



June 21, 2013

Mr. Andrew Steinberg
Nevada Environmental Response Trust
35 East Wacker Drive, Suite 1550
Chicago, Illinois 60601

**Re: GWETS Optimization Project Scope of Work and Budget Estimate
Nevada Environmental Response Trust Site, Henderson, Nevada**

Dear Mr. Steinberg:

ENVIRON International Corporation (ENVIRON) has prepared this scope of work and budget estimate for the 2013 Optimization of the Groundwater Extraction and Treatment System (GWETS) at the request of the Nevada Environmental Response Trust (the Trust or NERT) under direction from the Nevada Division of Environmental Protection (NDEP). Although we have initiated this scoping effort, ENVIRON is waiting for Trust and NDEP approval before proceeding ahead in implementing the work.

Objective

The objective of this GWETS Optimization Project is to increase the efficiency of the current GWETS and to ensure the continued effectiveness of the removal action. Optimization will be accomplished by adjusting the extraction rates for existing wells and activating idle wells in the Interceptor Well Field (IWF) and the Athens Road Well Field (AWF) which, in combination, are expected to enhance mass capture.

Implementing the GWETS Optimization Project has the potential to increase mass removal of perchlorate and chromium. Perchlorate removal is estimated to increase from approximately 1,362 to approximately 1,652 pounds per day (lbs/d). Chromium removal is expected to increase from approximately 8.0 to approximately 10.0 lbs/d. Chlorate and nitrate removals are estimated to increase by approximately 600 and 12 lbs/d, respectively. ENVIRON is working closely with the Trust and the GWETS Operator to make sure these increased loads can be accommodated by the current treatment systems.

Proposed Scope of Work

The proposed scope of work includes making operational adjustments to the extraction wells in the IWF and AWF including initiating extraction in seven currently idle wells in the IWF (I-W, I-X, I-Y, I-AA, I-AB, I-AC, and I-AD) and two wells in the AWF (ART-7B and PC-150) (collectively "Activated Wells"). This work will include planning and permitting, well testing, construction related to connecting ART-7B and PC-150 to the GWETS, well startup, data evaluation and modeling, and reporting of results.

Planning and Permitting

A work plan describing the specifics of the design and construction, the well testing and startup, and extraction rate adjustments will first be prepared. Evaluation of historical well data will be performed during the preparation of the work plan to identify the specific procedures used for the well testing program. The work plan will also describe risk management measures, methods of managing soil and groundwater generated during construction and well testing, and procedures to minimize disturbance to operation of the existing GWETS, in accordance with the Site Management Plan for the NERT site. A draft work plan will be provided to NDEP for review and approval.

Upon approval of the work plan, permits will be procured and coordination with subcontractors will be finalized. The site-specific Health and Safety Plan will be updated to include work hazards related to the GWETS Optimization Project activities.

Well Testing and Startup

The maximum achievable extraction rates in the Activated Wells will be established by conducting well testing. Based on this well testing, permanent pumps will be specified for the two Activated Wells at the AWF (ART-7B and PC-150). Permanent pumps have already been installed in the seven Activated Wells in the IWF, but the proposed well testing program will identify the potential flow rates for the pumps in these wells. If the existing pumps are not capable of sustained pumping at the rates needed to perform the well testing, then the pumps will be removed and portable pumps will be used to complete the testing. A contingency has been included in the budget estimate to cover additional labor and materials that could be reasonably expected under this scenario.

It is important to emphasize that although well testing will establish maximum achievable extraction rates for the nine Activated Wells, the sustained extraction rates will be selected primarily based on enhancing the capture at the IWF and AWF. To this end, the proposed well testing program will focus on the Activated Wells, but the testing will also provide data to inform the overall operations of the IWF and AWF as well as to update the groundwater model, which will be used to estimate the capture zones (discussed further below).

The well testing to be performed is expected to consist of the following:

