

Use Attainability Analysis for Unclassified Non-Perennial Watercourses with NPDES Permitted Facilities

New Mexico Environment Department
October 2012

Summary

The New Mexico Environment Department (Department) completed, with the assistance of Department contractor's Daniel B. Stephens and Associates (DBSA), an examination of 18 unclassified non-perennial stream segments associated with 13 National Pollutant Discharge Elimination System (NPDES) permitted facilities located throughout New Mexico (Figure 1). Through the application of the *Hydrology Protocol for the Determination of Uses Supported by Ephemeral, Intermittent, and Perennial Waters*, this document determines the appropriate hydrologic classification of surface waters through an Use Attainability Analysis (UAA) process as described in §20.6.4.15 NMAC.

The results from the application of the *Hydrology Protocol (HP)* support an UAA finding that the 18 watercourses listed in Table 1 are ephemeral, and that it is not feasible to achieve the Clean Water Act §101(a)(2) goals and that the appropriate water quality standards designations is §20.6.4.97 NMAC. Based on this finding, the Department is proceeding, as indicated in §20.6.4.15.C NMAC, to post this UAA on the Department's Surface Water Quality Bureau website, and notify interested parties of a 30-day public comment period. Depending on the comments received, the Department may then submit this UAA and responses to comments to EPA Region 6 for technical approval. If EPA grants technical approval, the waters listed in this UAA will be subject to §20.6.4.97 NMAC.

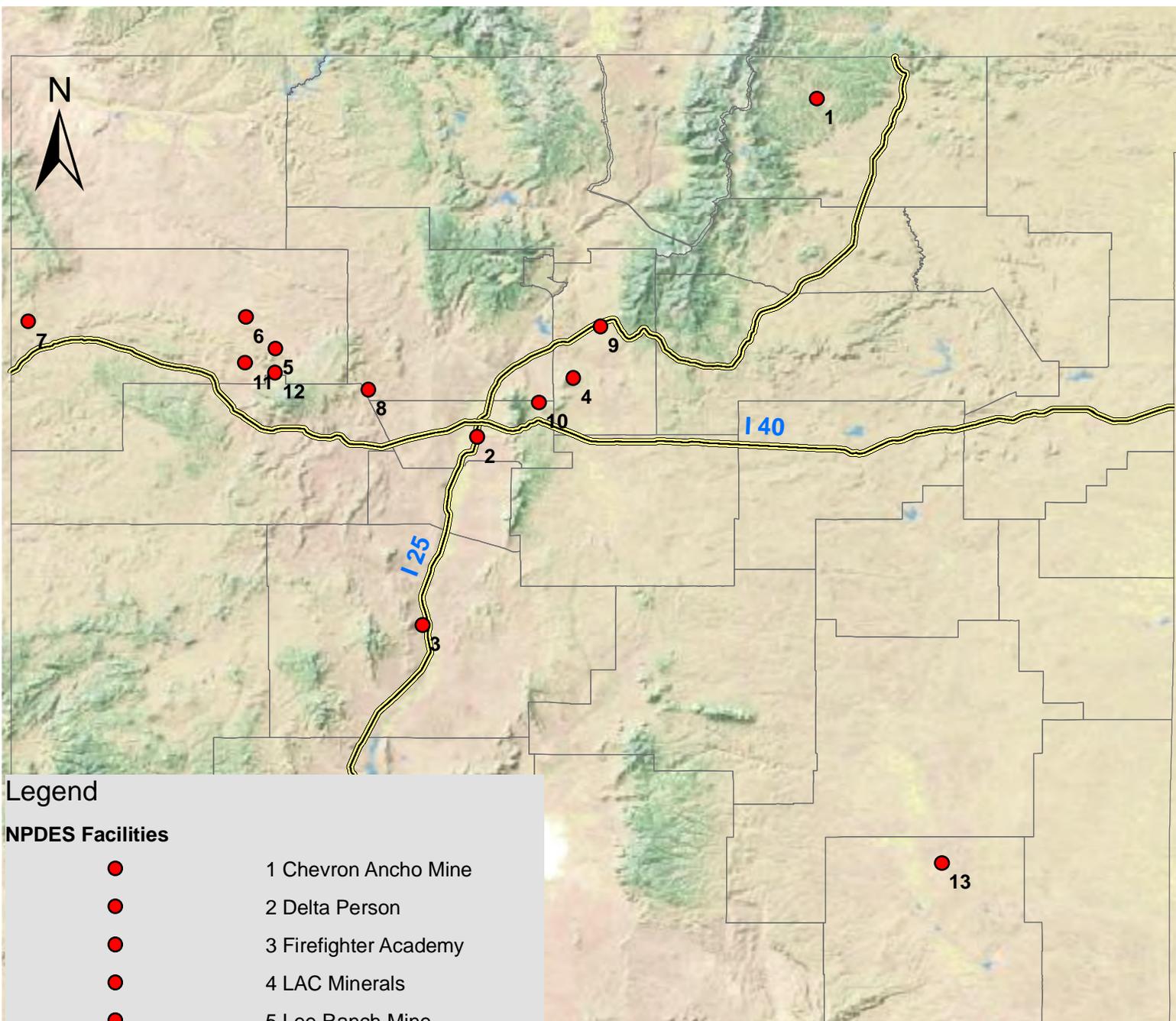
Background and Objectives

The Clean Water Act (CWA) §101(a)(2) and Section §20.6.4.6 NMAC declares that wherever attainable, water quality shall provide for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water. In accordance with this, federal regulation at 40 CFR 131.10(j) effectively establishes a "rebuttable presumption" that CWA §101(a)(2) uses ("§101(a)(2) uses") are attainable. According to federal regulation at 40 CFR 131.10(j), to remove a §101(a)(2) use, a state must conduct a UAA. Relevant to this UAA, an aquatic life use may be removed or changed to a use with less stringent criteria if the use is unattainable due to one or more of six factors listed in 40 CFR 131.10(g).

Waters that are not included in a classified Water Quality Standards segment (§20.6.4.101-899 NMAC) are considered unclassified waters of the State (§20.6.4.97-99 NMAC). Water quality standards and the appropriate use specific criteria for unclassified waters are dependent on the existing hydrologic condition (e.g., ephemeral, intermittent or perennial). In New Mexico, unclassified non-perennial waters are by default subject to §20.6.4.98 NMAC, with designated uses of wildlife habitat, livestock watering, primary contact, and marginal warmwater aquatic life. The uses of wildlife habitat, primary contact and marginal warmwater aquatic life are consistent with the presumption that §101(a)(2) uses are attainable. New Mexico Water Quality Standards at §20.6.4.15 NMAC provides for an UAA process for certain ephemeral waters based on the Hydrology Protocol which can be used to change the applicable designated uses and water quality standards for unclassified streams as part of the UAA process.

The objective of this examination is to determine the appropriate hydrologic classification, and hence water quality standards, of 18 unclassified non-perennial stream segments that are receiving waters for 13 NPDES permitted facilities in New Mexico. Based on historical observations and the limited discharges associated with these facilities, these stream segments may be ephemeral but are currently listed under §20.6.4.98 NMAC (unclassified intermittent water). To determine the appropriate hydrologic regime and designated uses and corresponding use-specific criteria applied to a particular water body, the Department contracted with DBSA to conduct a Level I Hydrology Protocol (HP) Evaluation for these waterbodies and where appropriate an UAA to change the water quality segment classification and the associated designated uses and criteria.

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis NPDES Facility Locations



Legend

NPDES Facilities

- 1 Chevron Ancho Mine
- 2 Delta Person
- 3 Firefighter Academy
- 4 LAC Minerals
- 5 Lee Ranch Mine
- 6 Lee Ranch El Segundo Mine
- 7 Chevron McKinley Mine
- 8 Resurrection Mining
- 9 Oshara Village
- 10 Paa-Ko
- 11 Rio Algom
- 12 Strathmore Roca Honda
- 13 S.W. Public Services



Stream Segment Overview and HP Site Setting

The Hydrology Protocol (HP) was specifically developed to generate documentation of the aquatic life and recreation uses supported by the hydrology of a given stream or river segment and is required for an UAA. The details of these specific applications are described in Section II of New Mexico's Water Quality Management Plan and Continuing Planning Process (CPP), to which the Hydrology Protocol is an appendix.

