Peabody Natural Resources Company
P. O. Box 757
Grants, New Mexico 87020
Phone: 505-285-4651
Fax: 505-285-3084

June 6, 2017

Shelly Lemon
Acting Bureau Chief
Surface Water Quality Bureau
Harold Runnels Building, N2110
1190 South Saint Francis Dr.
Santa Fe, NM 87505

Sent via USPS to:
P.O. Box 5469
Santa Fe, NM 87502

Dear Ms. Lemon,

Enclosed you will find four (4) copies of a revised Use Attainability Analysis (UAA) sampling plan for streams in the vicinity of Lee Ranch Coal Mine. Peabody Natural Resources Company (PNRC) believes that we have addressed all questions and concerns identified by the Surface Water Quality Bureau (SWQB) during your previous review of this document and discussed during the conference call on March 15, 2017. We have scheduled the UAA sampling on June 19-23, 2017, consistent with the Hydrology Protocol (late-May through mid-July).

If you have any additional questions or concerns raised during your review of this document, please contact me at (505) 285-3076 or cgaines@peabodyenergy.com.

Respectfully,

Chad Gaines
Environmental Specialist
505-285-3076
Peabody Natural Resources Company

cc: Mark Rochlitz, Senior Manager Engineering, Peabody Natural Resources Company
Randolph Lehn, Director Environmental Services Southwest, Peabody Energy Corporation
Jimmy Boswell, Manager Environmental, Peabody Energy Corporation
Bryce West, VP Environmental Services - Americas, Peabody Investments Corp.

Lee Ranch Mine
Use Attainability Analysis
Sampling Plan

April 2017

Contents

1 Introduction and Background

The Lee Ranch Mine (LRM) is a surface coal mine located in McKinley County New Mexico (Figure 1), and operates under Surface Mining Permit No. 19-2P issued by the New Mexico Mining and Minerals Division. Streams in the vicinity of Lee Ranch Mine are Mulatto Canyon, Arroyo Tinaja, San Isidro Arroyo, Doctor Arroyo, and tributaries thereof. These streams are not included in a classified Water Quality Standards segment (§20.6.4.101-899 NMAC) and consequently are unclassified waters of the State (§20.6.4.98 NMAC). Water quality standards for unclassified streams in New Mexico are based upon stream hydrology. By determining the correct hydrologic nature of the stream (i.e., perennial, intermittent, or ephemeral) LRM, NMED and the EPA can ensure that the appropriate designated uses and water quality standards are applied to and enforced for each surface water drainage.

In 2011, the New Mexico Environment Department (NMED) completed field work using the New Mexico Environment Department Surface Water Quality Bureau (SWQB) Hydrology Protocol (HP) on the Mulatto Canyon drainage (Figure 1) within the LRM permit boundary. This action was part of a study of 18 unclassified non-perennial stream segments associated with several facilities that hold NPDES permits in New Mexico. The results of the study were incorporated into a UAA developed in June 2012, and clearly indicated Mulatto Canyon and a portion of San Isidro Arroyo drainages are ephemeral (NMED 2012).

Due to uncertainty regarding the status of tributary drainages to Mulatto Canyon within and adjacent to the LRM permit boundary, LRM intends to study the tributary drainages using the HP and determine the hydrologic regime designation for these drainages, which will inform the development of a Use Attainability Analyses for submittal to the NMED and other agencies for review. The classifications resulting from this UAA will affect NMED application of water quality standards, NPDES effluent limits imposed at the LRM, and future permitting actions with the New Mexico Mining and Minerals Division (MMD) associated with the LRM surface mining permit (No. 19-2P).

The HP utilizes hydrologic, geomorphic, and biologic indicators to determine the persistence of water within a stream reach. The HP consists of two levels of evaluation, Level 1 and Level 2. The Level 1 evaluation consists of preparatory office procedures and a field evaluation that relies on 12 primary indicators and 2 supplemental indicators. If a hydrologic determination cannot be made following the Level 1 evaluation, a Level 2 evaluation must be conducted, which again consists of office procedures and a field evaluation. The Level 2 field evaluation includes 7 additional indicators to aid in defining the appropriate hydrologic determination.

LRM staff will initiate the study of the stream reaches with a full Level 1 evaluation consisting of all 14 indicators. If after completing the Level 1 evaluation, results indicate additional information is required to make an accurate determination, LRM will continue the study with a Level 2 evaluation.

2 Purpose and Objectives

This work plan describes LRM's proposed implementation of the NMED HP to San Isidro Arroyo and tributaries thereof. The tributaries include the Arroyo Tinaja, Mulatto Canyon, and Doctor Arroyo drainages (Figure 1). Information collected during implementation of the work plan is expected to support determinations of the appropriate classification of surface waters using an expedited UAA process for the San Isidro Arroyo and tributaries. Two major objectives of this work plan are: 1) determine the proper hydrologic regime for surface waters that are tributary to San Isidro Arroyo based on the HP; and 2) support the development and submittal of a UAA and requests for stream re-classification as appropriate.

This work plan may be expanded as needed. If additional locations are identified, the rationale for selecting locations and the additional information collected will be included in reports submitted under this work plan.

3 Proposed Survey and Analysis Plan (HP Application)

3.1 Watershed Description

The San Isidro Arroyo confluences with the Arroyo Chico downstream of the LRM. The San Isidro Arroyo watershed above this confluence encompasses all of the stream reaches in question, including Arroyo Tinaja, Mulatto Canyon, Doctor Arroyo, and tributaries thereof, and corresponds to the USGS 12-digit Hydrologic Unit Codes (HUC) 130202050205 and 130202050206 (Figure 1). The San Isidro Arroyo headwaters are predominantly in the southern and southwestern edges of this watershed and streams flow to the northeast. There is a definitive break in the watershed topography between the uppermost headwaters and the lower reaches. The uppermost headwater reaches originate in steep, deeply incised canyons. These canyons are located within the EPA Level IV Ecoregion of Semiarid Tablelands (22j) in the Arizona New Mexico Plateau (22). However, these streams quickly drop in elevation to the middle and lower portions of the watershed, which is characterized by rolling hills and broader stream channel bed widths. The lower streams are located within the EPA Level IV Ecoregion of San Juan/Chaco Tablelands and Mesas (22i) in the Arizona New Mexico Plateau (22). The Level IV ecoregional boundary runs along the base of the upper canyons to the southwest of the permit area.

The LRM is located in the middle portion of this watershed. Arroyo Tinaja, Mulatto Canyon, San Isidro Arroyo, and Doctor Arroyo originate upgradient of the LRM, and flow across the mine permit boundary. Dikes and diversions have been used to route upgradient streams around the active areas of the mine.

3.2 Watershed Approach

This work plan is intended to collect sufficient information using the HP process to determine the proper hydrologic regime of the San Isidro Arroyo and 3 principal tributaries; Arroyo Tinaja, Mulatto Canyon, and Doctor Arroyo.

Watersheds were categorized in three tiers. The first tier consists of lower order headwater streams (watersheds 1A, 1B, 1C, 1D). Two of these watersheds exist in the uppermost headwaters characterized by steep canyons and terrain (1A and 1B), while the other two are headwater watersheds within the lower portion of the watershed characterized by rolling topography (1C and 1D). The second watershed tier (watershed 2ABC) is located on San Isidro Arroyo further downstream and encompasses the Tier 1 watersheds of Arroyo Tinaja, Mulatto Canyon, and San Isidro Arroyo. This is an intermediate tier that collects drainage from both the upper canyon area and the lower plains area. The third watershed tier (watershed 3ABCD) is located the furthest downstream on San Isidro Arroyo prior to its confluence with Arroyo Chico and encompasses all subwatersheds analyzed.