- Shakedown testing of the seven Activated Wells in the IWF. These wells were installed previously by other consultants and/or contractors. To our knowledge the pumps, sensors, and controls installed at these wells have not been thoroughly tested to evaluate if they function properly. This shakedown testing will be used to identify any malfunctioning and/or improperly designed wells and to identify additional work that would be necessary to repair them.
- Slug testing of four wells at the AWF. Four wells at the AWF (ART-7B, PC-150, PC-148, and PC-149) will be slug tested. During these tests, drawdown will be monitored within the test well using a pressure transducer with integral datalogging capability. The slug test data will be used to set pump rates for subsequent step drawdown pump tests to be performed in ART-7B and PC-150 as well as provide data to estimate hydraulic conductivity values in the immediate vicinity of all four of the wells.
- Step drawdown pump testing of the seven IWF and two AWF Activated Wells. During these tests, drawdown will be monitored within the test well and also within at least three nearby wells using pressure transducers with integral datalogging capabilities. The data from these tests will be used to establish sustainable flow rates in the wells as well as provide data on the hydraulic conductivity of the formation in which the wells are situated.
- Recovery tests on existing pumping wells at both the IWF and the AWF. It is anticipated that up to seven wells within the IWF and up to four wells within the AWF will be turned off temporarily, one at a time, and allowed to recover while monitoring water levels. Overall mass removal rates are not expected to be significantly impacted by this testing. During these tests, water levels will be monitored within the test well and also within at least three nearby wells using pressure transducers with integral datalogging capabilities. These data will provide data on the hydraulic conductivity of the formation, while also provide information to evaluate the extent of overlapping of the pumping wells' cones of depression.

ENVIRON will coordinate with a subcontractor to run the pumps for the well testing of ART-7B and PC-150. During the testing, temporary discharge lines will convey the extracted water to Lift Station #3. For the well testing in the seven IWF Activated Wells, the GWETS Operator will assist in

operating the pumps already installed in the wells since these wells are already plumbed into the system.

During the step drawdown testing, ENVIRON proposes to collect a sample from each of the nine tested wells for analysis for perchlorate, total chromium, hexavalent chromium, total dissolved solids (TDS), chlorate, and nitrate (as nitrogen). The GWETS operator will facilitate the sampling process and will coordinate with TestAmerica Analytical Laboratories, Inc. for analysis.

After the proposed well testing is complete, preliminary flow adjustments will be made to extraction wells to accommodate sustained pumping from the seven IWF Activated Wells. It is expected that the seven IWF Activated Wells can begin operation immediately following the well testing, although this assumes that no malfunctions are identified during shakedown testing and that the GWETS .

The two AWF Activated Wells, ART-7B and PC-150, will require additional work before they can be utilized for sustained pumping as detailed below.

Installation of ART-7B and PC-150

Prior to initiating extraction from the two AWF Activated Wells (ART-7B and PC-150), pumps, utility lines (plumbing and electrical), and vaults will be installed to connect the two wells to Lift Station #3 for conveyance of extracted groundwater to the GWETS. Because these wells and Lift Station #3 are on City of Henderson (COH) property, ENVIRON will coordinate these activities with the COH and will work with the Trust and the COH to obtain any necessary access agreements and permits for the work. ENVIRON will coordinate with a construction contractor to complete the activation of ART-7B and PC-150 and will perform oversight of this work.

Startup of Activated Wells

Based on the results of well testing, preliminary extraction rates will be selected for sustained operation. The Activated Wells at the IWF and AWF will then be brought online one by one along with necessary adjustments to existing wells until all of the Activated Wells are operating sustainably. ENVIRON will work closely with the GWETS Operator to ensure that the treatment systems are not compromised as the wells are activated adjusting flows as necessary. During startup and for three weeks thereafter, water levels will be monitored within selected monitoring wells using pressure transducers with integral datalogging capabilities in order to understand the effects of the Activated Wells. After the startup period, the Activated wells will be routinely monitored consistent with the other actively pumping wells in the IWF and AWF.

Data Evaluation and Modeling

Upon completion of the proposed well testing program, the data will be compiled and analyzed to estimate hydraulic conductivity and well extraction efficiency for the wells tested. The results of the well tests will be used to update the NDEP-approved groundwater model and provide a better understanding of projected groundwater extraction rates at the IWF and AWF.

The model will also be updated and refined to reflect system changes that have occurred since the model was developed. These changes include the 2010 shutdown of the recharge trench downgradient of the IWF, and changes in extraction and injection rates at the nearby OSSM and AMPAC systems. To accurately estimate the capture zones from individual wells in the IWF and AWF, the model grid will be refined and the calibration updated, as necessary. For the initial analysis of capture zones, the model will continue to be used in steady-state mode. After the initial capture zone analysis, ENVIRON anticipates that a transient model will be developed, as requested by NDEP, to evaluate the changes in capture zones over time resulting from time-varying pumping rates. ENVIRON also anticipates that refinements and calibration of the model will be needed to evaluate the Seep Well Field (SWF). However, the tasks of developing the transient model and

updating the model in the vicinity of the SWF are anticipated to be performed as part of the RI/FS for the site and are therefore, not included in this GWETS Optimization Project.

