



COLORADO

**Colorado Water
Conservation Board**

Department of Natural Resources

1313 Sherman Street, Room 721
Denver, CO 80203

November 6, 2014

Water Environment Research Foundation
Attn: Louise Pouliot, Executive Asst & Contracts Administrator
Attn: Theresa Conner, Program Manager
635 Slaters Lane, Suite G110
Alexandria, VA 22314

RE: Notice to Proceed - WSRA Grant – Analysis of Barriers to Direct Portable Reuse in Colorado

Dear Louise,

This letter is to inform you that the attached purchase order to assist in the above WSRA grant project was approved on November 6, 2014. The attached purchase order will serve as the official contracting document.

With the executed P.O, you are now able to proceed with the project and invoice the State of Colorado for costs incurred from November 10, 2014 through June 30, 2015. Upon receipt of your invoice(s), the State of Colorado will provide payment no later than 45 days. I wish you much success in your project.

If you have any questions or concerns regarding specific project tasks, please contact Rebecca Mitchell, Water Supply Planning Chief at 303-866.3441 or Rebecca.mitchell@state.co.us. Please forward your invoices directly to me for processing.

Thank you.

Sincerely,

//s//

Doriann Vigil
Program Assistant II
Water Supply Planning Section
O 303.866.3441 x3250
1313 Sherman Street, Suite 718, Denver, CO 80203
dori.vigil@state.co.us





STATE OF COLORADO
Department of Natural Resources

ORDER		** IMPORTANT **				
Number: POGG1 PDAA 20150000000000000186		The order number and line number must appear on all invoices, packing slips, cartons and correspondence				
Date: 11/06/14						
Description: 2500 WSRA Zero Liquid Discharge/Analysis of Barriers		BILL TO				
BUYER		COLORADO WATER BOARD CONSERVATION				
Buyer:		1313 SHERMAN STREET, ROOM 718				
Email:		DENVER, CO 80203				
VENDOR		SHIP TO				
WATER ENVIRONMENT RESEARCH FNDTN		COLORADO WATER BOARD CONSERVATION				
635 SLATERS LN		1313 SHERMAN STREET, ROOM 718				
STE G110		DENVER, CO 80203				
ALEXANDRIA, VA 22314-1109		SHIPPING INSTRUCTIONS				
Contact: .		Delivery/Install Date:				
Phone: .		F.O.B: FOB Dest, Freight Allowed				
		VENDOR INSTRUCTIONS:				
Line Item	Commodity/Item Code	UOM	QTY	Unit Cost	Total Cost	MSDS Req.
1	G1000		0	0.00	\$18,462.00	<input type="checkbox"/>
Description: 2500 WSRA Zero Liquid Discharge/Analysis of Barriers						
Start Date: 11/10/14		End Date: 06/30/15				
Line Item	Commodity/Item Code	UOM	QTY	Unit Cost	Total Cost	MSDS Req.
2	G1000		0	0.00	\$1,417.00	<input type="checkbox"/>
Description: 2500 WSRA Zero Liquid Discharge/Analysis of Barriers						
Start Date: 11/10/14		End Date: 06/30/15				
Line Item	Commodity/Item Code	UOM	QTY	Unit Cost	Total Cost	MSDS Req.
3	G1000		0	0.00	\$25,000.00	<input type="checkbox"/>
Description: 2500 WSRA Zero Liquid Discharge/Analysis of Barriers						
Start Date: 11/10/14		End Date: 06/30/15				
TERMS AND CONDITIONS						
https://www.colorado.gov/osc/purchase-order-terms-conditions						
DOCUMENT TOTAL = \$44,879.00						

STATE OF COLORADO
Colorado Water Conservation Board
Grant Agreement
with
Water Environment Research Foundation
Contract Number CTGG12015-

SCOPE OF PROFESSIONAL SERVICES

Analysis of Barriers to Direct Potable Reuse in Colorado

This project is administratively managed by the Water Environment Research Foundation (WERF), but the actual project work will be conducted through subcontractors.

WATER ACTIVITY NAME - Analysis of Barriers to use of Direct Potable Reclaimed Water in Colorado

GRANT RECIPIENT – Water Environment Research Foundation (WERF)

This project is administratively managed by the Grantee, the Water Environment Research Foundation, but the actual project work will be conducted by subcontractors (WERF will subcontract with HDR Engineering.)

FUNDING SOURCE

Funding for this contract represents \$44,879.25 that was unspent from Contract Number C150456 Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems.

I. Statement of Work (Scope of Work)

INTRODUCTION AND BACKGROUND

The State of Colorado is heading toward a gap between water supply and demand. To investigate technologies to minimize brine discharge and maximize water recovery, the Colorado Water Conservation Board (CWCB) contracted with the Water Environment Research Foundation (WERF) pilot tests membrane treatment systems to achieve zero liquid discharge and evaluate regulatory and operational barriers to treatment and brine concentration disposal. This analysis is complete. When considering water reuse systems, Colorado faces similar technology barriers as well as regulatory, operational and public acceptance. Water reuse is likely to be an important tool in closing the water gap Colorado is facing. Although reuse has been practiced in Colorado for many years, additional dependence on reuse, including potable reuse, may be required to meet future water demands. There is a growing consensus among water professionals that direct potable reuse is a safe and technically feasible approach for the efficient reuse of existing water supplies. However, Colorado has yet to implement a direct potable reuse project. The potential regulatory, technical, operational and public acceptance barriers for such a project are not well understood in the context of Colorado's needs. With a better understanding of barriers to direct potable reuse, the State can prioritize funding aimed to

address those issues which stand in the way of potable reuse projects.

