Attachment A

COCHISE COUNTY and THE NATURE CONSERVANCY
SITE INVESTIGATION SCOPE OF WORK OUTLINE
RIVERSTONE RANCH PROPERTY
Dated September 9th, 2013

Introduction

Through hydrological, geological, hydrogeological, and geotechnical investigation, Cochise County ("the County") and The Nature Conservancy ("TNC") will assess the feasibility of a recharge facility or facilities on the 1,811-acre Riverstone Ranch property (Riverstone) to increase base flow in the San Pedro River to the maximum extent possible.

The property is located approximately six miles southeast of the City of Sierra Vista, within 2 miles of the San Pedro River, and shares its eastern boundary with the BLM San Pedro Riparian National Conservation Area (SPRNCA). Recent hydrogeological modeling scenarios indicate that recharge on Riverstone may result in increased San Pedro River base flow.

The goal is to identify potential locations for recharge facilities where urban enhanced run-off (UER), pre-development stormwater run-off (stormwater), and treated effluent could be recharged to enhance the alluvial and/or the shallow regional aquifer of the San Pedro River. UER and stormwater may be recharged in a single facility, while treated effluent recharge would require a separate facility. Since recharge facilities may be developed as a phased project as the various water sources are acquired for the site, recommendations for the appropriate facility type for each water source will also be included in the deliverable. These recommendations may include surface basins, vadose zone and/or saturated zone injection wells, discharge to existing drainages, or other new or emerging recharge technologies. Proposed facilities may incorporate existing on-site infrastructure, including earthen berms and the erosion-control drop structure.

Project deliverables will include identified locations and recommendations for appropriate recharge technologies suitable for each water source, together referred to as "recharge facilities" and any required conveyance systems. At a minimum, the deliverables for this scope of work will include letter-size conceptual designs of potential future facility for the recharge of UER, stormwater, and effluent. If recharge proves to be feasible on Riverstone, budgeting for later phases will include 100% design and bid package deliverables.

The first design focus will be on recharge of UER. Careful attention will be paid to allowing natural flows to continue across the site, while slowing the flow and capturing and infiltrating UER. Effectiveness of existing infrastructure on the property will be evaluated as part of any recharge facility design, including the earthen berms bisecting

the three main drainages and the cement drop-structure located near the confluence of Ramsey and Carr Canyon washes.

The second design focus will be on recharge of treated effluent. Groundwater modeling scenarios show effluent sources to have the greatest potential recharge benefit to the river, given the potential for relatively large volumes. Several options exist for effluent water sources, but negotiations with local municipalities and water companies have not yet commenced. To the extent that the conveyance system access from wastewater treatment plants (WWTPs) to the recharge site needs to be considered for facility design, the locations of existing and planned WWTPs are available. The design for this facility will need to include all requirements associated with obtaining and implementing an Aquifer Protection Permit (APP) as required by the Arizona Department of Environmental Quality (ADEQ) under the Clean Water Act. The actual APP application preparation, submittal, and interactions with ADEQ will be included as an option as described below for the 100% Design and bid package.

The third design focus will be on recharging stormwater captured in the upstream portion of the watersheds that would otherwise infiltrate or evaporate before arriving naturally at Riverstone. Stormwater would be collected and conveyed through a yet-to-be-determined conveyance system to Riverstone for recharge closer to the river. The recharge facility may utilize the same recharge facility as the UER. Depending on the availability of funding, the deliverable or an option will also include using the newly-developed Cochise County GIS tool, Pipeline Feasibility Analysis, and other existing data to identify stormwater collection points, amount of stormwater generated, rights of way from collection to recharge facility, and concept level pipeline or other conveyance system costs.

The project team includes TNC and the County (collectively referred to as the project team) who will jointly fund the site investigation contract. The project team will meet monthly to provide guidance to the Contractors. Project management will be conducted by the County. The Upper San Pedro Partnership (USPP) has also contributed funding for the site investigation. Monthly conference calls will be held to update all team members on all recharge projects. The approach for this investigation will be phased and iterative and will involve other interested parties at key decision points. Lacher Hydrologic Consulting will provide hydrologic analysis of recharge effects to the project team as a Contractor to TNC, to model the anticipated volume and timing of enhanced baseflow to the San Pedro River. Subsequent tasks will be designed based on resulting data, and decisions made with the project team at key, pre-defined decision points.