Use of a tiered approach ensures that all hydrologic regime types are characterized within the San Isidro watershed. It also allows the characterization of the boundary between the Level IV ecoregion, with watersheds 1A and 1B being located within the Semiarid Tablelands Level IV ecoregion and all other watersheds being located within the San Juan/Chaco Tablelands and Mesas Level IV ecoregion. Furthermore, all tributaries to San Isidro Arroyo are accounted for by sampling points or photograph points within the tributary itself or by those further downstream in the larger channels.

3.3 Initial Field Reconnaissance

An initial field reconnaissance was conducted to ensure that the sampling locations selected would accurately characterize the stream reaches / assessment units (AU). The field reconnaissance was conducted on September 2 – 3, 2015. The photos of select arroyo locations taken during the September 2015 field reconnaissance are found in Attachment 1 and correspond to sites in Figure 1. These sites were selected based on USGS maps and topography, aerial photography, and knowledge of the primary drainages across the site. Stream sections were reviewed and field evaluations were not made until a minimum reach of 150 meters (m) in length of the stream channel was observed. The field reconnaissance for each AU began upstream and worked downstream as appropriate.

During the field site reconnaissance, geomorphic, hydrologic and biological features of the surface water drainage channel were observed for consistency to ensure that the appropriate sample reach was chosen to be representative of the larger stream segment to which the UAA will apply.

3.4 Stream Reach and Sampling Site Selection

Additional information taken into account for selecting sampling locations included geology, surrounding topography, stream morphology, vegetation, incoming tributaries, and any other feature that may affect the hydrology of the system. Following the field reconnaissance and collection of additional information, individual sites were established in locations that give an accurate representation of the stream reaches in question. Representative reaches were identified near the downstream end of each sub-watershed to ensure all upstream runoff processes are included.

In summary, application of the HP is proposed for the following: 2 sampling sites in Arroyo Tinaja, 2 sampling sites in Mulatto Canyon, 3 sampling sites in San Isidro Arroyo (1 upper, 2 lower), and 3 sampling sites in Doctor Arroyo. Table 1 summarizes the sampling locations selected, the stream reach,

the corresponding subwatershed, and spatial relationship to current NPDES outfalls. The locations of all sampling sites are shown on Figure 1. Table 2 summarizes the additional photograph locations that will be used to verify that each HP sampling location is representative of other locations within the watershed / subwatershed. Determination of the appropriate classification for all tributaries to San Isidro Arroyo will rely on the application and interpretation of Level 1 Office and Field Procedures as provided in the HP.

There may be situations where unanticipated conditions are encountered in the field and need to be addressed through the addition of sampling locations that are not currently in the workplan. Examples of such field conditions may include, but are not limited to, significant changes in the hydrology, geology, geomorphic, or vegetative characteristics of the stream. If it is determined that the current sampling locations are not representative of the entire stream reach or watershed, LRM staff may add sampling locations based on their best professional judgment, without seeking prior approval from the agencies.

Table 1: This table shows the proposed sample sites, corresponding stream reaches and subwatersheds, and rationale. Sites are arranged by subwatershed, from Tier 1 to Tier 3.

Site ID	Stream Reach	Sub-Watershed	NPDES Outfalls Upstream	NPDES Outfalls Downstream	Rationale
HP11	Arroyo Tinaja	1A	--	049, 050, 090, 091, 092, 093, 102	Headwater watershed representative of steep canyon terrain. Site located at base of canyons near ecoregional boundary.
HP12	Arroyo Tinaja Tributary	1A	--	049, 050, 090, 091, 092, 093, 102	Headwater watershed representative of steep canyon terrain. Site located at base of canyons near ecoregional boundary.
HP13	Mulatto Canyon	1B	--	002, 003, 004, 006, 044, 049, 050, 090, 091, 092, 093, 101, 102, 103	Headwater watershed representative of steep canyon terrain. Site located at base of canyons near ecoregional boundary. In approximate location of 2011 NMED UAA site.
HP14	Mulatto Canyon	1B	--	002, 003, 004, 006, 044, 049, 050, 090, 091, 092, 093, 101, 102, 103	Headwater watershed representative of steep canyon terrain. Site located within canyons.
HP15	San Isidro Arroyo	1C	--	061, 062, 067, 085, 087, 094, 096	Headwater watershed representative of rolling hills.
HP16	Doctor Arroyo	1D	097	080, 095, 098, 099	Headwater watershed representative of rolling hills. Upstream of Doctor Springs.
HP17	Doctor Arroyo	1D	095, 097	080, 098, 099	Headwater watershed representative of rolling hills. Downstream of Doctor Springs.
HP18	Doctor Arroyo	1D	080, 095, 097, 098, 099	--	Headwater watershed representative of rolling hills. Downstream of Doctor Springs.
HP21	San Isidro Arroyo	2ABC	002, 003, 004, 006, 044, 049, 050, 061, 062, 067, 085, 087, 090, 091, 092, 093, 094, 096, 101, 102, 103	--	Tier 2 watershed downstream of confluence of Arroyo Tinaja, Mulatto Canyon, and San Isidro Arroyo. In approximate location of 2011 NMED UAA site.
HP31	San Isidro Arroyo	3ABCD	002, 003, 004, 006, 044, 049, 050, 061, 062, 067, 080, 085, 087, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 101, 102, 103	--	Tier 3 watershed downstream of confluence of Arroyo Tinaja, Mulatto Canyon, San Isidro Arroyo, and Doctor Arroyo. This site encompasses the San Isidro Arroyo watershed in its entirety. Located just upstream of its confluence with Arroyo Chico.

Table 2: This table shows the proposed photo locations. Sites are grouped by stream reach and are generally ordered from upstream to downstream.

Site ID	Easting	Northing	Location Type 1 (HP / Photo)	Location Type 2 (Stream / NPDES Confluence)	Associated NPDES Confluence	Stream Reach
PP151	-107.720	35.499	Photo Only	Stream	--	Arroyo Tinaja
HP11	-107.701	35.506	HP and Photo	Stream	--	Arroyo Tinaja
HP12	-107.697	35.500	HP and Photo	Stream	--	Arroyo Tinaja Tributary
PP169	-107.652	35.522	Photo Only	Stream	--	Arroyo Tinaja
PP283	-107.604	35.528	Photo Only	Stream & NPDES Confluence	091	Arroyo Tinaja
PP284	-107.594	35.530	Photo Only	Stream & NPDES Confluence	049, 050, 090, 092	Arroyo Tinaja
PP285	-107.591	35.536	Photo Only	Stream & NPDES Confluence	093	Arroyo Tinaja
HP14	-107.694	35.474	HP and Photo	Stream	--	Mulatto Canyon
HP13	-107.680	35.485	HP and Photo	Stream	--	Mulatto Canyon
PP281	-107.669	35.492	Photo Only	Stream & NPDES Confluence	002, 003, 004, 006, 044, 101	Mulatto Canyon
PP282	-107.656	35.519	Photo Only	Stream & NPDES Confluence	102, 103	Mulatto Canyon
PP157	-107.636	35.462	Photo Only	Stream	--	San Isidro Arroyo
PP158	-107.602	35.493	Photo Only	Stream	--	San Isidro Arroyo
HP15	-107.597	35.500	HP and Photo	Stream	--	San Isidro Arroyo
PP152	-107.660	35.482	Photo Only	Stream	--	San Isidro Arroyo Tributary
PP153	-107.653	35.477	Photo Only	Stream	--	San Isidro Arroyo Tributary
PP154	-107.646	35.474	Photo Only	Stream	--	San Isidro Arroyo Tributary
PP155	-107.639	35.471	Photo Only	Stream	--	San Isidro Arroyo Tributary
PP156	-107.640	35.468	Photo Only	Stream	--	San Isidro Arroyo Tributary
PP170	-107.618	35.497	Photo Only	Stream	--	San Isidro Arroyo Tributary
PP286	-107.592	35.510	Photo Only	Stream & NPDES Confluence	096	San Isidro Arroyo
PP287	-107.589	35.518	Photo Only	Stream & NPDES Confluence	085, 087, 094	San Isidro Arroyo
PP288	-107.586	35.524	Photo Only	Stream & NPDES Confluence	061, 062, 067	San Isidro Arroyo
HP21	-107.574	35.537	HP and Photo	Stream	--	San Isidro Arroyo
HP31	-107.519	35.580	HP and Photo	Stream	--	San Isidro Arroyo
PP159	-107.566	35.498	Photo Only	Stream	--	Doctor Arroyo

