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Nevada Division of Environmental Protection  
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**SMP-REQUIRED NOTIFICATIONS, WORK PLAN, CONTINGENCY PLAN, AND  
CONSTRUCTION MITIGATION MEASURES PLAN FOR THE ARTESIAN WELL  
MODIFICATION AND REPAIR PROJECT  
NEVADA ENVIRONMENTAL RESPONSE TRUST SITE, HENDERSON, NEVADA**

July 19, 2017

Dear Mr. Dong:

On behalf of the Nevada Environmental Response Trust ("NERT" or the "Trust"), Ramboll Environ US Corporation (Ramboll Environ) is pleased to present these notifications and Work Plan, Contingency Plan, and Construction Mitigation Measures Plan for the planned soil-disturbing and artesian well-related field activities to be performed at the NERT site (the "site") in Henderson, Nevada. The work will be conducted by Cascade Drilling (Cascade) with direct oversight from Ramboll Environ, and is scheduled to take place between July 31 and August 5, 2017. This document has been prepared in accordance with the Site Management Plan, Revision 3 (SMP).<sup>1</sup> The Trust has been advised of and approves of this document. Approval of this document by the Nevada Division of Environmental Protection (NDEP) is required prior to initiating the work described herein.

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This document addresses the following notifications and requirements of the SMP:

- Section 4.1 requires submittal of a work plan to NDEP and the Trust for approval when soil disturbing activities will be conducted within an excavation control area (ECA).
- Section 4.3 requires submittal of a contingency plan to NDEP and the Trust for approval, describing actions to be taken if previously unknown contaminated soil is encountered.

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<sup>1</sup> Ramboll Environ. 2017. Site Management Plan, Revision 3, Nevada Environmental Response Trust Site, Henderson, Nevada. February 13. Approved by NDEP on February 28, 2017.

- Section 4.4 requires submittal of a Construction Mitigation Measures Plan to NDEP and the Trust for approval, describing mitigation measures to be followed to address potential construction-related impacts during earthwork or construction activities.
- Section 4.7 of the SMP describes notifications and procedures to follow in the event of an emergency project related to an accidental spill or release.
- Section 5.3 requires notification to and approval from NDEP and the Trust for work to be performed within 50 feet of any on-site groundwater extraction and treatment system (GWETS) component.
- Section 5.7 requires submittal of a contingency plan to NDEP and the Trust for approval, describing actions to be taken in case of accidental release of untreated groundwater due to damage to any GWETS component or during work on artesian wells.

### **BACKGROUND INFORMATION**

In response to well head deficiencies identified during well inspections performed in September 2016 as part of the Groundwater Monitoring Optimization Plan (GWMO Plan; dated April 29, 2016 and approved by NDEP on June 24, 2016), artesian monitoring wells M-155, TR-1, TR-3, TR-5, TR-11 and TR-12 will be inspected for damage to the shallow casing or seal, repaired if necessary, and fitted with new well head equipment. These activities will be performed to address leaks of groundwater from the well heads, and to standardize the sampling equipment and methodology for these wells in a way that will allow for seasonal changes creating artesian and non-artesian flow conditions. Artesian wells, current conditions, and planned modifications are summarized on Table 1. Artesian well locations and photographs are presented on Figure 1.

The modified well heads will allow pressure head to be monitored on a pressure gauge during periods of artesian conditions and will also accommodate insertion of water level probes for collection of water level measurements during periods of non-artesian conditions. When the wells are under artesian conditions, the ball valve connected to the pump discharge tubing will be opened sufficiently to allow the water pressure in the well to purge the volume of the pump and tubing at an appropriate rate. After completion of purging, groundwater parameters will be monitored for stabilization prior to collection of groundwater samples. When the wells are not under artesian pressure conditions, a compressed air tank or compressor will be attached to the air line fitting at the well head to actuate the bladder pump. The volume of the pump and tubing will be purged at an appropriate rate, followed by monitoring for parameter stabilization and collection of groundwater samples. The proposed well head modifications and pump systems are presented on Figure 2.