The HP relies on hydrological, geomorphic, and biological indicators of the persistence of water and is organized into two levels of evaluations. A Level 1 Evaluation is required for the UAA process described in §20.6.4.15.C NMAC. The 13 NPDES facilities were chosen because the probability that the receiving streams were ephemeral based on geographic location and historic observations of prolonged dryness and lack of aquatic habitat. This study employed the Level 1 Evaluation which included office procedures and field evaluations.

Data gathered during the Level 1 Evaluations should, in most cases, provide enough information to give a clear indication of the hydrological status of the stream. A "Cover Sheet" and "Hydrology Determination Field Sheet" a.k.a. "Field Sheet" have been developed to record the information collected through application of the H P. The *Cover Sheet* is necessary for the UAA process and is designed to explain how the supporting documentation from the Level 1 Hydrology Protocol Evaluation is consistent with the UAA conclusion, namely that the stream is ephemeral and that attainment of the §101(a)(2) aquatic life and recreational uses is not feasible due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use.*

Level 1 Evaluation Office Procedures and Field Assessments

Level 1 office procedures were conducted prior to initiating field evaluations with the objective to gather as much physical and geographic information about the drainages and region prior to beginning field work. This included review of facility NPDES permits, previous site investigation information, aerial photos (Google Earth), and Geographic Information System (GIS) analysis of available stream data. This information was used to define stream segment locations of HP sample reaches to be evaluated in the field. Office procedures and field evaluations were conducted between June 20 and July 12, 2011. Meteorological and climate data were reviewed and documented to ensure that extreme drought conditions were not prevailing in the area nor were there recent precipitation events that would bias the outcome of the assessment. Drought conditions were assessed through the use of the 12-month Standardized Precipitation Index (SPI) which defined extremely dry conditions as any time the 12 month SPI for the site was less than -1.5. The SPI is an index that expresses the standardized probability of recording a given amount of precipitation, where an index of zero indicates the median precipitation amount for that location or region.

Field crews consisted of a minimum of two staff members and included primarily staff from DBSA and were accompanied by Department staff on numerous occasions. Permitted NPDES facility sites were selected in advance by the Department whereas stream segments and HP reaches were selected based on initial observation of the watercourse and watershed while driving and walking the area. Each HP reach was then selected as representative, based on characteristics such as similar geology, sinuosity, and vegetation, of the watercourse (drainage) being characterized. Photographs, GPS way points, and field sheets were completed for each assessment reach, to document the rationale behind the scoring of attributes and subsequent hydrologic determinations.

Evaluation Results and Supporting Documentation

The results of each assessment are located in Appendix A and are organized by associated NPDES permitted facility. The documentation for each Level 1 Evaluations consists of a Cover Sheet which documents the information collected during the assessment, field sheets which contains attribute scores, photographs depicting upstream and downstream portion of the reaches and points of interests, and a site map denoted the facility, assessment reach, proposed ephemeral reach, permitted wells, and the locations of the recorded permitted discharges. **Note:** Not all permitted discharges related to a particular

facility are depicted on the Site Map at the scale chosen to represent the featured watercourse within the evaluation area, only those discharges in direct hydrologic relationship to the assessment reach are depicted. Likewise, not all reaches associated with permitted discharges for a particular facility are being proposed for classification changes, only those watercourses directly evaluated during the course of the study.

Where available and appropriate, the National Hydrography Dataset (NHD) shapefiles were used to depict existing stream channels on site location maps. Additionally, the locations of permitted wells recorded with the New Mexico Office of State Engineer (OSE) were mapped in relation to the proposed ephemeral segment. All available OSE well information regarding diversion rights and pumping data related to these wells were used in conjunction with all HP Evaluations, GIS data, aerial photos, and NPDES permit information in the determination of appropriate hydrologic classification.

Quality Control

A Department field crew performed one field replicate of an HP Level 1 Evaluation at a location that was previously assessed by a field crew from DBSA. The results of this quality assurance exercise conducted at the Oshara Village Water Reclamation facility resulted in identical results and consequently concluded with the same ephemeral hydrologic classification determination. These results (field sheets) are included in the Oshara Village Water Reclamation documents.

Conclusion

In accordance with the UAA process, this UAA finds that in the 18 listed watercourses listed in Table 1:

- The recreational use that is currently being achieved is that of secondary contact.
- The aquatic life use that is currently being achieved is limited aquatic life.
- The aquatic life use of marginal warm water is impaired by natural ephemeral conditions.
- The highest attainable aquatic life use is limited aquatic life.

This UAA finds that it is not feasible to attain the designated use of marginal warm water and primary contact because of factor 131.10(g)(2): Natural, ephemeral or intermittent or low flow conditions or water levels prevent the attainment of the use.

The waters will be subject to 20.6.4.97 NMAC, with the limited aquatic life use and secondary contact. For the limited aquatic life use, the acute aquatic life criteria of Subsection I and J of 20.6.4.900 apply. Chronic aquatic life criteria do not apply unless adopted on a segment-specific basis. Human health-organism only criteria apply only for persistent pollutants unless adopted on a segment-specific basis.

Table 1. Stream Segments proposed for §20.6.4.97 NMAC designation based on results of the Level 1 HP assessment.

Watercourse Description	Upstream		Downstream		Total Length	Facility
	Latitude	Longitude	Latitude	Longitude	(mi)	Name
Bracket Canyon	36.778	-104.885	36.767	-104.843	2.75	Chevron Mining Inc. Ancho Mine #NM0030180
Tributary to Bracket Canyon	36.77	-104.885	36.766	-104.858	2.00	Chevron Mining Inc. Ancho Mine #NM0030180

Watercourse Description	Upstream		Downstream		Total Length	Facility Name
	Latitude	Longitude	Latitude	Longitude	(mi)	
Gachupin Canyon	36.793	-104.907	36.783	-104.863	2.85	Chevron Mining Inc. Ancho Mine #NM0030180
Unnamed Arroyo	35.029	-106.639	35.03	-106.644	0.35	Delta Person Generating Station #NM0030376
Unnamed Arroyo	35.059	-106.919	34.063	-106.914	0.57	Firefighters Academy #NM0029726
Cunningham Gulch	35.334	-1061401	35.342	-1061198	1.41	LAC Minerals, Inc. #NM0028711
Mulatto Canyon Arroyo	35.485	-107.68	35.537	-107.574	8.05	Lee Ranch Coal Co. Lee Ranch Mine #NM0029581
Inditos Draw	35.649	-107.833	35.641	-107.788	3.12	Lee Ranch Coal Co. El Segundo Mine #NM0030996
Unnamed Tributary to Kim-me-ni-oli Wash	35.652	-107.839	35.674	-107.923	5.12	Lee Ranch Coal Co. El Segundo Mine #NM0030996
Defiance Draw	35.581	-108.96	35.583	-108.919	2.70	Chevron Mining Co. McKinley Mine #NM0029386
Unnamed Tributary to Defiance Draw	35.625	-108.954	35.601	-108.919	3.14	Chevron Mining Co. McKinley Mine #NM0029386
Canon del Piojo	35.274	-107.2	35.288	-107.192	1.20	Resurrection Mining #NM0028169
Unnamed Tributary to Canon del Piojo	35.265	-107.199	35.287	-107.2	1.00	Resurrection Mining #NM0028169
Unnamed Tributary to Arroyo Hondo	35.601	-106	35.61	-106.006	0.37	Oshara Village Water Reclamation Facility #NM0030813
Unnamed Tributary to San Pedro Creek	35.206	-106.32	35.209	-106.308	0.83	Paa-Ko Communities Sewer Association #NM0029724
Arroyo del Puerto	35.411	-107.837	35.339	-107.795	6.80	Rio Algom Mining LLC Ambrosia Lake #NM0020532
Unnamed Tributary to San Mateo Creek	35.361	-107.682	35.344	-107.677	1.45	Strathmore Roca Honda #NM0031020
Unnamed Arroyo	32.826	-104.24	32.836	-104.25	0.95	S.W. Public Services Co. #NM0029131

References

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. Prepared by the Surface Water Quality Bureau. May 2011, pg 55 <ftp://ftp.nmenv.state.nm.us/www/swqb/WQMP-CPP/WQMP-CPP-December2011.pdf>

New Mexico Administrative Code (NMAC) Title 20 Environmental Protection, Chapter 6 Water Quality, April 1, 2012. <http://www.nmcpr.state.nm.us/nmac/title20/T20C006.htm>

Federal Water Pollution Control Act (Clean Water Act) (CWA) Title 33, Navigation and Navigable Waters, Chapter 26-Water Pollution Prevention and Control, Section 101 [As Amended Through Pub.L. 111-378, January 4, 2011] (33 U.S.C. § 1251 et seq.)