Summary of Approach

The approach to field investigations will include decision points following each primary field task that may affect the type and/or extent of subsequent investigations due to the different recharge options being evaluated and their dependence on site-specific conditions. The goal is to maintain flexibility in the approach to ensure a cost-effective program for obtaining sufficient and critical data to evaluate feasibility of potential

recharge methods to meet the project's recharge goals, acknowledging that significant departure from scope could have substantial effects on cost and schedule.

Scope of Work Outline

The tasks listed below are the identified elements to this scope of work. The Contractor, in his proposal, may suggest modifications to this scope of work and the tasks with justification for those suggested modifications to the Project Team. The scope will be revised to include any accepted modifications prior to contract award.

Task 1. Project Management

The Contractor shall:

- Identify a project manager who will be responsible for managing the budget, schedule, and deliverables throughout the project, including the management of budget, schedule, and deliverables of any subcontractors, as well as report directly to the County's project manager;
- Identify all subcontractors who will be involved in the project;
- Participate in and/or lead as appropriate all monthly conference calls/meetings;
- Suggest modification of project scope details, including phasing, critical path items and decision points, as the project progresses;
- Suggest modifications to clarify and prioritize recharge goals/approaches, as the project progresses;
- Suggest additional milestones leading to ensure achievement of project goals, as the project progresses;
- Assign roles and communication system for Contractor and subContractor project team members;
- Share site investigation results obtained during the site-specific field investigation phases; and
- Identify key stakeholders groups, contacts for each group, and timing for project participation with assistance from the Project Team.

Deliverable 1: Monthly Reports and Invoices and Monthly Conference Calls/Meetings

NOTE: The Contract as Awarded will serve as the Scope of Work Report that is required for TNC grant payment, due on or before October 15th, 2013.

Task 2. Draft and Final Regulatory Review Report

The Contractor shall prepare a draft regulatory review report that summarizes all of the regulatory requirements from federal and state laws and permit requirements, including but not necessarily limited to:

- the Clean Water Act,
- the Clean Air Act,
- AZPDES permits,

- State Aquifer Protection Permit,
- State Reuse Permit,
- Arizona Water Rights, and
- Corps of Engineers 404 permits

The purpose of this report is to have these requirements summarized in one place so people who are involved in the project understand what is required, as well as for use for all future recharge projects, whether using stormwater or wastewater.

The Project Team members will have an opportunity to comment on the draft report. The Contractor will respond to those comments, and incorporate the responses into the Final Regulatory Report as appropriate.

Deliverable 2. Draft Regulatory Review Report as described above.
Deliverable 3. Final Regulatory Report with Response to Comments on Draft Report attached.

Task 3. Data Collection and Evaluation

The Contractor shall perform data collection and evaluation of existing documentation appropriate to the project, including, but not necessarily limited to:

- JE Fuller GIS tool and Pipeline feasibility study, 2012;
- Cochise County Flood Control/Urban Runoff Recharge Plan, Stantec, 2006;
- Rapid estimation of recharge potential in ephemeral-stream channels using electromagnetic methods, and measurements of channel and vegetation characteristics, Callegary, et al., 2007;
- Upper San Pedro Partnership documents;
- Lacher Hydrological Consulting reports;
- Determine accessibility of existing wells;
- Climate change effects on runoff to the extent possible (this may be qualitative rather than quantitative);
- Survey of recharge networks elsewhere/recharge benefits to stream flow; and
- Water sources potentially available for use in this project.

The Nature Conservancy has an extensive bibliography that may be useful as a starting point for this effort that will be supplied to the Contractor.

Deliverable 4: Bibliography and electronic copy of all references collected during Task 3. This deliverable may be placed on the Contractor's ftp site for download by the project team.

Task 4. Perform Natural Resources Survey

The Contractor shall perform a natural resource survey to include surveys of archeological, biological, and paleontological resources to identify sites that would impact the locations of field investigation and/or construction sites.