Reporting

A technical memorandum will be prepared to describe the activities completed as part of this scope of work. Results of the well testing will be included along with a description of how the raw data were analyzed. An initial analysis of capture zones following the changes to operations at the IWF and AWF will also be presented.

Anticipated Schedule

The activation of the wells depends on the FBR refurbishment and decommissioning activities that have been proposed by the new GWETS Operator, Envirogen Technologies, Inc., (Envirogen). Envirogen will be taking over from the current GWETS Operator on August 15, 2013 and plans to commence FBR improvement activities shortly thereafter. According to Envirogen, the improvements are necessary in order to accommodate the increased loading to the FBRs that would accompany the GWETS Optimization Project.

As estimated by the Trust based upon current assumptions, modification of the GWETS and the related management of GW-11 pond levels by Envirogen are expected to be complete in March, 2014. At this point the wells could be activated. Please refer to the project summary prepared by the Trust for additional information on how the pond levels may impact the schedule.

The following schedule is subject to change, but is based on ENVIRON's experience on this and similar projects and represents a reasonably foreseeable timeline of events with the understanding that NDEP has identified this work a high priority. The schedule has been divided into four phases, as follows:

PHASE 1: 8 WEEKS

- Receive Budget and Scope Approval from NDEP: *Start of timeline*
- Preparation of Draft Work Plan: *3 weeks*
- Trust Review of Draft Work Plan: *1 week*
- NDEP Review/Approval of Work Plan: *4 weeks*

PHASE 2: 12 WEEKS

- Mobilization: *2 weeks*
- Well Testing: *3 weeks*
- Update Groundwater Model to Current Conditions: *5 weeks - Concurrent with Mobilization and Well Testing*
- Utility Design: *2 weeks*
- Utility Permitting / COH Approval: *3 weeks*
- Utility Construction: *2 weeks*
- Refine Model Grid and Update Calibration: *5 weeks - Concurrent with Utility Design, Permitting, and Construction*

PHASE 3: 2 WEEKS

- *Startup of Activated IWF Wells: 1 week*
- *Startup ART-7B and PC-150: 1 week*

PHASE 4: 9 WEEKS

- *IWF/AWF Capture Zone Modeling Evaluation: 4 weeks*
- *Well Startup and Capture Analysis Report Preparation: 4 weeks*
- *Trust Review of Report: 1 week*

Budget Estimate

Upon approval by the Trust and NDEP, the scope of work described herein will be performed under a new project task on a time and materials basis. As detailed in the attached anticipated budget spreadsheet, the cost to implement the activations, well testing and startup activities in this scope of work is estimated to be \$447,000, inclusive of all contingencies as described below. Inclusive in this total are costs to perform the groundwater model updates for the IWF and AWF and evaluate well field performance (capture zone evaluation) using the groundwater model, estimated at \$84,000. Reporting activities are estimated to be \$54,000.

The cost estimates have been prepared using the following key assumptions:

- The cost estimate includes a 15% contingency on the total costs and subcontractor estimates include an additional 15% contingency (for a 30% total contingency on subcontractor estimates).
- ENVIRON has assumed \$14,000 (\$2,000 per well) for "IWF Repair Contingency" to account for potential costs necessary to repair IWF wells. This contingency will only be necessary if malfunctioning or improperly designed wells are discovered following shakedown testing.
- ENVIRON has assumed \$52,000 (\$7,500 per well) for "IWF Pump Contingency" to account for potential costs related to needing to remove and replace existing pumps as well as to provide for a subcontractor to supply portable pumps to test the IWF wells. This contingency will only be necessary if the existing pumps are not capable of achieving the necessary flow rates required for step drawdown testing.
- One of the piping runs from either ART-7 or ART-7A will be repurposed to connect ART-7B to the GWETS.
- Subcontractor costs for installation of ART-7B and PC-150 (including utility installation) are assumed to be \$25,390 not including 5% markup, 15% contingency, 15% additional subcontractor contingency, or either of the "IWF Repair Contingency" or "IWF Pump Contingency" described above.
- Subcontractor costs related to well testing are assumed to be \$9,000 not including 5% markup, 15% overall contingency, 15% additional subcontractor contingency, or either of the "IWF Repair Contingency" or "IWF Pump Contingency" described above.