### **ANTICIPATED ACTIVITIES**

In order to assess the integrity of surface seals and casing joints, limited excavation will be performed around the existing well heads at each location where surface leaks have been observed (M-155, TR-3, TR-11, and TR-12).

As preparation for the work, a public utility notification will be made and the areas around each well will be scanned for underground utilities using ground-penetrating radar (GPR) and standard utility locating methods. In addition, prior to initiating repair or modification activities at any artesian well, steps will be taken to prevent accidental releases of groundwater at the ground surface. The preferred method is insertion of an inflatable well packer which will be weighted and allowed to sink to a depth of approximately 10 feet below ground surface, at which point it will be inflated, sealing the well. Groundwater in the well casing above the depth of the packer will then be pumped out of the well and contained in a drum. The packer will remain in place during removal of the stove pipe and concrete apron, excavation of the well casing for inspection as needed, and any repairs to the uppermost casing. After custom flanged well heads are installed, the packers will be removed in order to install the dedicated pumps and tubing. During installation, groundwater rising to the top of the unsealed well casing will be pumped off and contained in a drum or other appropriate container.

If the packer method is infeasible (for example, if scale buildup prevents a good seal between the packer and well casing), other methods may be used, including obtaining a larger water storage vessel (i.e., a truck-mounted tank or portable poly tank) and continuously pumping the well to keep the groundwater level below the surface until all work is completed.

The existing stove pipe surface mounts will be removed and the existing PVC well casings will be excavated to a depth of up to 5 feet using air-knife and/or hand-digging. A backhoe may be used if found to be necessary. For on-site well locations, excavated soils will be placed in lined roll-off bins, drums, or in stockpiles in accordance with the SMP, and appropriate dust control measures will be implemented in accordance with the NERT Site-Wide Dust Control Plan (SWDCP)<sup>2</sup>.

The existing surface seal (i.e., the cement surrounding the well casing) will be removed to a depth of up to 5 feet for inspection of the casing and casing joints. If damage is observed, the casing will be repaired with a new length of PVC blank casing and a new gasket seal at the repaired casing joint. Following any necessary repairs to the casing, a cylindrical cement form (Sonotube® or similar) with diameter approximating the original borehole diameter will be placed over the well casing and fitted onto the top of the existing cement seal. The well casing will be centered within the tube and neat Portland cement will be poured into the tube annulus to protect the casing and provide a new surface seal. The area around the concrete form will then be backfilled.

Backfill material will be compacted into place using the backhoe bucket and/or an air-knife "fluffer" which is a compressed air powered tool that is typically used for this application. Excavation and repair activities will be overseen by Ramboll Environ.

For on-site wells, clean imported fill material will be used for backfill to avoid an excavation being open for several days pending analytical data reports. Soil samples will be collected from the stockpile to assess whether the soil is appropriate for reuse on-site or if it will be disposed at an appropriate off-site location. For off-site wells, the excavated soil stockpile will be used for backfill.

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<sup>2</sup> Tetra Tech. 2015. NERT Site Wide Dust Control Plan, Henderson, Nevada. July 10.

Following necessary well casing repairs and backfilling, stove pipe surface mounts will be restored and custom well head assemblies including socket flanges, gasket, pressure gauge and ball valve will be installed (Figure 2). At monitoring well TR-12, due to its location in an unsecured off-site area, a lockable, traffic-rated sub-grade vault box will be installed in lieu of a stovepipe surface mount.

New, dedicated bladder pumps with dedicated air and discharge tubing will be installed in each well, with pumps positioned at a depth of up to 100 feet and a pump intake extension tube leading from the pump to an intake screen positioned at the center of the screened interval.