National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), U.S. Department of Commerce, U.S. Drought Indicators, Standardized Precipitation Index (SPI) <http://www.ncdc.noaa.gov/oa/climate/research/2012/feb/drought-indicators.html>

APPENDIX A

NPDES Facility Sites and Proposed Ephemeral Reaches

-Table of Content-

- Ancho Mine/Chevron**
 - Brackett Canyon
 - Tributary to Brackett Canyon
 - Gachupin Canyon

- Delta Person**
 - Unnamed Arroyo

- NM Fire Academy**
 - Unnamed Arroyo

- LAC Minerals**
 - Cunningham Gulch

- Lee Ranch Mine**
 - Mulatto Canyon

- Lee Ranch El Segundo Mine**
 - Tributary to Kim-me-ni-oli Wash
 - Inditos Draw

- McKinley Mine**
 - Defiance Draw
 - Tributary to Defiance Draw

- Resurrection Mining**
 - Canon del Piojo
 - Unnamed Arroyo

- Oshara Village**
 - Tributary to Arroyo Hondo

- PAAKO**
 - Tributary to San Pedro Creek

- Rio Algom Mining**
 - Arroyo del Puerto

- Strathmore Roca Honda**
 - Tributary to San Mateo Creek

- SW Public Services**
 - Unnamed Arroyo

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Brackett Canyon	Canadian	11080001
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. Brackett Canyon from headwaters at mining area to Vermejo River	36.7777/-104.8845	36.7672/-104.8432
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Chevron/Ancho

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 36.7777/-104.8844	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-54, upstream assessment location
Location 2 (lat/long): 36.7672/-104.8432	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-60, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads , culvert
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	No facility pumping and no recorded or permitted wells within 3 miles (NMOSE).
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges are storm water only, in most cases from large retention ponds. Receiving stream flows only in response to precipitation.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Please explain hydrologic impact Mining, Elk grazing
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road, culvert, and discharge point have similar HP characteristics and scores and other land use observations don't appear to alter the UAA conclusion.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

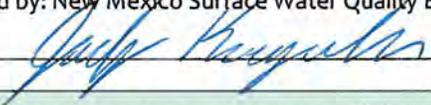
Additional Comments:

ATTACHMENTS:

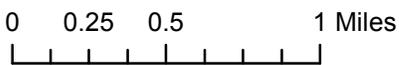
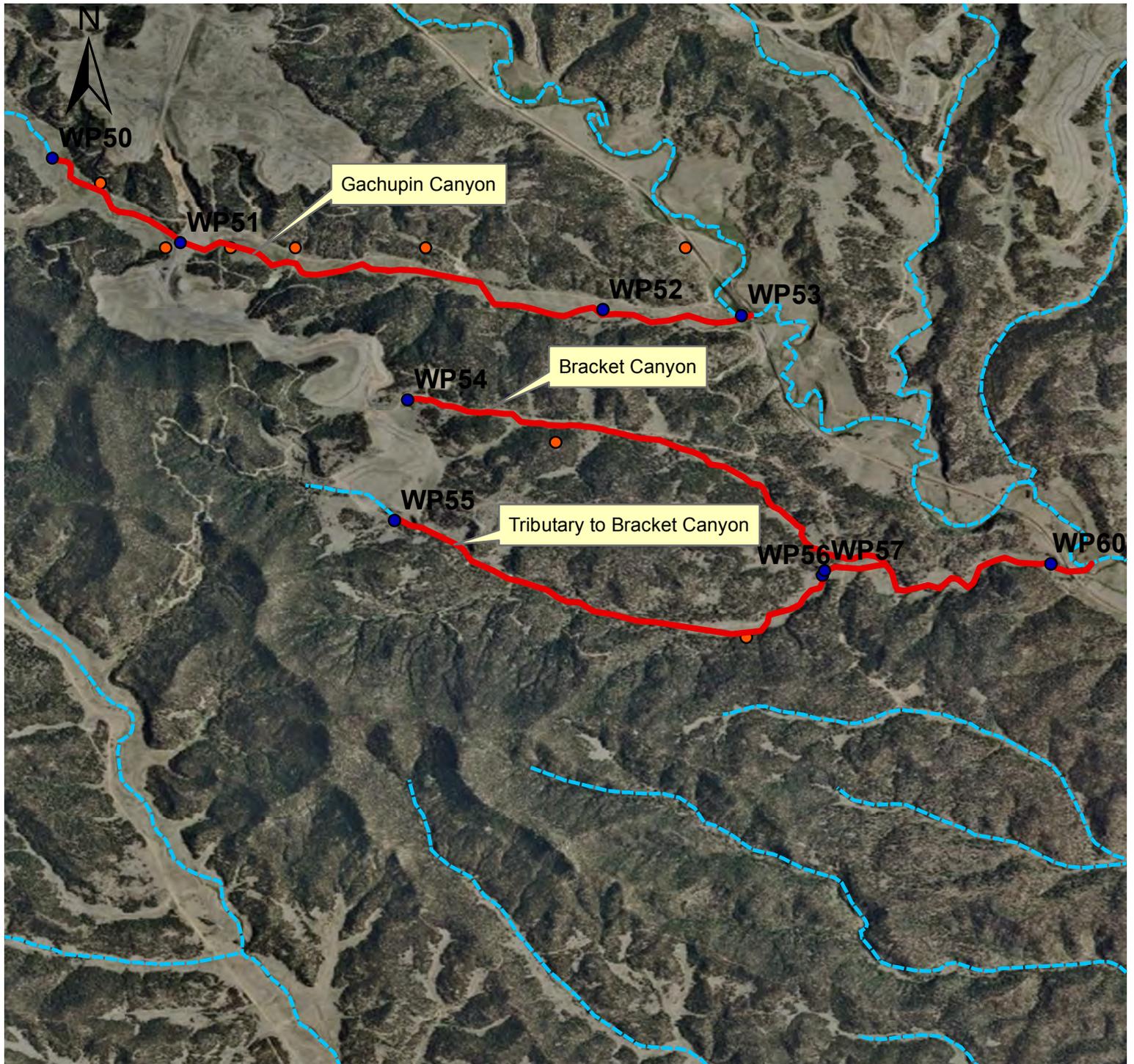
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



Legend

- Hydrology Protocol Waypoints
- Outfall Locations
- Proposed Ephemeral Segments
- - - NHD Base Stream Channels

Site: Chevron Mining Inc., Ancho Mine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 6/29/11	Stream Name: Brackett	Latitude: 36,777 73901	
Evaluator(s): EB, MK	Site ID: Chervon/Ancho	Longitude: -104,88449531	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> 0	Assessment Unit: WP-54	Drought Index (12-mo. SPI Value): -1.29 to -0.8	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 70 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				0

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Ancho Mine 10	upstream	WP-54
11	downstream	

NOTES:

Dominant plants in channel: Blue grama grass, drop seed,
Rabbitbrush

Pocket gopher burrows present.

Pinon pine, juniper and ponderosa pine grow in the
upland beyond banks. Although, different from channel, all
still upland plants.

-grasses in channel lean towards downstream.

modifications: roads, Elk

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/29/11</u>	Stream Name: <u>Brackett</u>	Latitude: <u>36.76721428</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>Chevron / Ancho</u>	Longitude: <u>-104.84325074</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-60</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 60% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event.	
OTHER: Stream Modifications <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Diversions <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Discharges <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section		

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg. 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Ancho Mine 19	upstream	WP-60 looking downstream brackett toward culvert and confluence w/vermejo
20	downstream	
21	downstream	

NOTES:

WP-60 is upstream from culvert
 stream modifications = culvert, roads, elk
 Dominant vegetation = sweet clover, Kochia, dropseed. (in channel)
 along banks = snake weed, dropseed, sand sage.