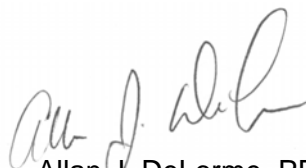
ENVIRON will seek approval from the Trust prior to the utilization of these contingencies.

ENVIRON proposes to perform the work described herein under the existing contract between ENVIRON and the Trust, following Trust and NDEP approval of this scope of work and cost estimate. Please let us know any questions you have about the information provided herein.

Sincerely,



John M. Pekala, PG
Senior Manager
Nevada CEM #2347, expires 9/20/2014



Allan J. DeLorme, PE
Principal

Attachment

ec: Tanya O'Neill, Foley & Lardner LLP

2013 Environmental Project Detailed Budget Estimates Nevada Environmental Response Trust Site; Henderson, Nevada

	DESIGN / SETUP	WELL INSTALL	WELL TESTING	MODEL UPDATES	REPORTING	TOTAL	TOTAL WITH CONTINGENCY	Task F18 - GWETS Optimization Project: One-Time Activation Costs													
Hours	318	292	292	590	370	1862	1862	Setup, Design, Work Plan, Contracting, Access Agreements, Permitting													
Labor	\$ 37,653	\$ 34,619	\$ 35,469	\$ 73,532	\$ 43,932	\$ 225,204	\$ 258,985	Trenching, Utilities, Pump Installations for Activated Wells													
Expenses	\$ 3,150	\$ 19,513	\$ 17,063	\$ -	\$ 2,835	\$ 42,561	\$ 48,945	Startup/Testing of Activated Wells and Testing of Existing IWF/AWF Wells													
Subs	\$ -	\$ 47,268	\$ 73,800	\$ -	\$ -	\$ 121,068	\$ 139,228	Model Update/Capture Zone Analysis													
Total Task Cost (Check)	\$ 40,803	\$ 101,400	\$ 126,332	\$ 73,532	\$ 46,767	\$ 388,833	\$ 447,158	Reporting													
LABOR															ODCs					TOTALS	
RATE SCHEDULE:	P	M-10	M-9	M-8	SA-7	SA-6B	SA-6	A-5	A-4		Draft	Admin	LABOR SUB-TOTAL	C&C	Unit	Unit Cost	Quantity	ODC SUB-TOTAL	ODC Markup	category costs	TOTAL
Custom	\$205	\$170	\$160	\$145	\$133	\$115	\$110	\$93	\$84		\$80	\$59	5%					5%			
DESIGN / SETUP															TASK SUBTOTAL					\$ 40,803	
LABOR	12	26	0	50	30	0	60	60	0	0	40	40	\$35,860	\$1,793				\$0			\$37,653
EXPENSES													\$0	\$0				\$0			\$3,150
Plotting													\$0	\$0	Lump Sum	\$1,500	1	\$1,500	y	\$75	
Permit Fees													\$0	\$0	Each	\$1,500	1	\$1,500	y	\$75	
WELL INSTALL															TASK SUBTOTAL					\$ 101,400	
LABOR	2	20	0	30	40	0	80	100	0	0	10	10	\$32,970	\$1,649				\$0			\$34,619
EXPENSES													\$0	\$0							\$19,513
Airfare													\$0	\$0	Each	\$450	4	\$1,800	y	\$90	
Rental Vehicle													\$0	\$0	Week	\$300	3	\$900	y	\$45	
Hotel													\$0	\$0	Day	\$100	20	\$2,000	y	\$100	
Daily Food													\$0	\$0	Day	\$50	20	\$1,000	y	\$50	
Submersible Motor													\$0	\$0	Each	\$800	2	\$1,600	y	\$80	
Submersible Pump													\$0	\$0	Each	\$1,500	2	\$3,000	y	\$150	
Flow Meter													\$0	\$0	Each	\$1,000	2	\$2,000	y	\$100	
Instrumentation													\$0	\$0	Each	\$1,500	2	\$3,000	y	\$150	
Piping													\$0	\$0	LF	\$8	100	\$800	y	\$40	
Temporary Fence													\$0	\$0	LF	\$5	200	\$984	y	\$49	
Field Supplies													\$0	\$0	Lump Sum	\$750	1	\$750	y	\$38	
Equipment Shipping													\$0	\$0	Lump Sum	\$750	1	\$750	y	\$38	
SUBCONTRACTORS															TASK SUBTOTAL					\$ 47,268	
Mobilization													\$0	\$0	Lump Sum	\$1,500	1	\$1,500	y	\$75	
Manholes - Excavate													\$0	\$0	Day	\$1,300	2	\$2,600	y	\$130	
Trenching													\$0	\$0	Day	\$1,300	1	\$1,300	y	\$65	
Manholes - Construct													\$0	\$0	Each	\$4,225	2	\$8,450	y	\$423	
Pipefitting													\$0	\$0	Day	\$1,440	1	\$1,440	y	\$72	
Electrician													\$0	\$0	Day	\$800	1	\$800	y	\$40	
Backfill/Compaction													\$0	\$0	Day	\$1,300	1	\$1,300	y	\$65	
Soil Management													\$0	\$0	Lump Sum	\$2,500	1	\$2,500	y	\$125	
Site Restoration													\$0	\$0	Lump Sum	\$2,000	1	\$2,000	y	\$100	
Shakedown Testing													\$0	\$0	Lump Sum	\$2,000	1	\$2,000	y	\$100	
Demobilization													\$0	\$0	Lump Sum	\$1,500	1	\$1,500	y	\$75	
IWF Repair Contingency													\$0	\$0	Lump Sum	\$14,000	1	\$14,000	y	\$700	
Contingency on Subs													\$0	\$0	Lump Sum	\$5,909	1	\$5,909	n		