**WORK WITHIN EXCAVATION CONTROL AREAS (ECAs)**

Per Section 4.1 of the SMP, submittal of this document provides the required notification to NDEP and the Trust of potential soil disturbing activities within an excavation control area (ECA). Monitoring well M-155 is the only well requiring work that is present within the boundaries of an ECA (ECA D3 on the north side of the GW-11 pond berm). A description of the ECA and related construction activities is presented below:

***ECA D3***

The GW-11 and WC ponds are actively used by the GWETS operator and Tronox. The berms around the ponds contain impacted soil, but this soil cannot be excavated because of the potential to compromise the integrity of the pond berms. Discolored soil sample DS-DB-1 and duplicate sample DS-DB-2 were collected from black discolored soil along the slope of and adjacent to the GW-11 Pond berm, and were analyzed for dioxins/furans, HCB, SVOCs/PAHs, arsenic, lead, cobalt, manganese, magnesium, and perchlorate. Results indicated concentrations of dioxins/furans, HCB, and magnesium were above soil screening levels. Following removal of soil to the south, three excavation extent samples (EE-D10-1, EE-DB-1, and EE-DB-2) were collected from the black discolored soil on the berm and analyzed for dioxins/furans, HCB, and magnesium. Concentrations of magnesium were above soil screening levels in the three samples. In addition, soils beneath the ponds remain uncharacterized. Therefore, this area has been designated as ECA #D3, as shown in Figure 4. The ponds are double-lined and impacted soil may have been removed from within the pond footprints during construction.

In proximity to the location of artesian monitoring well M-155, discoloration has been observed in the road cut along the emergency egress route north of the GW-11 and WC Ponds. Therefore, the northern boundary of ECA #D3 has been extended to the Site boundary to include the berm to the north, as shown on Figure 4.

During work at M-155, appropriate soil sampling and characterizing of ECA soils will be performed as described in Section 4.2 of the SMP, as follows:

***Excavation, Sampling, Analysis, and Disposal of ECA Soils***

Excavated soil from all well locations requiring soil excavation will be temporarily stockpiled on site using appropriate plastic sheeting above and below the stockpile. The stockpile will be sampled for off-site disposal profiling. The total volume of soil generated from all on-site monitoring wells is expected to be less than 5 cubic yards (CY). One four-point composite soil sample will be collected from the stockpile and will be analyzed for chemicals that have been detected in this area and potentially others, in accordance with all applicable laws and regulations for soil disposal profiling.

***Confirmation Sampling for ECA Excavations***

If NDEP prefers, one bottom confirmation sample may be collected from the excavation of monitoring well M-155. This sample would be collected for documentation purposes only, i.e., no further excavation will be performed as part of this mobilization and task, regardless of the results of the analyses. The sample would be analyzed for the chemicals identified on Table A-1 of the SMP, or as directed by NDEP.

**CONTINGENCY PLAN FOR WORK ON ARTESIAN MONITORING WELLS**

Per Sections 5.3 and 5.7 of the SMP, this document serves as a notification and Contingency Plan to NDEP and the Trust that construction activities will be conducted on artesian monitoring wells, with the potential for release of untreated groundwater. The purpose of the Contingency Plan is to describe the actions to be taken in case of accidental release of untreated groundwater due to unintended damage to an artesian well.

***Precautions***

Construction personnel and subcontractors will implement the following precautions and procedures during implementation of the construction activities:

- Daily health and safety “tailgate” meetings will be held prior to the start of field work. In addition to discussions of health and safety hazards and preventions, the names and mobile phone numbers for all field staff and subcontractors will be confirmed. Clear lines of communication will be established each day to ensure a swift and coordinated response to a release.
- Envirogen Technologies, Inc. (ETI), which is the current operator of the GWETS, will be advised of work that may impact their operations (i.e., work within 50 feet of any GWETS component).
- Protective barriers (e.g., barricades, traffic cones/pylons, caution tape, etc.) will be used as necessary when activities that involve the use of heavy equipment (i.e., backhoes, excavators) are performed near exposed wells or other exposed GWETS infrastructure.
- A private utility locator will clear each excavation cut area for underground utilities and GWETS components prior to conducting any intrusive activities.
- Soil excavation in the work area will not commence until utility clearance activities, including completion of a private utility locator survey, and review of information available from ETI, are complete. Hand tools will be used for excavation and grading within one foot of any artesian monitoring well casing and within six feet of any identified GWETS components or subsurface utilities.
- Work areas will be delineated and monitored as necessary to avoid unauthorized entry during construction work.
- Prior to initiating well repairs, an inflatable packer will be installed in each well at a depth of approximately 10 feet below ground surface, such that the packer will temporarily halt the flow of artesian groundwater during repair activities and in the case of unintended damage to the well casing or well head during repairs. Groundwater within the well casing above the level of the inflatable packer will be pumped into a drum or other appropriate container for storage and transport to the GW-11 pond. The packers will not be removed until the dedicated pumps and tubing systems are ready to be installed. Once packers are removed, field personnel will act quickly to complete the well head