Ancho Mine Bracket Canyon Photos



Ancho-10



Ancho-11



Ancho-19



Ancho-20



Ancho-21

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Tributary to Brackett	Canadian	11080001
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. Tributary to Brackett Canyon (South Fork) from headwaters mining area to Brackett Canyon.	36.7700/-104.8853	36.7664/-104.8581
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Chevron/Ancho

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 36.7700/-104.8853	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-55, upstream assessment location
Location 2 (lat/long): 36.7664/-104.8581	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-56/WP-57, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < -1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Dam just downstream from WP-55, open culvert at bottom, does not impound water
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	No facility pumping and no recorded or permitted wells within 3 miles (NMOSE).
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges are storm water only, in most cases from large retention ponds. Receiving stream flows only in response to precipitation.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Please explain hydrologic impact Mining, Elk
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road, dam, and discharge point have similar HP characteristics and scores and don't appear to alter the UAA conclusion.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

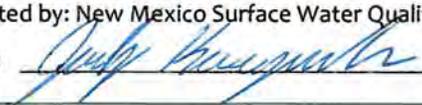
Additional Comments:

ATTACHMENTS:

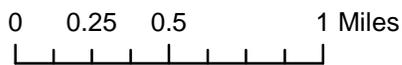
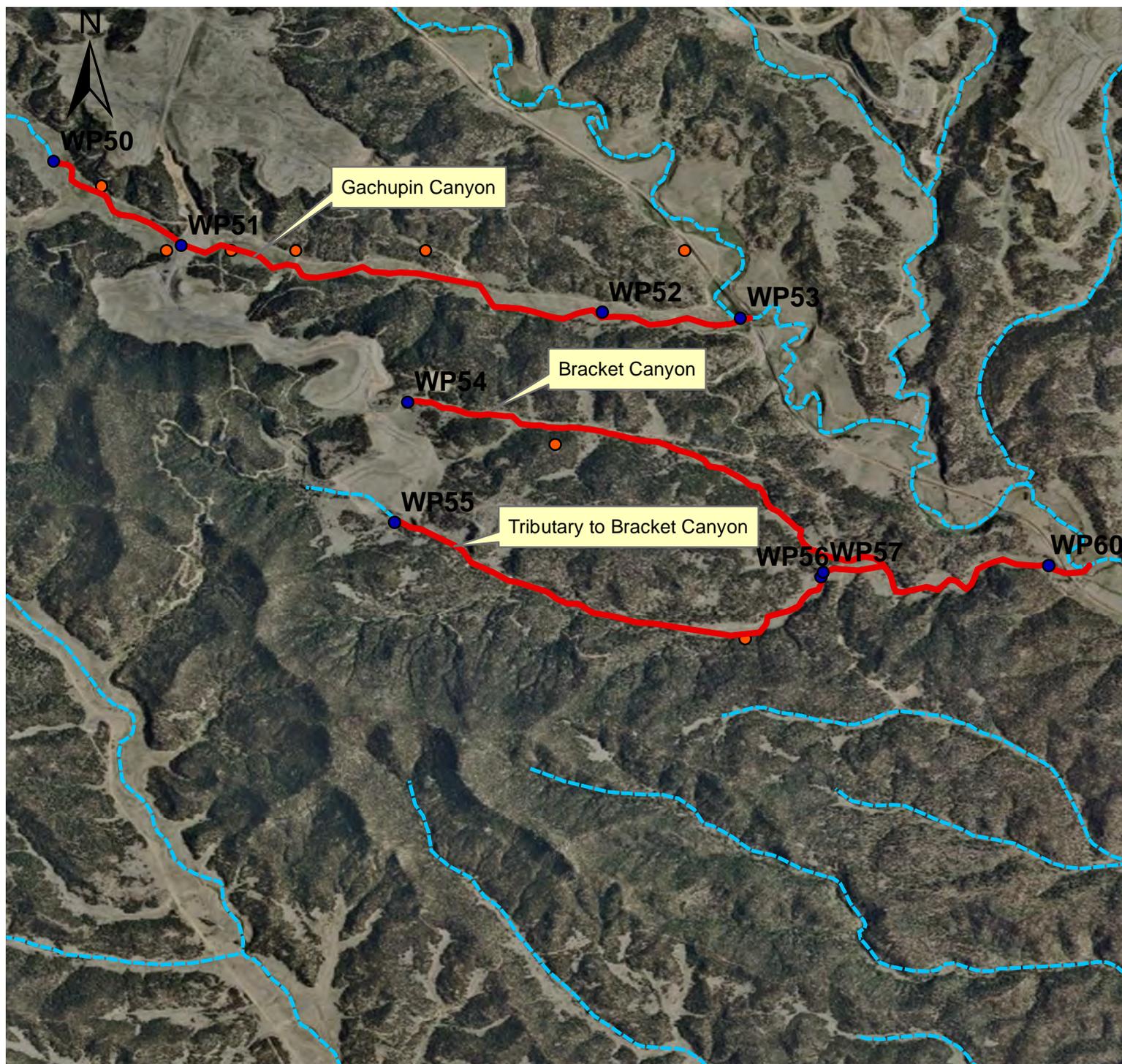
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



Legend

- Hydrology Protocol Waypoints
- Outfall Locations
- Proposed Ephemeral Segments
- - - NHD Base Stream Channels

Site: Chevron Mining Inc., Ancho Mine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/29/11</u>	Stream Name: <u>Unnamed Trib to Brackett</u>	Latitude: <u>36.7700044</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>Chevron / Ancho</u>	Longitude: <u>-104.88533293</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-55</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> <u>70</u> % cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> % cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				0

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Arko Mine 12	upstream	WP-55
13	downstream	

NOTES:

Dominant plants in channel: Blue grama, snakeweed, juniper
 piñon pine, Ponderosa pine, dropseed grass

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/29/11</u>	Stream Name: <u>Unnamed Trib to Brackett</u>	Latitude: <u>36.76647028</u>
Evaluator(s):	Site ID: <u>Chevron / Ancho</u>	Longitude: <u>-104.85814587</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-56 / WP-57</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> <u>60</u> %cloud cover <input type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Ancho Mine 14	downstream	WP-57
15	upstream	

NOTES:

Road nearby. WP-56 close to road. suspect runoff from road.

Dominant plants: snake weed, drop seed, Ponderosa pine
 pocket gopher burrows in channel.

Small patch of horse tail on edge of channel, banks have
 more trees (juniper, piñon, ponderosa).

Ancho Mine Tributary to Brackett Canyon Photos



Ancho-12



Ancho-13



Ancho-14



Ancho-15

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Gachupin Canyon	Canadian	11080001
Reach Description:	Upstream lat/long:	Downstream lat/long:
Ephemeral tributary of Gachupin Canyon west of confluence of Vermijo River.	36.7932/-104.9072	36.7832/-104.8630
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Chevron/Ancho

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 36.7932/-104.9072	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-50, upstream assessment location
Location 2 (lat/long): 36.7835/-104.8719	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-52/WP-53, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	No facility pumping and no recorded or permitted wells within 3 miles (NMOSE).
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges are storm water only, in most cases from large retention ponds. Receiving stream receives flow

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
		only in response to precipitation.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Please explain hydrologic impact Mining, Elk
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road and discharge point have similar HP characteristics and scores and don't appear to alter the UAA conclusion. Grazing does not appear to influence the UAA conclusion.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

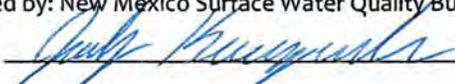
Additional Comments:

ATTACHMENTS:

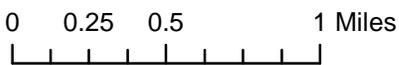
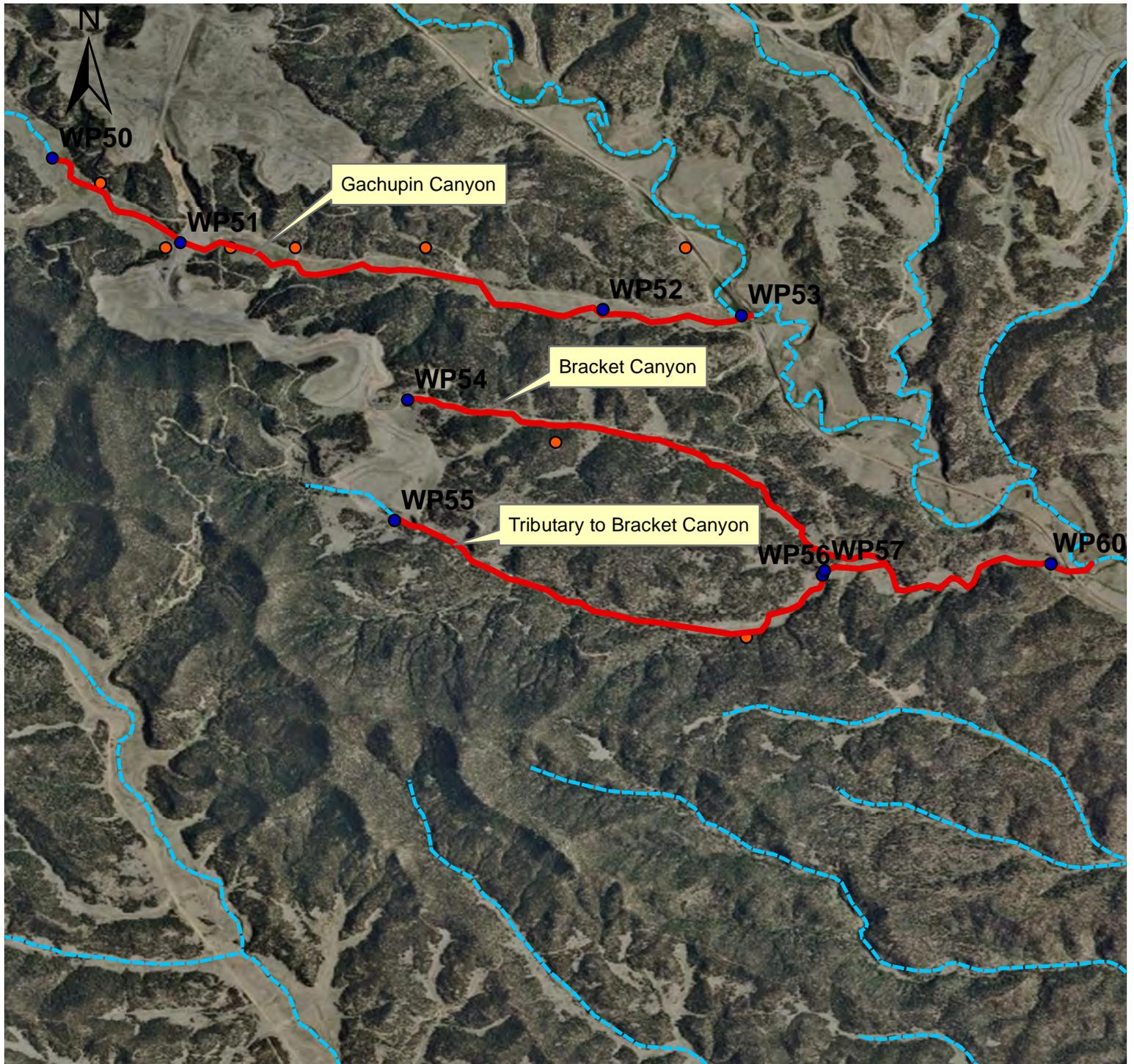
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



Legend

- Hydrology Protocol Waypoints
- Outfall Locations
- Proposed Ephemeral Segments
- - - NHD Base Stream Channels

Site: Chevron Mining Inc., Ancho Mine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/29/11</u>	Stream Name: <u>Gachupin</u>	Latitude: <u>36.79324178</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>Chevron / Ancho</u>	Longitude: <u>-104.90724692</u>
TOTAL POINTS: <u>2</u> <small>Stream is at least intermittent if ≥ 12</small>	Assessment Unit: <u>WP-50</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 60 %cloud cover <input type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Anchorage 3	Upstream	WP-50
4	downstream	
5	outfall	WP-51

NOTES:

Veg: riparian plants (Horsetail) are present but not dominant, pocket gopher burrows present.

Dominant: dropseed, sweet clover, convolvulus

Upstream of WP-50 possibly intermittent, horsetail + rushes prevalent

Roads.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/29/11</u>	Stream Name: <u>Gachupin</u>	Latitude: <u>36.78353678</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>Chevron / Ancho</u>	Longitude: <u>-104.87197418</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-52/WP-53</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>70</u> %cloud cover ___ clear/sunny	PAST 48 HOURS: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover <u>X</u> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <u>X</u> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <u>X</u> YES ___ NO Diversions ___ YES <u>X</u> NO Discharges ___ YES <u>X</u> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	<u>0</u>
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	<u>0</u>
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	<u>0</u>
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	<u>0</u>
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	<u>2</u>	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	<u>0</u>
SUBTOTAL (#1.1 – #1.6)				<u>2</u>

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

Ancho Mine Gachupin Canyon Photos



Ancho-3



Ancho-4



Ancho-5



Ancho-6



Ancho-7



Ancho-8



Ancho-9

Cover Sheet

Hydrology Protocol Use Attainability Analysis for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed arroyo which is tributary to MRGCD South Diversion Channel	Middle Rio Grande	13020203
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unclassified ephemeral arroyo, I-25 south to MRGCD South Diversion Channel.	35.0290/-106.6387	35.0296/-106.6441
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Delta Person

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.0292/-106.6413	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-6, ~500ft upstream from WP-5
Location 2 (lat/long): 35.0290/-106.6433	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-5, near NPDES outfall
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < -1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-0.79 to -0.51 May 12 month SPI (NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Delta Person discharges cooling water episodically and short term.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
<p>If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Upstream and downstream sections of the channel with regards to the discharge point have similar HP scores and characteristics.</p>		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<p>If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:</p>		

Additional Comments:
<p>According to the New Mexico Office of State Engineer's recorded permitted well data, there are two permitted wells within a 0.3 mile radius which have permitted withdrawals greater than 1000 acre feet (AF) per year. Permit # RG 00050 and permit # RG 00551 have permitted withdrawals of 4657 AF and 2685 AF respectively. Each permitted well is associated with multiple points of diversion for which there are pumping records for the last 10 years. Permit # RG 00050 has 18 current points of diversion of which four are within 0.25 miles of the assessed reach but only two have pumped since 2004 and the combined yearly average withdrawal between these two wells is approximately 96 AF/yr. Depth to water in these wells is estimated to be 120 feet. Permit # 00551 has eight current points of diversion of which one is within 0.33 miles of the assessed reach. The average yearly withdrawal from this well based on 2004-2011 data is approximately 594 AF/yr. Depth to water in this well is recorded at 253 feet. Based on average yearly withdrawals, depth to water, and HP results associated with these wells, there is not sufficient evidence to demonstrate that these withdrawals impact the UAA conclusion.</p>

ATTACHMENTS:

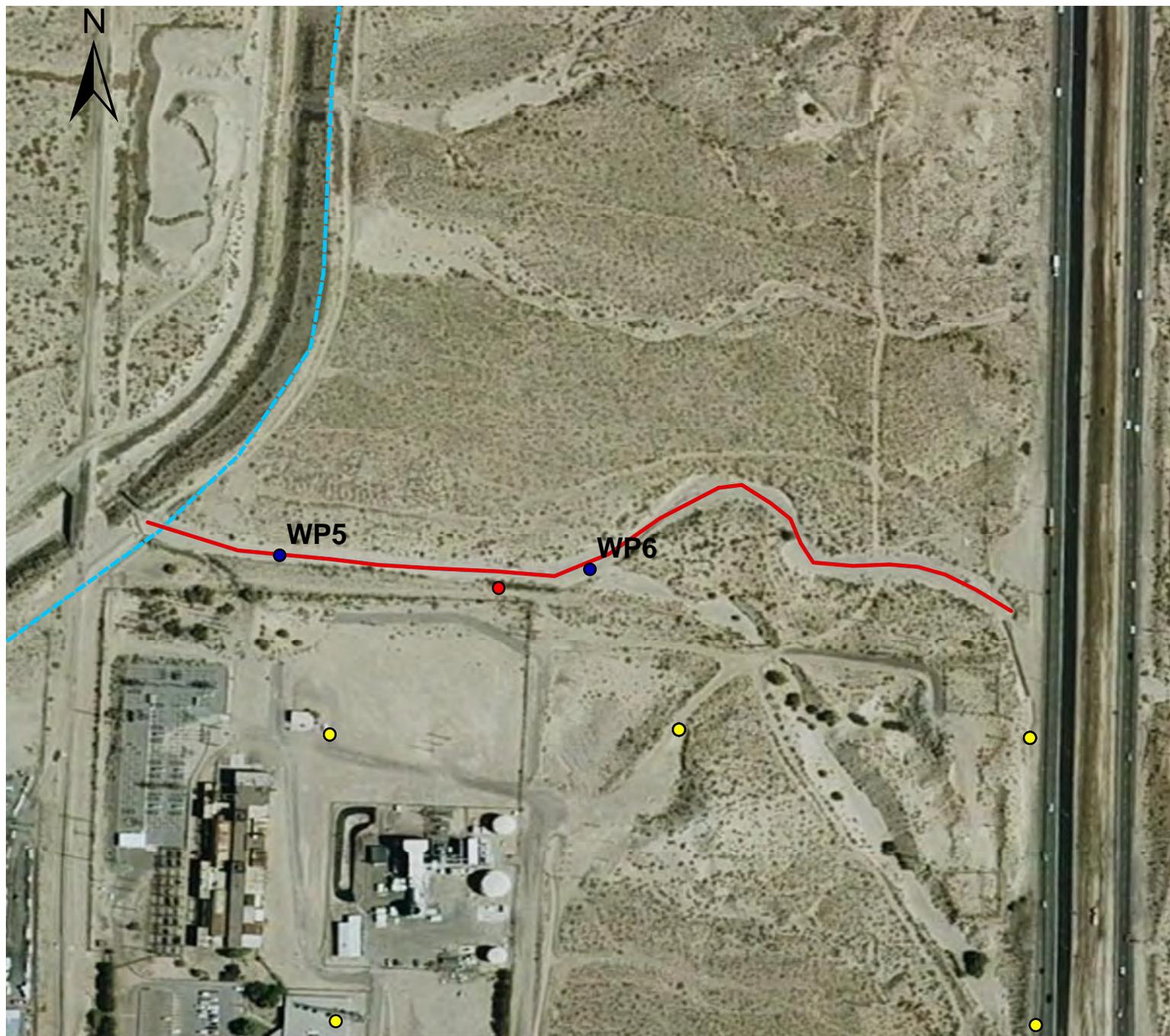
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u><i>[Signature]</i></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If no, see attached reasons.</i>	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 200 400 800 Feet