Site ID	Easting	Northing	Location Type 1 (HP / Photo)	Location Type 2 (Stream / NPDES Confluence)	Associated NPDES Confluence	Stream Reach
PP289	-107.559	35.505	Photo Only	Stream & NPDES Confluence	097	Doctor Arroyo
HP16	-107.556	35.515	HP and Photo	Stream	--	Doctor Arroyo
PP160	-107.555	35.518	Photo Only	Stream	--	Doctor Arroyo
PP162	-107.535	35.525	Photo Only	Stream	--	Doctor Arroyo Tributary
PP161	-107.551	35.525	Photo Only	Stream	--	Doctor Arroyo Tributary
PP290	-107.551	35.527	Photo Only	Stream & NPDES Confluence	095	Doctor Arroyo Tributary
HP17	-107.550	35.528	HP and Photo	Stream & NPDES Confluence	098	Doctor Arroyo
PP291	-107.548	35.535	Photo Only	Stream & NPDES Confluence	099	Doctor Arroyo
PP167	-107.577	35.512	Photo Only	Stream	--	Doctor Arroyo Tributary
PP168	-107.555	35.534	Photo Only	Stream	--	Doctor Arroyo Tributary
PP292	-107.549	35.538	Photo Only	Stream & NPDES Confluence	080	Doctor Arroyo Tributary
PP163	-107.531	35.528	Photo Only	Stream	--	Doctor Arroyo Tributary
PP164	-107.527	35.533	Photo Only	Stream	--	Doctor Arroyo Tributary
PP165	-107.524	35.536	Photo Only	Stream	--	Doctor Arroyo Tributary
PP166	-107.545	35.542	Photo Only	Stream	--	Doctor Arroyo Tributary
HP18	-107.539	35.556	HP and Photo	Stream	--	Doctor Arroyo

3.5 Level 1 Office Procedures

3.5.1 Primary Data Review

A review of existing hydrology, meteorological, watershed and geomorphic data will be performed prior to performing any fieldwork. This data will also be presented in detail in the final UAA report. These data are likely to include:

- Mine use maps, historic aerial photographs and hydrology maps developed and incorporated into the Permit Application Package that provides the basis for the MMD Surface Mining Permit (No. 19-2P).
- Recent surface water flow and analytical data, depth to groundwater and other pertinent hydrologic information collected at the LRM in accordance with the Surface Mining Permit (No. 19-2P) will be reviewed prior to selecting AUs.
- Downstream USGS gauges will be reviewed for data availability and applicability to the streams in question at LRM. Streamflow characteristics of downstream USGS gauges will be analyzed and interpreted.
- The LRM has constructed numerous sediment ponds downgradient of active and reclaimed mining areas and other areas associated with surface coal mining including haulage and access roads, shops, buildings, and material storage areas to provide treatment of stormwater runoff from disturbed areas. These ponds are permitted as NPDES point-source outfall structures under the LRM individual NPDES Permit No. NM0029581. LRM does not believe that these outfalls have a significant effect on tributaries or drainages associated with the HP. The history of the discharges submitted to the EPA and Annual Pond reports show that the sediment structures only receive runoff from the mining area, rarely discharge, completely contain the sediment during flow events, and do not store significant volumes of water. Discharge history and annual pond reports will be reviewed.
- Eleven springs have been identified within and around the LRM permit boundary. Data and documentation of spring persistence and flow rates will be reviewed.
- The final reclaimed topography and drainage paths / reclaimed streams to ensure that all stream reaches are covered by the current sampling locations.

3.5.2 Determining Drought Conditions

Weather conditions will be determined by using the Palmer Drought Severity Index (PDSI), Standardized Precipitation Index (SPI) and the Palmer Z index.

The 12-month Standardized Precipitation Index (SPI) was obtained through the High Plains Regional Climate Center (HPRCC) Climate Maps website (HPRCC 2016). The SPI is a way of measuring drought that is based on probability of precipitation. The NDMC map shows that McKinley County, New Mexico currently has a 12-month SPI value between 0 and -1. The SPI at this time scale is representative of longer-term precipitation patterns. A value between 0 and -1 is indicative of below-average precipitation conditions.

The Palmer Z-index was obtained through the National Oceanic and Atmospheric Administration (NOAA) website (NOAA 2016). The Palmer Z-Index measures short term drought on a monthly scale. Northwestern New Mexico is shown as a range of -1.24 and +0.99 in September 2016, which is indicative of normal conditions.

The PDSI can be obtained from the NOAA website (NOAA 2016). The PDSI is used to measure the duration and intensity of long-term drought patterns. The September 2016 PDSI map shows that northwestern New Mexico is within the PDSI range of -1.99 to +1.99, again indicative of normal conditions.

These indices will be evaluated again during the office procedures and prior to conducting the field evaluation.

3.6 Level 1 and 2 Field Evaluation

To ensure the UAA is completed with utmost accuracy LRM intends to use onsite and regional technical staff to conduct the UAA. The staff conducting the UAA has a combined 58 years of experience in hydrology, hydrogeology and geology including experience in the arid southwest United States. The names and experience of the personnel are provided in (Attachment 2).

To ensure that the highest attainable use is appropriately determined, physical, biological, and chemical parameters will be analyzed. Physical characteristics will be characterized primarily using the Hydrology Determinations Field Sheet as provided in the NMED HP. During field evaluations any other relevant physical information that may provide clarification on the stream classification will also be documented and used to properly assess the stream.

AUs will be reach based (150 m minimum) and will begin upstream and worked downstream as appropriate. Stream characteristics will be documented by photo-documentation. Field assessments will follow the NMED HP and will begin with Level 1 indicators of: Water in Channel, Fish, Benthic Macroinvertebrates, Filamentous Algae and Periphyton, Difference in Vegetation, and Absence of Rooted Upland Plants in the Streambed. The Hydrology Protocol calls for an initial evaluation of the total score at this point in the field work to determine whether the stream score is ≤ 2 and no other biological, chemical, or physical characteristics imply other stream conditions exist. If this is the case, the Hydrology Protocol indicates that the stream can be characterized as ephemeral and the field evaluation is complete. However, as stated earlier in this sampling plan, LRM staff intends to conduct a complete Level 1 evaluation regardless of the score at this initial juncture. Therefore, for all sampling locations LRM staff will also evaluate Sinuosity, Floodplain and Channel Dimensions, In Channel Structures, Stream Substrate Size and Sorting, Hydric Soils, Presence of Sediment on Plants and/or Debris, Seeps and Springs, and Iron Oxidizing Bacteria/Fungi. If after completing the Level 1 evaluation, staff determines that additional information is necessary to properly characterize the stream reach, field evaluations will continue with Level 2 office and field procedures until an accurate determination of the stream hydrology can be made.