installation and will use appropriate equipment (pump, shop-vac, plastic sheeting, absorptive materials, etc.) to keep groundwater from spilling onto the ground surface.

### ***Spill Response Procedures***

- The primary response action for a release of untreated groundwater during construction activities will be to shut down and contain any uncontrolled flow. An inflatable packer system will be on hand to halt artesian groundwater flow in the event of a release. Other pumping, vacuum, and containment equipment will also be available as needed, as described above.
- A spill response kit will be readily available during construction activities and utilized in the event of a release of untreated groundwater.
- As described in the SMP, if construction activities result in the release of untreated groundwater, the contractor will immediately notify Ramboll Environ. Ramboll Environ will immediately notify Weiquan Dong of NDEP at (702) 486-2850, extension 252 and Steve Clough of the Trust at (702) 960-4309 of the release and report on the status of the GWETS operation. If any GWETS components are shut down due to damage to the system(s) or to control the release of untreated groundwater, Ramboll Environ will provide NDEP, the Trust, and ETI with a written explanation for the shutdown.
- If the construction activity results in the release of untreated groundwater, the release will be reported to the NDEP 24-Hour Spill Notification Line, if required by NAC 445A.345 to 445A.348.

### **CONSTRUCTION IMPACT MITIGATION MEASURES**

As described in Section 4.4 of the SMP, measures must be implemented to mitigate the potential impacts of the following activities:

- Dust generation associated with soil excavation and loading activities, construction or transportation equipment traveling over on-site soil, and wind traversing soil stockpiles that potentially contain contaminants of potential concern;
- Tracking of soil off the site on the wheels or bodies of construction or transportation vehicles or equipment; and
- Transporting of sediments from the site in surface water run-off.

Under the direction of Ramboll Environ, the drilling contractor will implement the following mitigation measures to control the potential impacts of these activities.

#### ***Dust Mitigation***

Dust mitigation measures are designed to be in compliance with Sections 90-94 of the Clark County Air Quality Regulations, which are administered and enforced by the Clark County Department of Air Quality (DAQ). Because soil disturbing or construction activities will not exceed 0.25 acres in overall area for this project, no County Dust Control Permit will be required from the DAQ, per Section 94 of the Clark County Air Quality Regulations. Thus, dust mitigation for this task is to be performed in accordance with the NERT SWDCP<sup>3</sup>.

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<sup>3</sup> Tetra Tech. 2015. NERT Site Wide Dust Control Plan, Henderson, Nevada. July 10.

To ensure the overall effectiveness of dust control measures at the site, and to remain in compliance with the Site Wide Dust Control Plan, dust control measures implemented by the contractor will include the following activities, at a minimum:

- Limit vehicle speeds on unpaved or off-road areas to 5 miles per hour;
- Control excavation activities and the pace or speed of work;
- Minimize drop heights during excavation or loading activities; and
- Utilize water trucks (or water tanks/sprayers mounted on support trucks or trailers) to conduct wet suppression at areas where work activities have the potential to generate significant dust.