2013 Environmental Project Detailed Budget Estimates Nevada Environmental Response Trust Site; Henderson, Nevada

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RATE SCHEDULE:	P	M-10	M-9	M-8	SA-7	SA-6B	SA-6	A-5	A-4		Draft	Admin	LABOR SUB-TOTAL	C&C	Unit	Unit Cost	Quantity	ODC SUB-TOTAL	ODC Markup	category costs	TOTAL
Custom	\$205	\$170	\$160	\$145	\$133	\$115	\$110	\$93	\$84		\$80	\$59		5%					5%		
WELL TESTING																			TASK SUBTOTAL		\$ 126,332
LABOR	2	20	0	30	40	0	100	100	0	0	0	0	\$33,780	\$1,689				\$0			\$35,469
EXPENSES													\$0	\$0				\$0			\$17,063
Airfare													\$0	\$0	Each	\$450	5	\$2,250	y	\$113	
Rental Vehicle													\$0	\$0	Week	\$300	4	\$1,200	y	\$60	
Hotel													\$0	\$0	Day	\$100	20	\$2,000	y	\$100	
Daily Food													\$0	\$0	Day	\$50	20	\$1,000	y	\$50	
Transducers													\$0	\$0	Each	\$200	40	\$8,000	y	\$400	
Water Level Meter													\$0	\$0	Each	\$150	2	\$300	y	\$15	
Field Supplies													\$0	\$0	Lump Sum	\$1,500	1	\$1,500	y	\$75	
SUBCONTRACTORS													\$0	\$0				\$0			\$73,800
Well Development Rig													\$0	\$0	Day	\$3,000	3	\$9,000	y	\$450	
IWF Pump Contingency													\$0	\$0	Lump Sum	\$52,500	1	\$52,500	y	\$2,625	
Contingency on Subs													\$0	\$0	Lump Sum	\$9,225	1	\$9,225	n		
MODEL UPDATES / WELL FIELD PERFORMANCE EVALUATIONS																			TASK SUBTOTAL		\$ 73,532
LABOR	10	80	0	20	40	200	160	0	0	0	40	40	\$70,030	\$3,502				\$0			\$73,532
EXPENSES													\$0	\$0				\$0			\$0
Subitem 1													\$0	\$0	Each			\$0	y	\$0	
Subitem 2													\$0	\$0	Mile			\$0	y	\$0	
SUBCONTRACTORS													\$0	\$0				\$0			\$0
Sub #1													\$0	\$0	Day			\$0	y	\$0	
Sub #2													\$0	\$0	Lump Sum			\$0	y	\$0	
REPORTING																			TASK SUBTOTAL		\$ 46,767
LABOR	15	20		30	45	70	70	40			40	40	\$41,840	\$2,092				\$0			\$43,932
EXPENSES													\$0	\$0				\$0			\$2,835
Plotting													\$0	\$0	Lump Sum	\$2,500	1	\$2,500	y	\$125	
Report Production													\$0	\$0	Each	\$200	1	\$200	y	\$10	
TOTAL	67	312	0	290	345	470	870	560	0	0	180	180	\$381,560	\$19,078				\$156,558	\$7,071	\$388,833	\$388,833
																			Total \$ 388,833		
																			15% Contingency \$ 58,325		
																			Total w/ Contingency \$ 447,158		
																			Rounded Total \$ 447,000		