Deliverables 5 and 6. Deliverables will include draft and final summary reports for the resources identified, that include but are not necessarily limited to site descriptions, geographic coordinates in UTM, photographs, and survey notes.

Task 5. Preliminary Hydrologic Analysis

The Contractor will perform a preliminary hydrologic analysis including, but not necessarily limited to:

- Determining existing and future condition runoff volumes for tributaries drainages to Riverstone, including watershed delineation and application of rainfall runoff modeling for 2-, 5-, 10-, and 100-year events;
- Developing detailed estimates of potential available capture volumes of UER and stormwater using an appropriate and widely-accepted methodology;
- Using the Cochise County GIS tool, Pipeline Feasibility Analysis, and other existing data to identify UER and stormwater collection points, rights of way from collection to recharge facility, and estimated costs; and
- Developing estimates for potential treated effluent sources and conveyance cost estimates.

Deliverable 7: Preliminary Hydrologic Analysis Report to summarize the results of the analysis.

Task 6. Preliminary Site Investigation for Recharge Feasibility

The Contractor shall perform a comprehensive preliminary site investigation (geologic, hydrogeologic, and geotechnical) regarding the feasibility of recharge on this property, including, but not necessarily limited to:

- Performing a site recharge screening level evaluation of potential alternative or complimentary sites using available information collected in Task 3 above;
- Evaluating hydrogeologic, soil, and surface geology data to determine suitability for:
  - UER recharge,
  - Stormwater recharge, and
  - Treated effluent recharge;
- Identifying and incorporating site constraints (including, but not necessarily limited to, physical, biological, archaeological, legal, water delivery infrastructure access, etc.) to eliminate clearly unsuitable areas; and
- Finalizing screening/ranking criteria for each of the water sources to focus shallow-subsurface site characterization.

Deliverable 8: Preliminary Site Investigation Report of Recharge Feasibility summarizing the results of preliminary site investigation.

Task 7. Coordination Meeting to Refine Plan for Field Investigations

The Contractor shall:

- Prepare a visual presentation summarizing the results to date and proposed recharge locations based on those results and recommendations for the Initial Recharge Feasibility Study (in task 8 below);
- Conduct a meeting with the Project Team (and any necessary contractor and subcontractor personnel) at their office or other appropriate location; and
- Prepare meeting notes of all discussions and decisions arrived at during the meeting.

Deliverable 9: Meeting Notes summarizing discussions and decisions arrived at during the meeting and any revisions required for scope modification for Task 8.

Task 8. Conduct Initial Recharge Feasibility Study

The Contractor will perform a recharge feasibility study with subtasks that may include, but are not necessarily limited to:

- Conduct shallow subsurface geologic, hydrogeologic, and geotechnical site characterization to determine recharge feasibility and to help develop options to maximize recharge effectiveness, including, but not necessarily limited to:
  - Conducting backhoe test pit/trenching investigations for lithologic characterization of sediments,
  - Collecting geotechnical soil samples for determination of geotechnical parameters as identified in Task 6 above, and
  - Performing infiltration testing for evaluation of infiltration rates pertaining to possible recharge methods, including but not necessarily limited to recharge basins, in-channel recharge, injection wells (vadose zone and/or saturated zone), and other emerging technologies;
- Develop estimates of “achievable” recharge volume (that the aquifer can accept) for possible recharge methods;
- Perform surface geophysical survey using appropriate methods identified in Task 6 above) at transects selected from drilling results to develop cross-sections of subsurface materials.

Deliverable 10. Initial Recharge Feasibility Study Report that summarizes and analyzes the results and proposes any additional detailed recharge feasibility studies required and order of magnitude costs (broken down by the remaining task options described below). The report shall include, but is not necessarily limited to:

- the following attachments:
  - Engineering soil descriptions,

  - Graphic logs,
  - Cross sections, and
  - Contoured geophysical survey results.
- the proposed additional requirements including, but not necessarily limited to:
  - number and select locations for exploration deeper subsurface site characterization (to be performed in task 10 below),
  - Appropriate drilling method at selected locations for characterization of upper 50 to 100 feet of subsurface sediments, and
  - Appropriate testing methods (if necessary) such as down-borehole permeability tests to evaluate subsurface hydraulic properties.