### ***Dust Monitoring***

During all work, Ramboll Environ will monitor for potential dust producing conditions. If visible dust is being created, the field technician will perform work zone dust monitoring both upwind and downwind of active work areas (using a calibrated pDR-1000AN or equivalent). Differential dust monitoring results in excess of 100 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) will be reported to the contractor to ensure that dust control measures are being implemented correctly or increased when necessary. The action level of 100  $\mu\text{g}/\text{m}^3$  of dust has been used during past soil remediation, excavation, and backfilling activities at the site. This action level is designed to prevent fugitive dust emissions from the site, as required by the Site Wide Dust Control Plan. The action level is also designed to be protective of human health based on known impacts to soil at the site.

### ***Track-Out Mitigation and Equipment Decontamination***

Tracking of soils outside of the work area will be mitigated by equipment and vehicle decontamination. In general, dry decontamination methods will be used including brushing, scraping, or vacuuming of equipment bodies, wheels or treads, and vehicle tires. Scrapings will be maintained within the work area.

Close attention will be paid to the effectiveness of dry decontamination methods, and if dry methods are not effective (for example: due to wet or muddy conditions), wet decontamination methods, including pressure washing or steam cleaning, will be employed. Any wet decontamination will be performed within the work area, and rinse water will be contained within these areas.

### ***Surface Water Run-Off Mitigation***

U.S. Environmental Protection Agency (EPA) regulations [40 CFR 122.26(b) (15)] require National Pollutant Discharge Elimination System (NPDES) storm water discharge permit coverage for discharges from construction activities that disturb one or more acres. Since this construction project will not affect an area greater than one acre, no coverage under the Construction Storm Water General Permit will be needed and no Storm Water Pollution Prevention Plan (SWPPP) will be prepared. However, the following best management practices (BMPs) are anticipated to be implemented as needed to control potential storm water, dust control water, and sediment run-off from the site. Additional control measures may be implemented as necessary.

- Structural practices including silt fences, fiber rolls (“straw wattles”), earth dikes, or other erosion control measures, if applicable.



- Administrative practices including limiting dust control water spraying to the amount necessary for dust suppression.
- Placing of clean fill dirt stockpiles and excavated clean soil stockpiles on plastic sheeting within a silt fence.
- Covering of soil stockpiles with plastic sheeting when not actively being excavated or loaded.
- If previously unknown contaminated soils are to be excavated, they will be loaded directly into a plastic lined roll-off bin and covered in plastic sheeting pending analytical testing. Characterization, management and disposal of previously unknown contaminated soil are described further in Section 4.3 of the SMP.
- Daily checks of weather forecast and communication of predicted rain events by the contractor.

### **PREVIOUSLY UNKNOWN CONTAMINATED SOIL**

Per Section 4.3 of the SMP, the contractor will notify Ramboll Environ if any discolored, oily or odorous soil is encountered at any on-site location(s), and Ramboll Environ will immediately notify the Trust. The Trust will call the NDEP 24-Hour Spill Notification Line and notify NDEP BISC within 24 hours, as required. If odorous soil is encountered, the contractor will stop work and inform Ramboll Environ of the situation. Ramboll Environ will field screen with a photoionization detector and will collect a sample(s) of any discolored or oily soil as needed to characterize the potentially impacted soil, as described in Section 4.3 of the SMP. Sampling and further characterization and handling of the potentially impacted soil will be managed as described in Section 4.3 of the SMP.

### **EMERGENCY PROJECTS**

In the event of an accidental spill or release that could qualify as an emergency project, Ramboll Environ will prepare an Emergency Project notification for approval by the Trust and NDEP. Upon approval of the Emergency Project status by NDEP, a work plan for clean-up will be prepared and submitted in general accordance with Section 4.7 of the SMP.

### **REQUEST FOR APPROVAL**

This Work Plan, Contingency Plan, and Construction Mitigation Measures Plan provides information required by the SMP for implementation of the artesian monitoring well repair project at the NERT site. Your review and approval of this work plan is requested and appreciated.



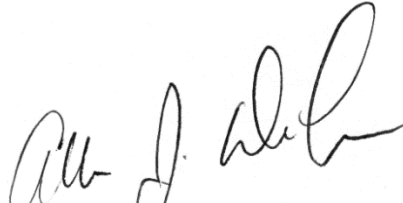
**CLOSURE**

We would appreciate your prompt review and approval of this document. Please contact John Pekala at (602) 734-7710 or [jpekala@ramboll.com](mailto:jpekala@ramboll.com) if you have any comments or questions concerning this document.