Based on baseline information collected on stream channels, channel widths for most sampling sites will be less than 4 meters, and the corresponding sampling lengths of 150 meters will be utilized. However, for channels wider than 4 meters, representative channel lengths 40 times the average channel width will be used as prescribed in the NMED HP. Representative reaches higher in each watershed may also be identified if necessary to evaluate potential variability in hydrologic regimes within different geologic or geomorphologic settings. The LRM sampling team will perform one field replicate to assure the repeatability of the methods in accordance with recommendations in the SWQB Quality Assurance Project Plan.

If an AU defined in this work plan needs to be modified or a new AU added for any reason, the NMED will be notified and provided with the reason and proposed new AU.

3.7 Additional HP Scoring Considerations

LRM understands there is some potential for erroneous classification of high desert arroyos and stream channels in semi-arid regions of the Southwestern U.S., such as exist at the LRM. For instance, a lack of rooted upland plants (HP Indicator 1.6) along sand-bed channels with low gradients may be driven by conditions that do not support upland plants due to appreciable sediment transport and associated scour and deposition during flash floods. In addition, surrounding bedrock outcrops or hillslopes can encroach on the floodplain and stream channel creating stream sinuosity (HP Indicator 1.7) that is not reflective, or determined, by the frequency or permanency of flow. Finally, the degree of channel entrenchment (HP Indicator 1.8) can be driven more by infrequent but large flash floods and alternating reaches of scour or sediment deposition along channel reaches. These potential scoring issues as applied to survey information collected as part of this work plan will be considered when applying the HP to LRM streams.

3.8 Evaluation Results

In summary the evaluation of the field analysis and office procedures will provide sufficient information to determine the appropriate use classification for all arroyos and tributaries within the San Isidro watershed upstream of site HP31. Results from the work plan will be compiled into a UAA report that will be submitted to NMED and USEPA Region 6 for agency review and public notification and comment process.

4 Public Notice and Agency Consultation

Section 20.6.4.15.D NMAC requires that a work plan for a UAA shall provide for public notice and comment and for consultation with appropriate state and federal agencies. This work plan will be reviewed and approved by a multi-stakeholder technical review committee comprised of staff from LRM and Peabody Energy, New Mexico Environment Department, and USEPA. This will occur by review of this work plan by NMED and USEPA Region 6, response to comments, and meetings as necessary to resolve comments.

The Statewide Water Quality Management Plan and Continuing Planning Process document (the Plan), adopted by the WQCC on May 10, 2011, specifies that the Surface Water Quality Bureau (SWQB) determines whether to proceed with the expedited UAA process if the UAA demonstrates that limited aquatic life and secondary contact are the highest attainable uses, and that no existing Section 101(a)(2) uses would be removed. LRM will comply with all notice requirements provided by Section 20.6.4.15 regarding public notice based on the SWQB's determination to implement an expedited or regular UAA.

The lands on which the waters of interest are located on lands owned by Lee Ranch and controlled by LRM via leases. Accordingly, the appropriate agencies for consultation on this work plan are NMED and the USEPA Region 6. That will be accomplished through review of this work plan and the report by those agencies. Based on the outcome of the work proposed, LRM and/or NMED may petition the Commission to modify designated uses, which will require further public notice and provide additional opportunity for public comment before the Commission.

5 Schedule and Reporting

Lee Ranch Mine has outlined the above work plan that will be undertaken in mid-May through early-June of 2017, prior to the onset of the monsoon season. All completed scoring sheets, the output of the Level 1 Office Procedures, and all collected photographic documentation will be provided in a consolidated report. The report will include maps showing the extent of each of the reaches surveyed with the calculated numeric HP scores. Based on the results provided in the report, recommendations regarding appropriate classifications will be proposed and supported by the data collected. Any significant uncertainties and/or potential additional data needs will be identified in the report.

6 References

Energy Minerals and Natural Resources Department, New Mexico Mining and Minerals Division (MMD). Life of mine surface mining permit No. 19-2P.

High Plains Regional Climate Center (HPRCC) Climate Maps, 2016. 12-Month Standardized Precipitation Index. http://hprcc.unl.edu/maps.php?map=ACISClimateMaps

National Oceanic and Atmospheric Administration (NOAA), 2016. Historical Palmer Drought Indices, Z-Index. http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/zin/201510-201609

National Oceanic and Atmospheric Administration (NOAA), 2016. Historical Palmer Drought Indices, Palmer Drought Severity Index. http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/psi/201510-201609

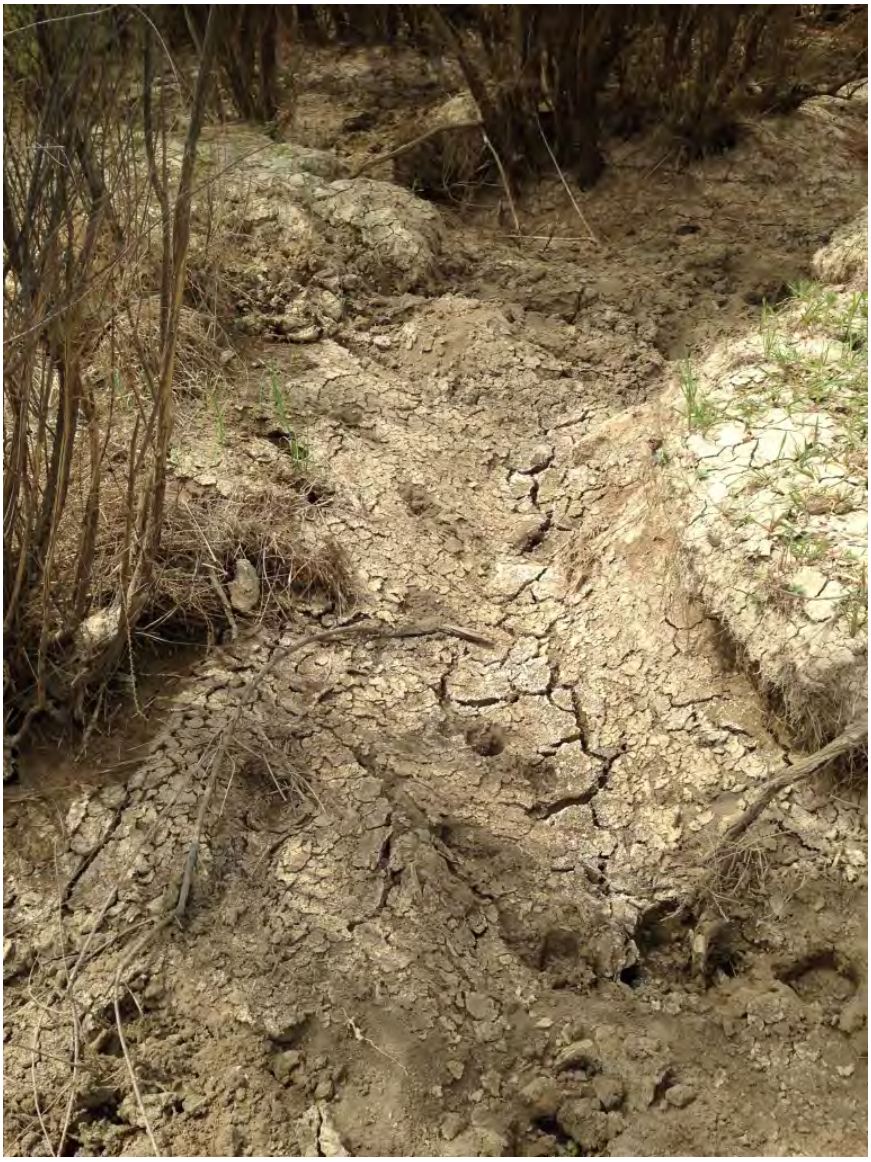
New Mexico Administrative Code (NMAC) Title 20 Environmental Protection Chapter 6 Water Quality, November 2016. http://164.64.110.239/nmac/parts/title20/20.006.0004.pdf