Task 9. Coordination Meeting to Present Initial Feasibility Study Results and Recommendations for Detailed Recharge Feasibility Study for Field Investigations

The Contractor shall:

- Prepare a visual presentation summarizing the results of the Initial Feasibility Study and recommendations for the Detailed Recharge Feasibility Study (in tasks 10 and 11 below);
- Conduct a meeting with the Project Team (and any necessary contractor and subcontractor personnel) at their office or other appropriate location; and
- Prepare meeting notes of all discussions and decisions arrived at during the meeting.

Deliverable 11. Meeting Notes summarizing discussions and decisions arrived at during the meeting and any revisions required for scope modification for Tasks 10 and 11.

Task 10 (Option #1 of Phase II). Conduct Detailed Recharge Feasibility Study

The Contractor shall conduct a deeper subsurface geologic, hydrogeologic, and geotechnical site characterization.

Deliver 12. Deliverables will include, but are not necessarily limited to:
- Engineering soil descriptions,
- Graphic logs,
- Cross sections, and
- Contoured geophysical survey results.

Task 11 (Option #2 of Phase II). Install Shallow Monitor Wells

The Contractor shall:

- Install a minimum of three to a maximum of 5 shallow monitoring wells in a method and at locations proposed by the Contractor to the Project Team in Task 9 above.

Monitoring three wells are the minimum number capable of determining groundwater flow direction and gradient, and
- Conduct aquifer tests for determining transmissivity of the alluvial or shallow regional aquifer (depending on aquifer that is present below the site).

Deliverable 13. Deliverables will include, but is not necessarily limited to:
- Soil boring logs from borings in which wells are installed;
- Well construction diagrams;
- Well development logs; and
- Water level survey results.

Task 12. (Option #3 of Phase II). Detailed Recharge Facility Report

The Contractor shall prepare a Detailed Recharge Facility Report summarizing and analyzing the results of task 10 and 11 and recommendations for tasks 14 and 15 below.

Deliverable 14. Detailed Recharge Facility Report including the deliverables from tasks 10 and 11 as attachments.

Task 13. (Option #4 of Phase II). Coordination Meeting to Present Detailed Feasibility Study Results and Recommendations for Additional Field Investigations If Required

The Contractor shall:

- Prepare a visual presentation summarizing the results of the Detailed Feasibility Study and recommendations for the additional field investigations (in task 14 below);
- Conduct a meeting with the Project Team (and any necessary contractor and subcontractor personnel) at their office or other appropriate location; and
- Prepare meeting notes of all discussions and decisions arrived at during the meeting.

Deliverable 15. Meeting Notes summarizing discussions and decisions arrived at during the meeting and any revisions required for scope modification for Task 14.

Task 14. (Option #4 of Phase II). Perform additional tasks. Cost to be negotiated if required.

The Contractor shall perform additional tasks as proposed in Task 13 to refine recharge methods and locations.

Deliverable 16. Additional Tasks Report.

Task 15. (Option #5 of Phase II). Preparation of Draft and Final Technical Memorandum

The Contractor shall prepare draft and final Technical Memoranda that summarize and analyzes all results from tasks 3 through 14 and includes the results of the hydrologic modeling of the LHC Phase 2 Riverstone Refinement & Simulation effort. This report shall recommend the recharge method(s), locations, and quantities for UER, stormwater, and treated effluent.

Deliverable 17. Draft Technical Memorandum as described above.
Deliverable 18. Response to Comments on Draft Technical Memorandum.
Deliverable 19. Final Technical Memorandum as described above.

Schedule

It is anticipated that the contract will be awarded on or before October 15th, 2013. The Contractor shall work closely with the County's project manager to develop a schedule for review and approval by the Project Team within 10 days of contract award.

Funding

This scope of work identifies basic tasks plus optional tasks that are within scope but may not be able to be accomplished with available funding. This scope may be modified to award options if funding is sufficient for award or turn basic tasks into options if funding is insufficient for basic tasks. This will be accomplished during negotiations following receipt of the initial proposal from the Contractor.