Sincerely,



**John M. Pekala, PG**  
Senior Manager  
CEM #2347, expires 9/20/2018



**Allan J. DeLorme, PE**  
Principal

Attachments

cc: BMI Compliance Coordinator, NDEP, BISC, Las Vegas

ec: James Dotchin, NDEP  
Nevada Environmental Response Trust  
Tanya O'Neill, Foley & Lardner LLP

**TABLES**

**Table 1: Artesian Monitoring Well Modifications  
Nevada Environmental Response Trust Site  
Henderson, Nevada**

Artesian Well Modifications				
Well ID	Well Owner	Well Type	Description	Proposed Modifications
M-155	NERT	Artesian	Stove pipe significantly damaged by rust. Metal well cap difficult to open. Stove pipe is filled with water.	Excavate to 5 ft bgs, assess condition of well, replace stove pipe, modify well head with custom flanges and equipment, install dedicated pump
TR-1	NERT	Artesian	Pressure gauge working. Well cap shows some damage.	Replace stove pipe, modify well head with custom flanges and equipment, install dedicated pump
TR-3	NERT	Artesian	Leaking. Cap present but not functional. Cracked concrete apron.	Excavate to 5 ft bgs, assess condition of well, replace stove pipe, modify well head with custom flanges and equipment, install dedicated pump
TR-5	NERT	Artesian	Well cap shows some damage. Water overflows casing when cap removed.	Replace stove pipe, modify well head with custom flanges and equipment, install dedicated pump
TR-11	NERT	Artesian	Leaking. Missing lock, cap, stove pipe and lid.	Excavate to 5 ft bgs, assess condition of well, replace stove pipe, modify well head with custom flanges and equipment, install dedicated pump
TR-12	NERT	Artesian	Leaking. Partially obscured by bushes. Missing metal cap and stovepipe.	Excavate to 5 ft bgs, assess condition of well, replace stove pipe, modify well head with custom flanges and equipment, install dedicated pump
<b>Total</b>				<b>6</b>