Legend

- Hydrology Protocol Waypoints
- Outfall Locations
- OSE Well Locations
- Proposed Ephemeral Segments
- - - NHD Base Stream Channels



Site: Delta Person Generating Station

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/20/11</u>	Stream Name: <u>Unnamed Trib to S. Diversion Channel</u>	Latitude: <u>35.02903437</u>
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>Delta Person</u>	Longitude: <u>-106.64332007</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-5/WP-6</u>	Drought Index (12-mo. SPI Value): <u>-0.75 - (-1.24) from WRCC</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	* (1) see note	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
1	Point of NPDES	WP-5
2	Looking downstream of NPDES	
3	Looking upstream of NPDES	
4	Right bank, facing downstream	
5	Left bank, facing downstream	

NOTES:

* Sandy substrate, location not ideal for supporting rooted plants.
 upland plants prevalent along bank.

Dominant vegetation snakebush (Gardneri), four wing salt bush (triplex)
 [along banks] - At WP-6, add broom dalea.

Modifications: culvert near end of channel, where channel enters
 south diversion channel.

Delta Person UAA Photos



Delta Person-1



Delta Person-2



Delta Person-3



Delta Person-4



Delta Person-5

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed Arroyo	Middle Rio Grande	13020203
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unnamed arroyo from just above Fire Academy Outfall-001 to storm water diversion channel.	34.0585/-106.9194	34.0634/-106.9144
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		NM Firefighters Academy

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 34.0585/-106.9194	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-74, upstream assessment location
Location 2 (lat/long): 34.0584/-106.9191	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-76/WP-77, downstream assessment location
Location 3 (lat/long): 34.0621/-106.9153	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (June 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Old breached berms exist in channel but no longer impound water.
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges into large two cell retention pond, overflow is typically re-used.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Upstream and downstream sections of the receiving reach with regards to the discharge point and road have similar HP characteristics and roads have no observable impact on UAA determination.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

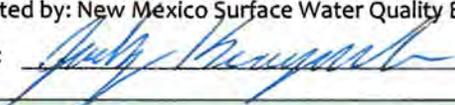
Additional Comments:
According to the New Mexico Office of State Engineer's (OSE) well data, there is one permitted well (Permit # RG05276) which has nine current points of diversions used to satisfy the permitted 4000 acre feet (AF) per year withdrawal. Three of the current diversion wells, associated with Permit # RG05276, are within 1.0 mile radius of the assessed reach. The combined yearly average withdrawal from these three wells is 1276 AF/yr with an average depth to water of 75 feet. Although pumping is documented in the area, it is largely downstream and there is insufficient evidence to conclude that these wells impact the UAA conclusion.

ATTACHMENTS:

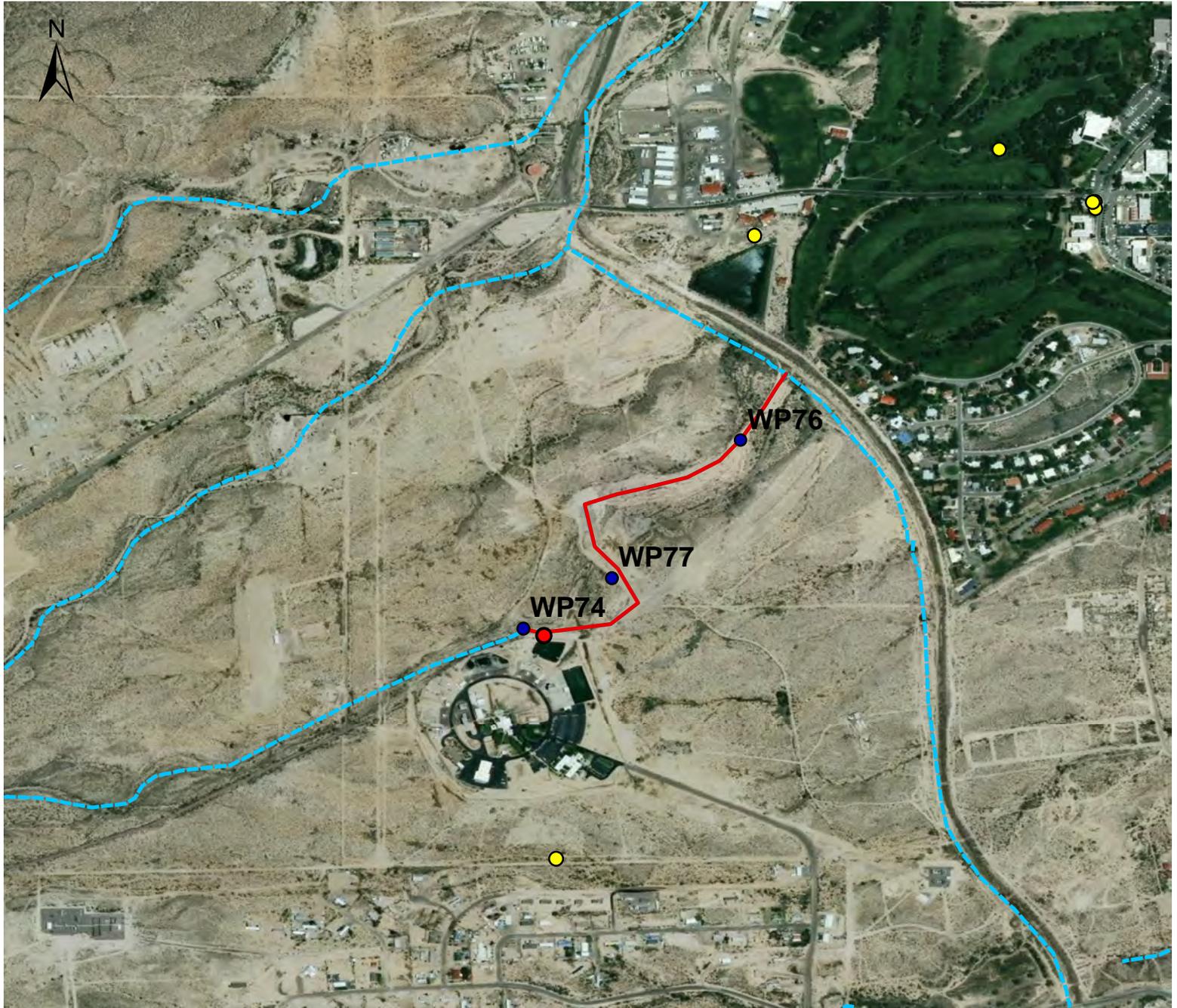
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.1 0.2 Miles



Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment
- - - NHD Base Stream Channel

Site: NM Firefighters Training Academy

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/5/11</u>	Stream Name: <u>Unnamed arroyo to diversion channel</u>	Latitude: <u>34.05855620</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>NM Firefighters Academy</u>	Longitude: <u>-106.91944341</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> 2	Assessment Unit: <u>WP-74</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8</u>

WEATHER CONDITIONS	NOW:	PAST 48 HOURS:	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event.
	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>10</u> %cloud cover ___ clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>10</u> %cloud cover ___ clear/sunny	OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Fire Academy 1	upstream	WP-74
2	downstream	
3	downstream	

NOTES:

Dominant plants in channel: snake weed, dropseed grass
 Mesquite, blue grama
 creosote ~~are~~ present and no mesquite above channel.

