency	$0
													Subtotal	**$209,302**
												Expenses (7.5%)		$15,698
													TOTAL	**$225,000**

[1] Initial wetland assessment, no 404 permitting assumed, a wetland delineation and Permit Application, if required, would be additional.

Note: hourly and lump sum estimates and rates may change during project, total labor charges will be held to total shown in Table unless additional fees are authorized.