New Mexico Environmental Department (NMED), 2011. Statewide Water Quality Management Plan and Continuing Planning Process, Appendix C: Hydrology Protocol for the Determination of Uses Supported By Ephemeral, Intermittent, and Perennial Waters. Surface Water Quality Bureau. May 2011. https://www.env.nm.gov/swqb/Hydrology/

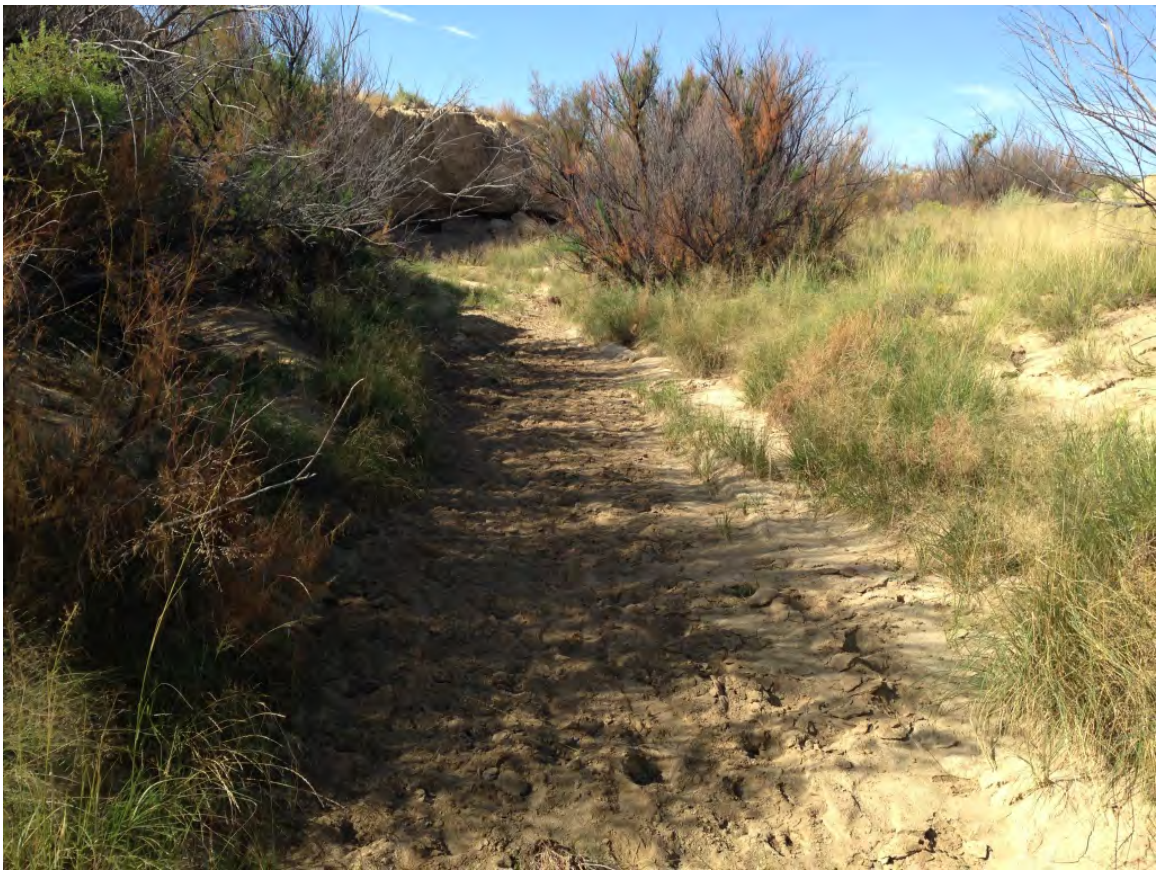
New Mexico Environment Department (NMED), 2012. Use Attainability Analysis for Unclassified Non-Perennial Watercourses with NPDES Permitted Facilities. Surface Water Quality Bureau. June 2012. https://www.env.nm.gov/swqb/UAA/HP/index.html