Bank is artificially built up south of the NPDES
 outfall (south downstream of WP-73), berms in channel

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/5/11</u>	Stream Name: <u>unnamed arroyo to diversion channel</u>	Latitude: <u>34,06213772</u>	
Evaluator(s): <u>EB, MK</u>	Site ID: <u>NM Firefighters Academy</u>	Longitude: <u>-106,91531978</u>	
TOTAL POINTS: <u>2</u> <small>Stream is at least intermittent if ≥ 12</small>	Assessment Unit: <u>WP-76/WP-77</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 10% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 10% cloud cover <input type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
File Academy 7	downstream	} WP-76
8	"	
9	upstream	
10	upstream	} WP-77
11	downstream	

NOTES:

Dominant vegetation in channel: mollugo cerviana, three-awn
 four wing saltbush, tumbleweed, snakeweed
 channel has mostly grass + forbs. Shrubs are concentrated
 to channel edges, banks have creosote, saltbush, ephedra
 beyond banks: creosote slow bleed.

channel is highly modified: road, berms, retention basin
 between NPDES outfall and diversion channel.

Firefighters Academy UAA Photos



Firefighters-1



Firefighters-2



Firefighters-3



Firefighters-7



Firefighters-8



Firefighters-9

Firefighters Academy UAA Photos



Firefighters-10



Firefighters-11

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Cunningham Gulch	Upper Rio Grande	13020201
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo, Cunningham Gulch to Santa Fe County Road 55.	35.3342/-106.1401	35.3415/-106.1207
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		LAC Minerals

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.3342/-106.1401	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-11, upstream assessment location
Location 2 (lat/long): 35.3415/-106.1207	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-13/WP-14, downstream assessment location
Location 3 (lat/long): 35.3409/-106.1197	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-15, historic channel
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

If yes for any of above, please explain why these conditions do not impact the UAA conclusion that *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:*

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Weir into pond at upstream section of reach. Boulder lined channel through mining area.
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Mine has channelized stream
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Facility discharges storm water only in response to precipitation events.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact
<p>If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Outfall is located in a highly modified channel within a mining area. Full assessment of all HP metrics is not possible within this section. The HP assessment was completed at upstream and downstream locations that are largely unmodified and have similar HP characteristics. The modified section of this reach is included in the proposed ephemeral segment because of its shared topography and hydrology of the site. The upstream weir and modified section of the receiving reach have no observable impact on UAA determination of the upstream and downstream sections and thus the entire proposed ephemeral segment.</p>		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<p>If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:</p>		

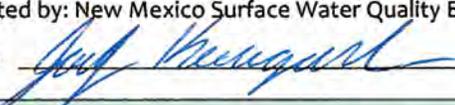
Additional Comments:
There is no recorded pumping or permitted diversion rights for wells in the area. All wells at the site are associated with monitoring program.

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.15 0.3 Miles



Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment

Site: LAC Minerals Inc.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>Cunningham Gulch</u>	Latitude: <u>35.33425906</u>
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>LAC</u>	Longitude: <u>-106.1402944</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-11</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1 <i>see notes</i>	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
LAC JAA 24	looking upstream	WP-11 (Upstream of NPDES)
25	looking downstream	
26	" "	
27	looking upstream	

NOTES:

Dominant species: Ponderosa pine, piñon pine, one seed juniper, oak.

* Some fill material has been put in channel obscuring in-channel upland plants.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>Cunningham Gulch</u>	Latitude: <u>35.34152551</u>
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>LAC</u>	Longitude: <u>-106.12075184</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-13/WP-14</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>Historic Cunningham Gulch</u>	Latitude: <u>35.34098534</u>	
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>LAC</u>	Longitude: <u>-106.11971401</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-15</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2
If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.				

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
LAC JAA 36	looking downstream	WP-15 historic cunningham gulch
37	looking upstream	

NOTES:

Dominant Species: Ponderosa pine, one-seed juniper, piñon pine and oak.

Modifications: roads and mining activities. channel no longer would flow in this historic channel.

LAC Minerals UAA Photos



LAC-24



LAC-25



LAC-26



LAC-27



LAC-34



LAC-35



LAC-36



LAC-37

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed tributary to Kim-me-ni-oli wash	San Juan	14080106
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. NM 509 (Continental Divide) to confluence with arroyo tributary from north.	35.6524/-107.8388	35.6742/-107.9225
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Lee Ranch/El Segundo

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos, GW depth
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.6524/-107.8388	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-26/WP-27, upstream assessment location
Location 2 (lat/long): 35.6683/107.9138	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-28/WP-29, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads, mining
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	See additional comments

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges storm water only. Receiving stream flows only in response to precipitation.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	<i>Please explain hydrologic impact</i> Mining
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the roads and discharge points have similar HP characteristics and scores and available well data does not indicate an impact on UAA determination.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
According to the New Mexico Office of State Engineer's permitted well data, there is are 8 wells within 1.5 miles of the assessed reach. Three of these wells have permitted diversions. Two wells are recorded as stock water use and are permitted for 3 acre feet (AF) per year withdrawal and the other is a mining activity well which is permitted for up to 650 AF/yr. For the purposes of this HP assessment the two 3 AF/yr wells are considered de minimis and do not impact the UAA conclusion. The mining well has a recorded depth to water of 275 feet and there is no recorded use (pumping data) of the well on file. There is no direct evidence that this well impacts the UAA conclusion.

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau

Signed: *[Signature]*

Date: 10/11/12

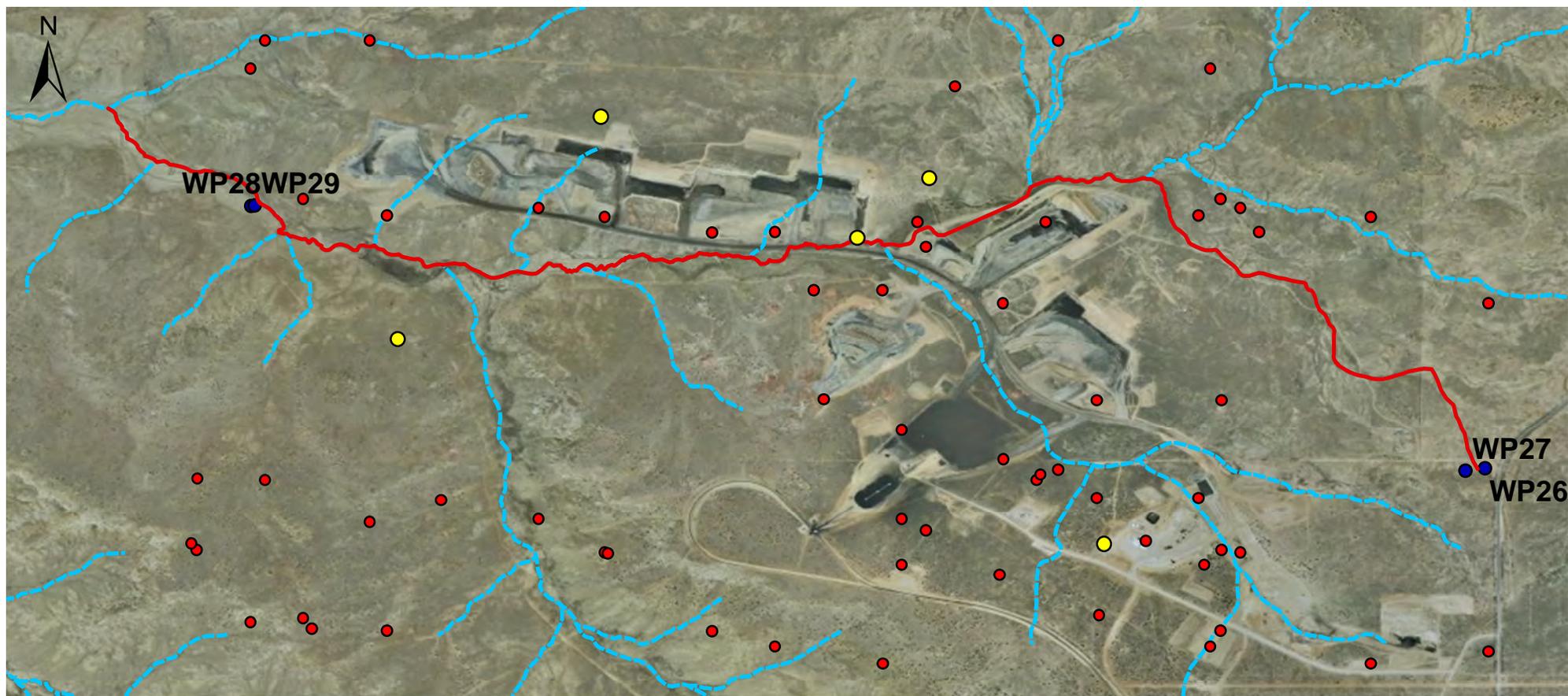
EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment
- - - NHD Base Stream Channel