OBJECTIVES

Objectives of this study are to:

- Examine barriers to direct potable reuse of reclaimed water in the State of Colorado.
- Recommend steps the State of Colorado can take to facilitate overcoming these barriers.

TASKS

Task 1 – Project Management by WERF

Description: WERF will oversee and manage the Research Project. WERF will enter into a research contract with HDR Engineering, Inc. to conduct the research and implement the tasks listed in this Scope of Work. The research contract shall incorporate the objectives and details of the Research Project and the timetable for carrying out and completing the Research Project as well as the deliverables.

Method/Procedure:

- WERF will contract HDR to perform the research.
- WERF will apply its Peer Review procedures to provide technical review of the Research Project implementing its EPA approved Quality Management Plan (QMP).
- WERF will form a Project Subcommittee (PSC) consisting of 3 to 5 Colorado and national industry experts to provide independent peer review of the work performed by WERF's subcontractor for Task 1.
- WERF will present findings of the study to CWCB.

Deliverables:

- Peer reviewed White Paper.
- Presentation of findings to CWCB at the Board's discretion.

Task 2 – Develop Direct Potable Reuse White Paper

Description: This contractual task will be performed by HDR and will develop a white paper summarizing the barriers to direct potable reuse in Colorado. It is anticipated that the white paper will be approximately 20-30 pages in length. It will consist of two parts. Part one will document barriers to the implementation of direct potable reuse. This part will be divided into the following areas:

- Regulatory
- Technical
- Operational
- Public acceptance

Part two will present the recommended actions the State of Colorado could take that would reduce barriers to direct potable reuse in Colorado.

Method/Procedure:

- HDR will provide draft White Paper to WERF for peer review by the Project Subcommittee.

- HDR will participate in WERF organized conference call with Project Subcommittee members to discuss Project Subcommittee's comments.
- HDR will revise the White Paper incorporating Project Subcommittee comments.
- HDR will provide presentation materials of findings for presentation to CWCB.

Deliverables:

- One (1) electronic copy of draft White Paper.
- One (1) electronic copy of final White Paper.
- One (1) electronic copy of presentation materials suitable for presentation to CWCB.

Task 3 – Develop Funding for and Hold Workshop on Potable Reuse in Colorado (Optional Task)

Description:

WERF will develop partnerships with other research foundations (such as Water Research Foundation, WateReuse Foundation, Colorado WateReuse Foundation) to provide additional funding to supplement the remaining Contract Number C150456 funds. If supplemental funding is obtained, the funding will be used to host a one-day workshop of national experts and interested Colorado parties to vet the White Paper (Task 1) and help to develop a consensus on what actions need to be taken to developing direct potable reuse as a potential water supply in Colorado. The White Paper will be revised and updated by HDR to incorporate the findings of the Workshop.

Method/Procedure:

- WERF will develop funding partnership with other research agencies.
- WERF organize one-day workshop at location determined by CWCB.
- WERF provide updated white paper based on workshop findings.

Deliverables:

- Workshop presentation materials.
- Updated White Paper.

II. Personnel

Key personnel for the project are as follows:

Overall Project Manager –Theresa Connor, PE: WERF

Principal Investigator – Philip Brandhuber, PhD: HDR Engineering

Exhibit B: Timetable for Project Activities:



Water Environment Research Foundation			
Budget Detail - Total			
Program: WERF White Paper of Barriers to Direct Potable Reuse			
Program Period: December 1, 2014 - June 30, 2015			
Description	Total Budget		
Personnel	\$4,000		
Fringe Benefits @ 26.37%	1,055		
Travel	8,000		
Equipment			
Other Direct Costs	5,649		
Contractual - HDR *	25,000		
Other Expense **			
Total Direct Costs	\$43,703		
Indirect Costs @ 29.40%***	1,176		
Total Costs	\$44,879		
* HDR Contractual Project Budget (Attached)			
*** Indirect Costs @ 29.40% of Personnel (Salaries)			
Optional Task of Workshop to vet White Paper not fully funded. Full travel costs may not be needed if not included.			

HDR Additional Task Budget - WERF5T10

See "Instructions" Worksheet

PERSONNEL (Applicant Organization Only)

Name	Role	Annual Salary	% time	Salary Requested	Fringe Benefits	Total Cost	Other Funds	In-Kind	WERF Cost
Brandhuber	PI			4847	2273	7120			7120
Craig	Project Engineer			1850	868	2718			2718
Staff (3)	Tech Advisors			1018	477	1495			1495
Accounting				165	77	242			242
						0			
						0			
						0			
Subtotal						11576	0	0	11576

OTHER DIRECT COSTS

	Total Cost	Other Funds	In-Kind	WERF Cost
EQUIPMENT (Use additional pages for itemization if necessary)				
	0			
	0			
Subtotal	0	0	0	0

SUPPLIES (Use additional sheets if necessary)

	0			
	0			
	0			
Subtotal	0	0	0	0

TRAVEL

Domestic:	150			150
Foreign:	0			
Conference:	0			
Subtotal	150	0	0	150

SUBCONTRACTS

	0			
	0			
	0			
Subtotal	0	0	0	0

DISADVANTAGED BUSINESSES (If none, steps taken by proposer must be described for justification to be accepted.)

	0			
Subtotal	0	0	0	0

Other Costs (Itemize)

	0			
Subtotal	0	0	0	0

TOTAL DIRECT COSTS:

INDIRECT COSTS:	0.9	% (See instructions for calculation)	11726	0	0	11726
FEE (if applicable):		% x (Personnel + Indirect Cost)	10553			10553
			2721			2721
Total Cost			25000	0	0	25000

SCHEDULE OF DELIVERABLES AND MILESTONES
WERF5T10
Amendment 2

[illegible]