**FIGURES**

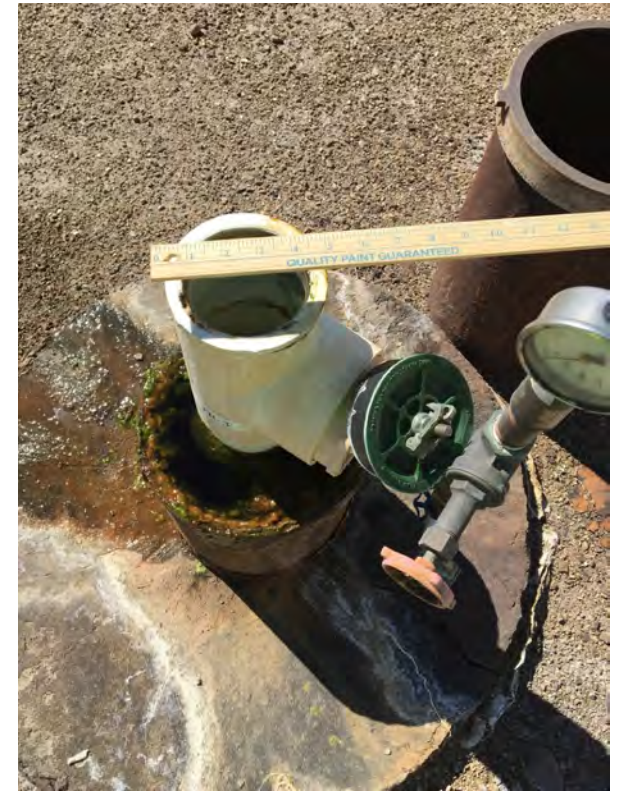




M-155



TR-1



TR-3



TR-5



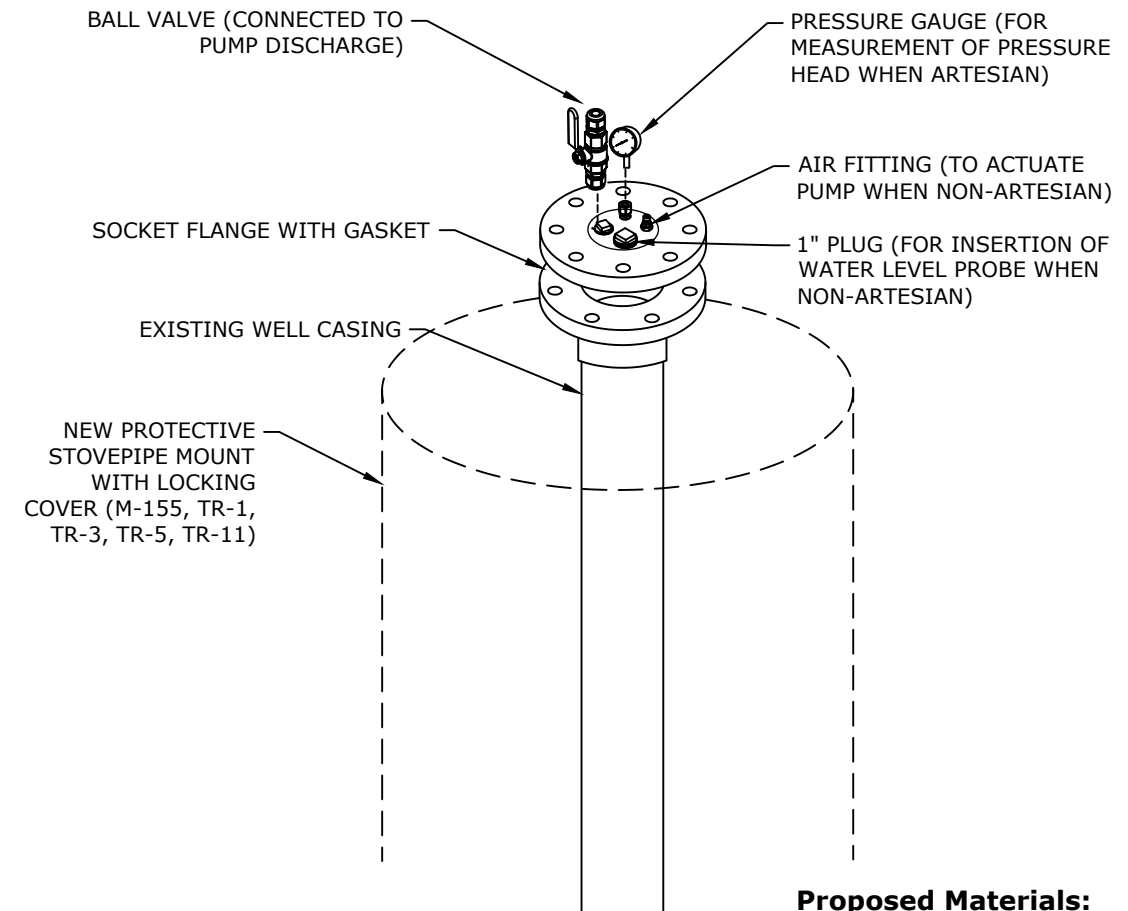
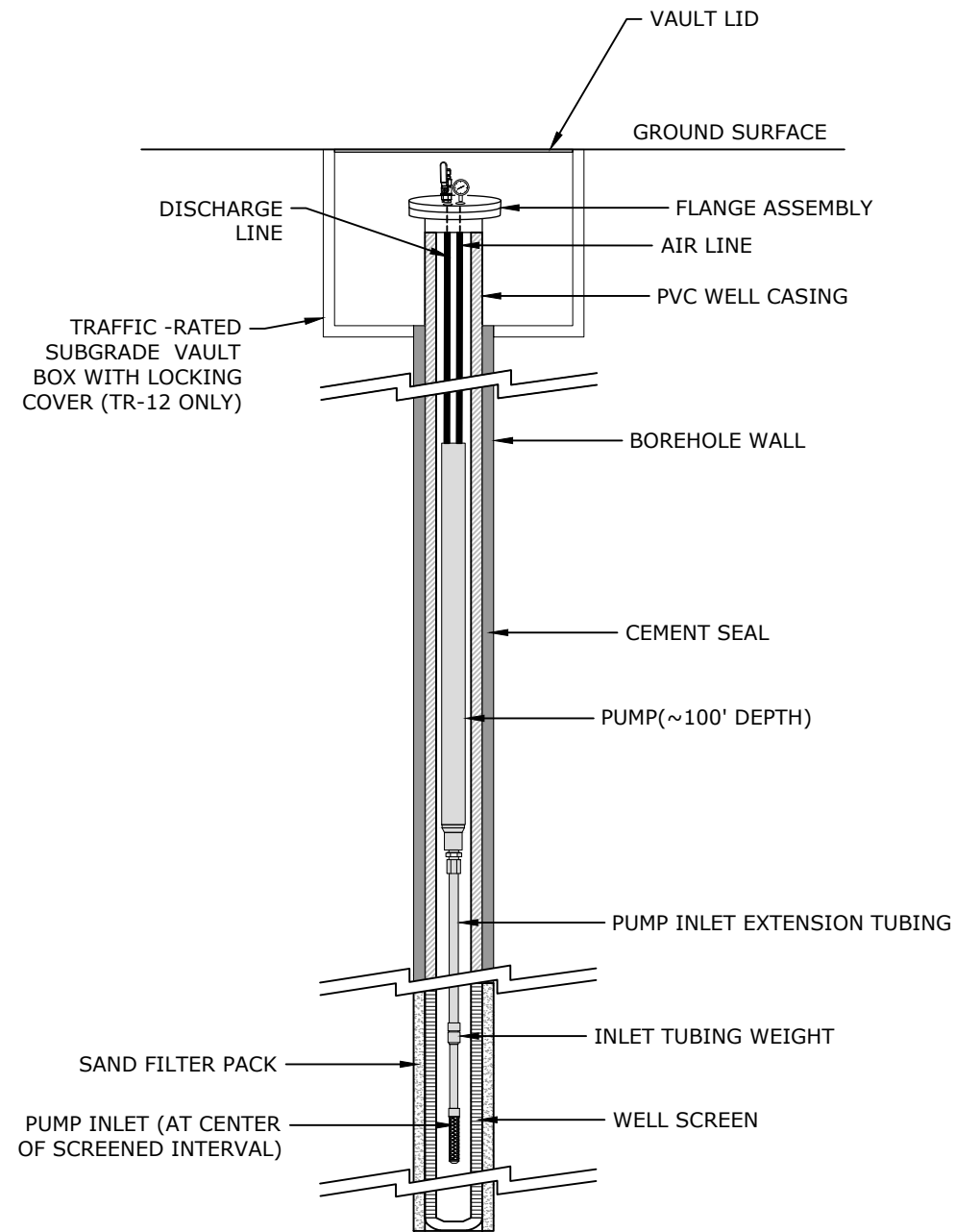
TR-11



TR-12

**Artesian Well Locations and Photographs of Existing Well Heads**  
 Nevada Environmental Response Trust Site  
 Henderson, Nevada





Not to Scale

**Proposed Materials:**

- Ball valve - Stainless Steel (SS)
- Pressure Gauge - SS; 0 to 15 psi range
- Flanges - PVC
- Gasket - Nitrile
- Pipe Plug - PVC
- Air fitting - SS
- Air Line - Polyethylene
- Discharge Tubing - Teflon-lined polyethylene
- Pump - Well Wizard Bladder Pump, PVC construction with Teflon bladder
- Inlet Extension Tubing - Teflon-lined polyethylene
- Inlet Tubing Weight - SS
- Pump Inlet - SS

**NOTE:**

Materials and specifications are subject to change prior to final design