7 Attachment 1 – Field Reconnaissance Photos

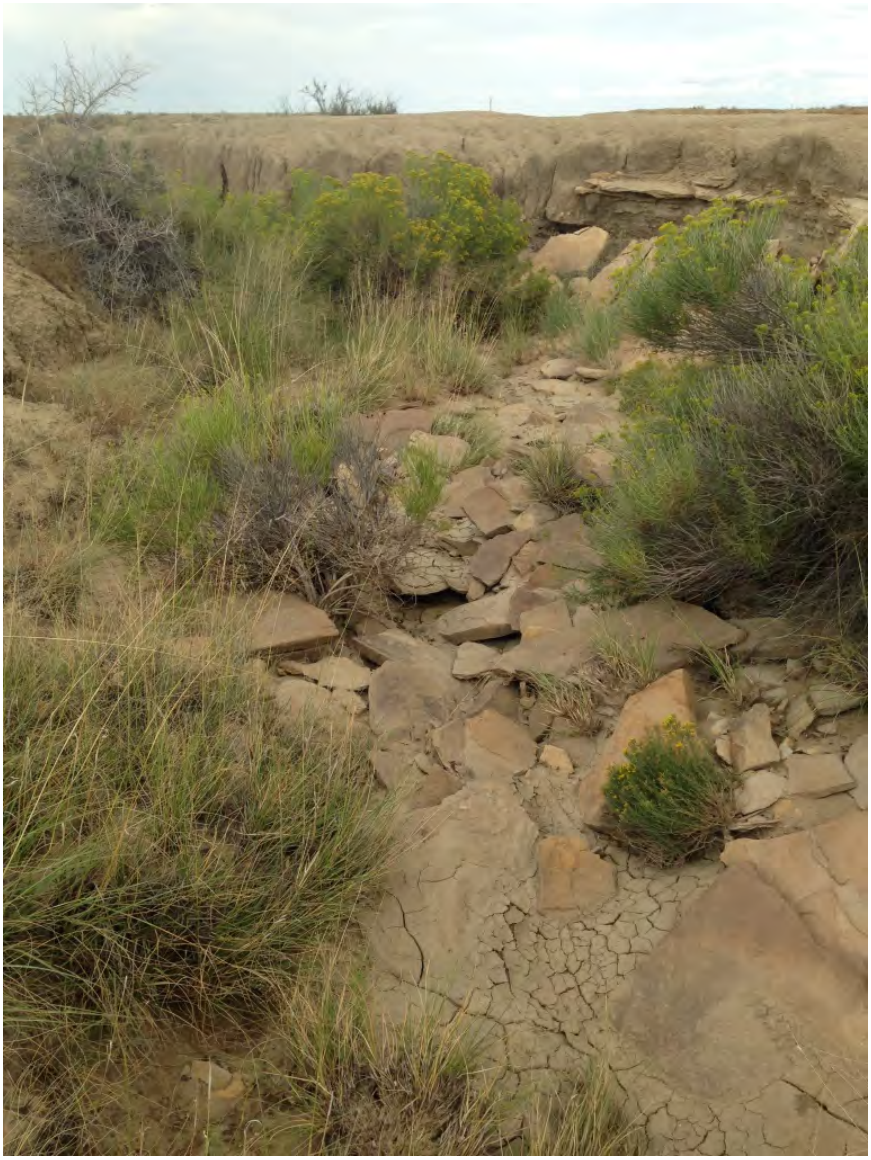
Upstream Sites – HP15



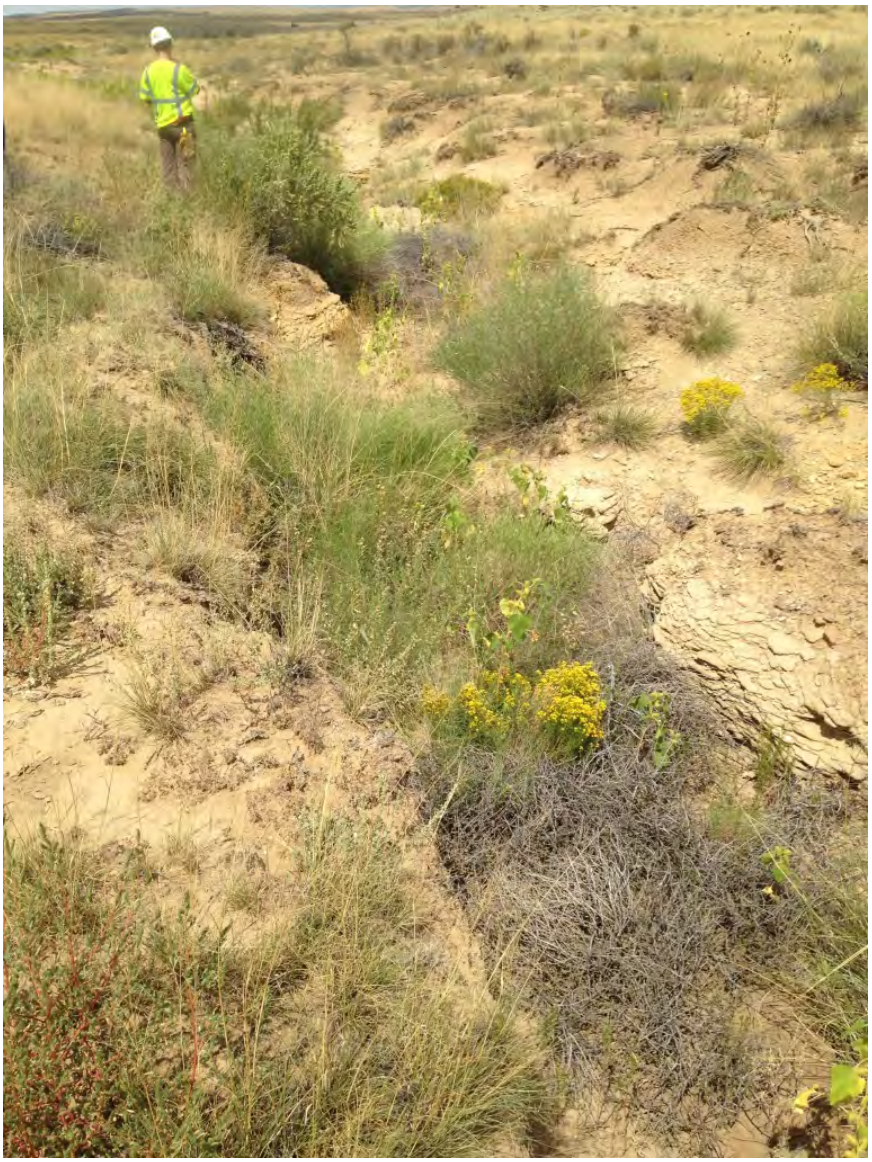
Downstream Sites – HP21



Upstream Sites – PP159



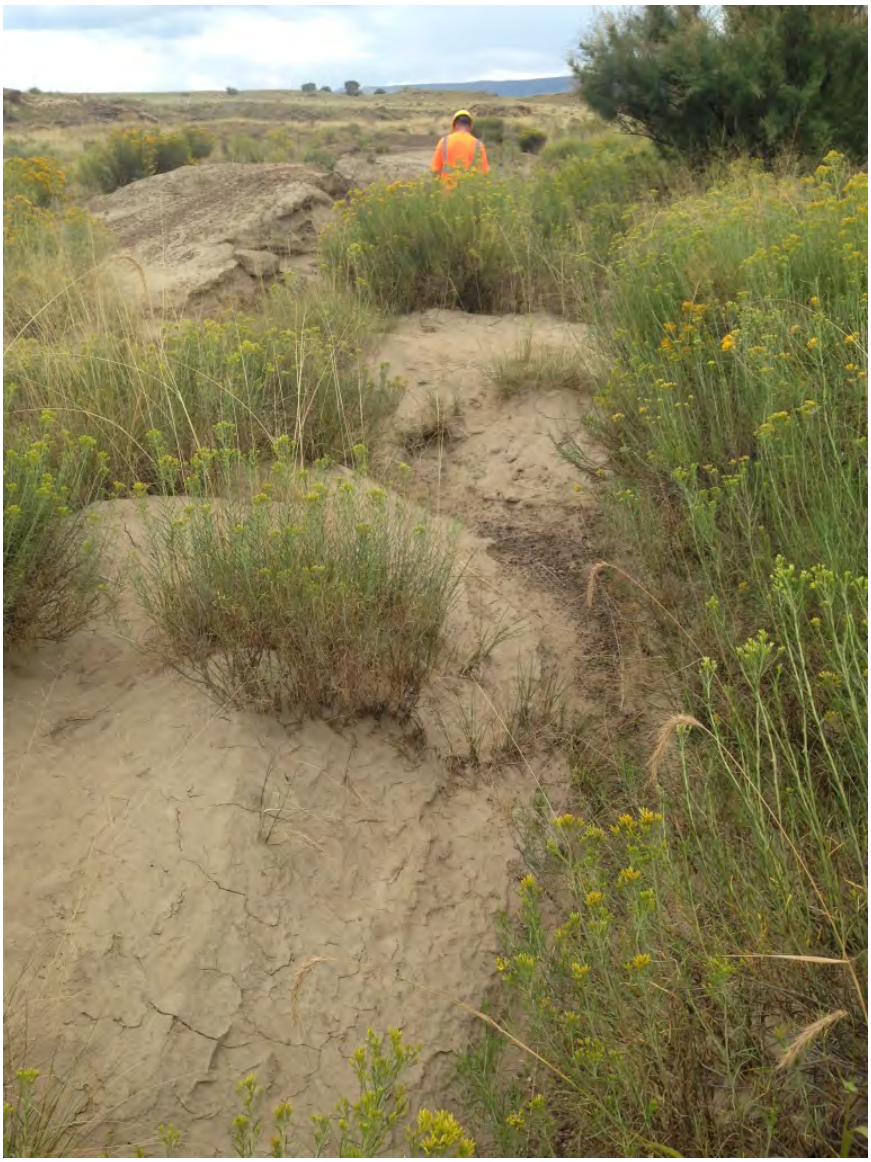
Upstream Sites – PP166



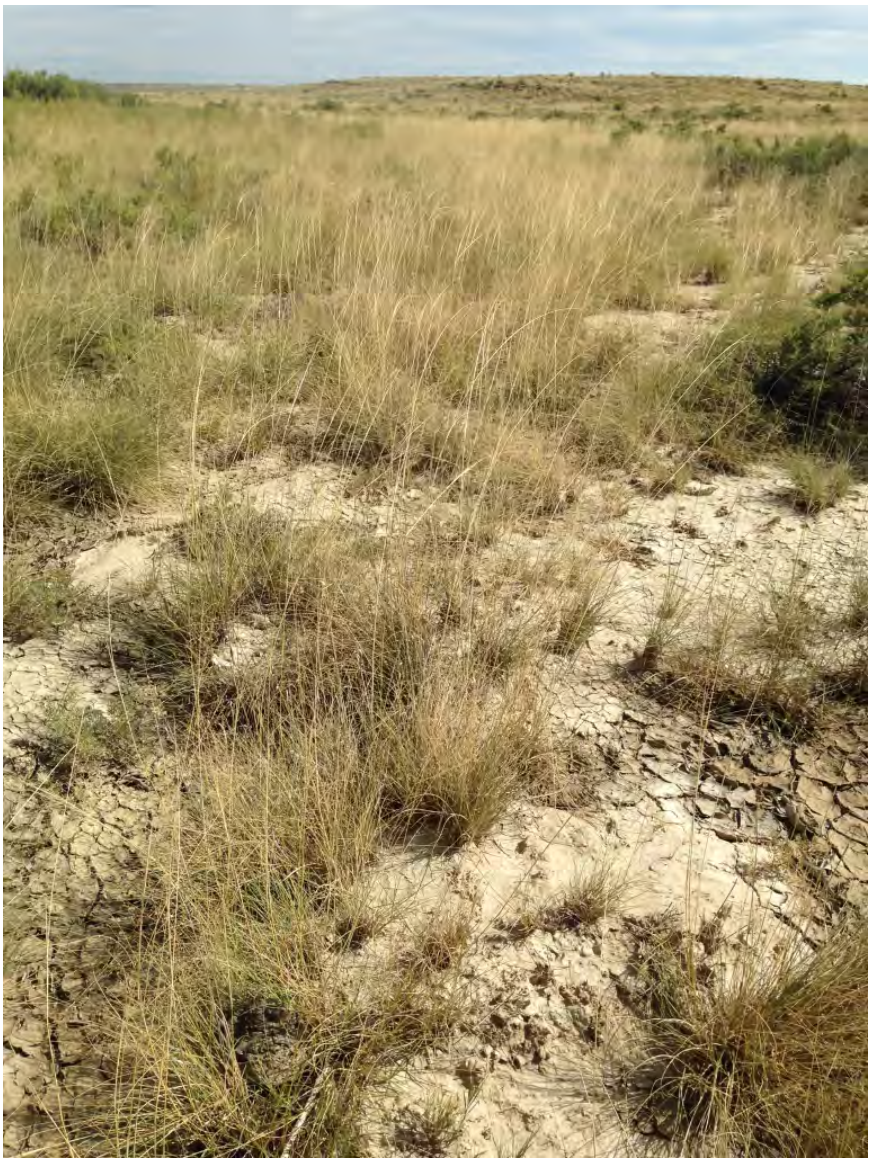
Upstream Sites – HP12

Downstream Sites – PP284

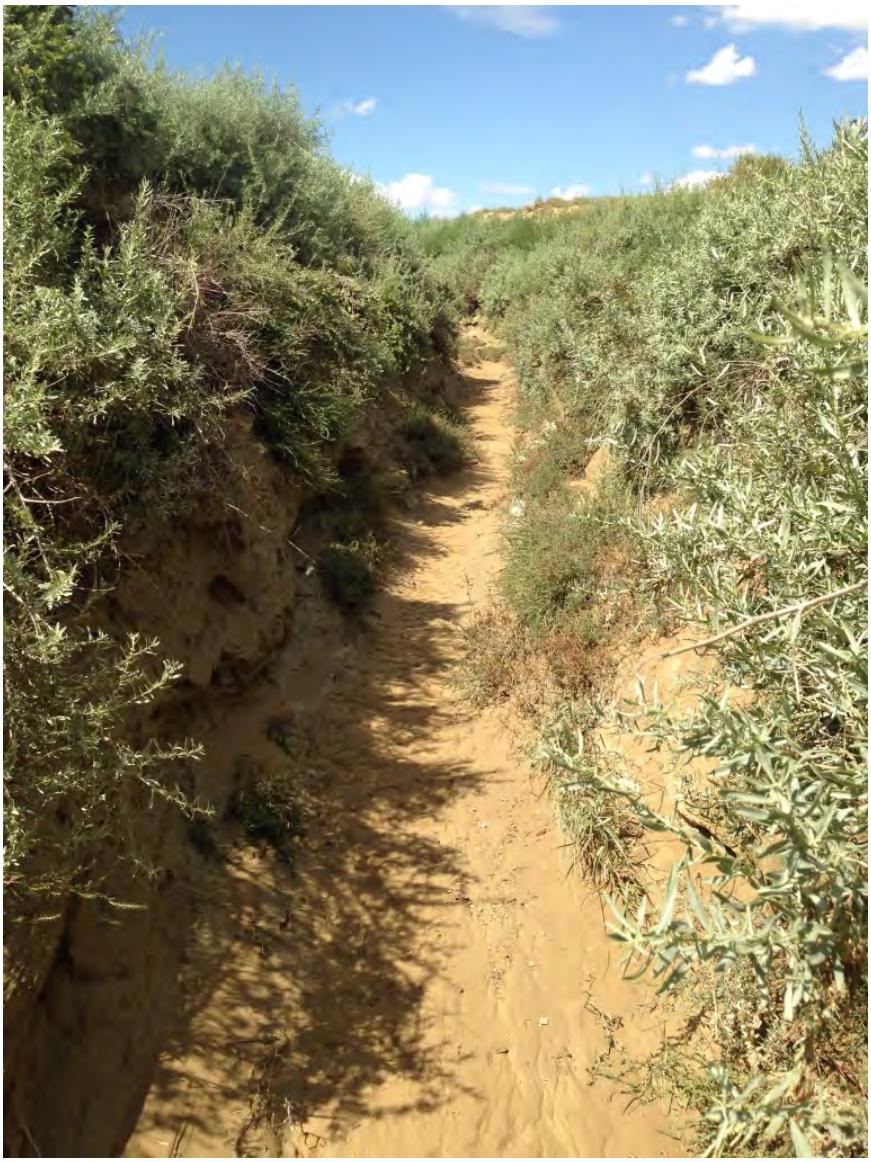
Upstream Sites – HP16



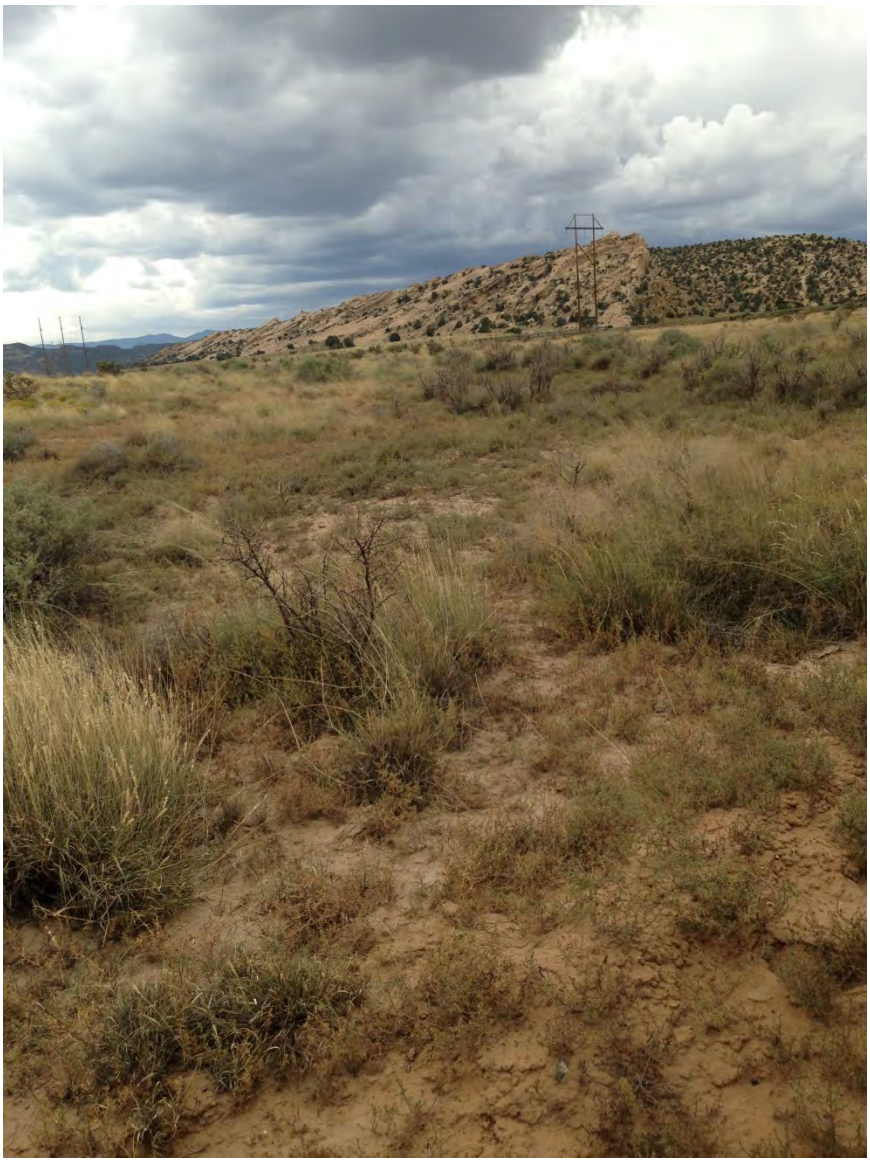
Upstream Sites – HP17



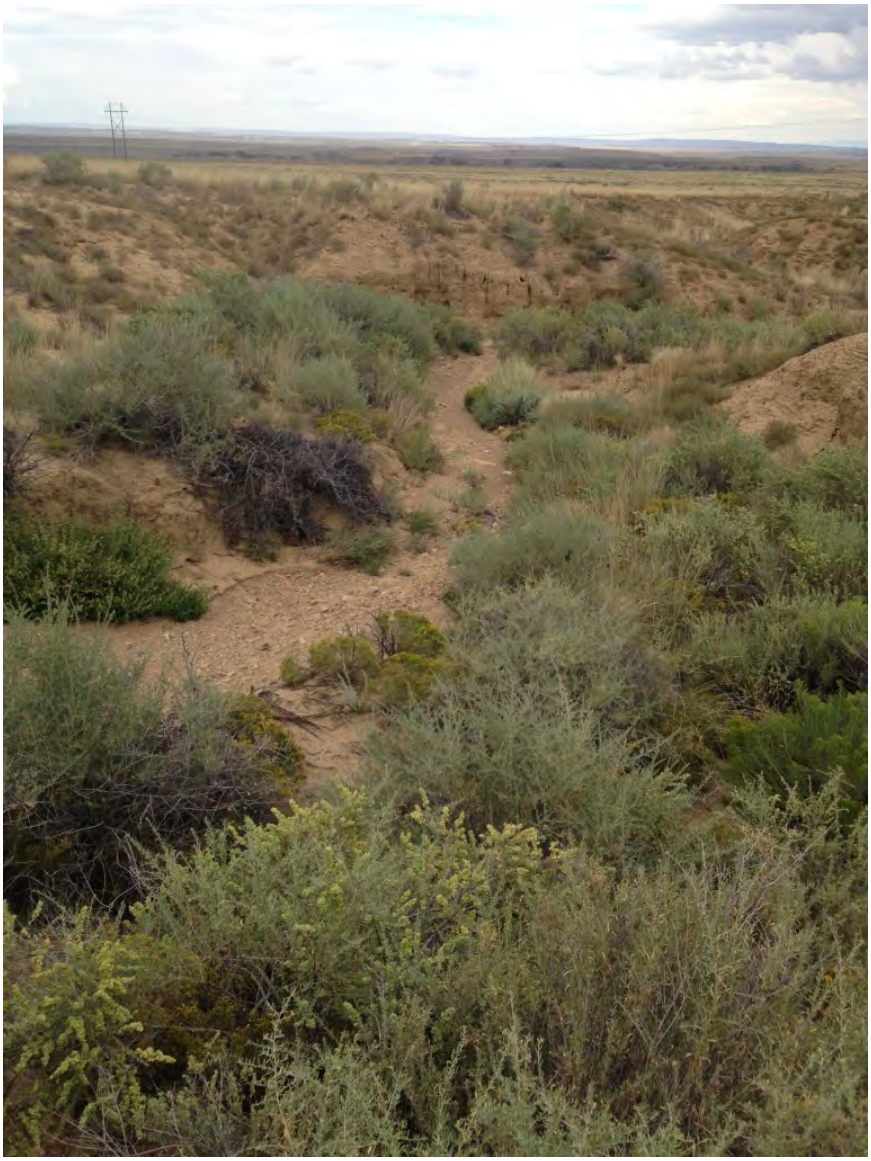
Upstream Sites – HP13



Upstream Sites – PP155



Upstream Sites – PP154



Upstream Sites – PP153

8 Attachment 2 – UAA Team Experience

John Cochran is a retired Peabody Energy employee now consulting with Peabody's regional office. John received his B.S. degree in hydrology from the University of Arizona. John has been practicing hydrology and hydrogeology in the arid southwest for 34 years.

Chad Gaines is the onsite environmental specialist at Lee Ranch Mine. Chad received his B.A. in Organizational Management from Ashford University. Chad has 10 years experience in coal mining at this location and 4 years experience in the environmental sector.

Jimmy Boswell is with Peabody's regional office. Jimmy received his B.S. degree in Environmental Science and M.S. degree in Geology at Indiana University. Jimmy has been practicing hydrology for 14 years, with 6 years experience in the arid southwest.

9 Figure 1

Map showing proposed UAA sampling locations.

Lee Ranch Mine Use Attainability Analysis Sampling Plan

Lee Ranch Permit Boundary
UAA Proposed Sampling Locations
Photograph Locations
NHD Streams
Level IV Ecoregions

UAA Watersheds
- Tier 3
- Tier 2
- Tier 1

Diversions / Dikes
- Dike
- Diversion

NPDES Outfalls
- Existing, Permanent
- Existing, Temporary
- Proposed, Temporary

Elevation
- 7894 - 8240
- 7648 - 7894
- 7451 - 7648
- 7295 - 7451
- 7164 - 7295
- 7044 - 7164
- 6936 - 7044
- 6839 - 6936
- 6756 - 6839
- 6683 - 6756
- 6601 - 6683
- 6440 - 6601

Drawn By: JB
Last Updated: 04/04/2017

0 0.5 1 2 3 Miles

Reference Scale: 1:24,000