Site: Lee Ranch Coal Co. El Segundo Mine (Kim-me-ni-oli Tributary)

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/27/11</u>	Stream Name: <u>Kim-me-ni-oil</u>	Latitude: <u>35.65240026</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Lee Ranch / El Segundo</u>	Longitude: <u>-107.83884115</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> <u>2</u>	Assessment Unit: <u>WP-26 / WP-27</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/27/11</u>	Stream Name: <u>Kim-me-ni-oli</u>	Latitude: <u>35.66834435</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Lee Ranch / El Segundo</u>	Longitude: <u>-107.91386973</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> 2	Assessment Unit: <u>WP-28/WP-29</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 25 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

Lee Ranch El Segundo Photos



Lee Ranch-11



Lee Ranch-12



Lee Ranch-13



Lee Ranch-14



Lee Ranch-15



Lee Ranch-16

Lee Ranch El Segundo Photos



Lee Ranch-17



Lee Ranch-18



Lee Ranch-19

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Mulatto Canyon	Middle Rio Grande	13020205
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo	35.4852/-107.6796	35.5372/-107.5738
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Lee Ranch Mine

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.4852/-107.6796	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-25, upstream assessment location
Location 2 (lat/long): 35.5372/-107.5738	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-23/WP-24, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads and mining activity
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	See additional comments.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges storm water to large retention pond, receiving stream flows only in response to precipitation events.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
<p>If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: No evidence of discharge to receiving reach. Upstream and downstream sections of the channel with regards to the discharge point have similar HP scores and channel appears to be in natural condition (unmodified) with regards to mining activity.</p>		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<p>If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:</p>		

Additional Comments:
<p>According to the New Mexico Office of State Engineer's recorded permitted well data, permit # RG35275 is associated with the NPDES facility for which the assessed reach is the receiving waters. There are 12 current points of diversion associated with the diversion right of 1500 acre feet (AF) per year. Of these, only two are currently in production and they are within 0.4 miles of the assessed reach. The combined yearly average (based on records available between 2000-2011) withdrawal for these wells is approximately 132 AF/yr. The recorded depth to water is 150 feet. Additionally, there are 8 domestic/stock wells within 1.0 mile of the assessed reach with permitted withdrawals of 3 AF/yr. For the purposes of this HP assessment, these (3AF/yr) wells are considered de minimis. The two wells associated with RG35275 that are currently in production have reduced their overall yearly diversion, including no pumping from 2004-07, from an average combined 292 AF/yr for the first four years to 120 AF/yr for the last four years. The assessed reach is 8 miles long and there is not sufficient evidence to demonstrate that these withdrawals impact the UAA conclusion.</p>

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau

Signed: *Judy Murayada*

Date: 10/11/12

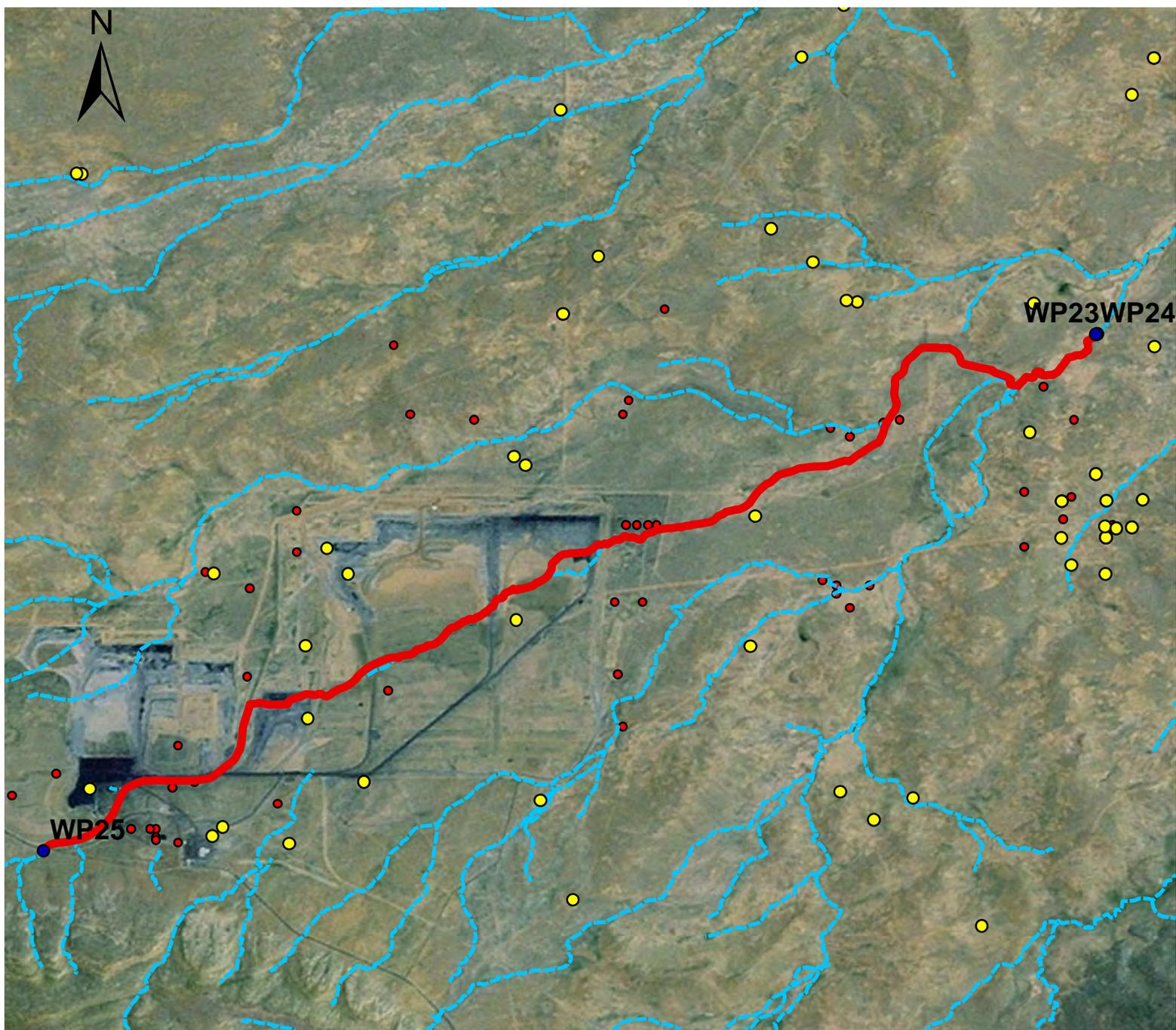
EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.5 1 2 Miles

Legend

- Hydrology Protocol Waypoints
- OSE Well Locations
- Outfall Location
- NHD Base Stream Channel
- Proposed Ephemeral Segment



Site: Lee Ranch Coal Co. (Mulatto Canyon)

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/27/11</u>	Stream Name: <u>Mulatto Canyon</u>	Latitude: <u>35,48528103</u>
Evaluator(s): <u>EB, HP</u>	Site ID: <u>LEE Ranch</u>	Longitude: <u>-107,67962980</u>
TOTAL POINTS: <small>Stream is at least intermittent if ≥ 12</small>	Assessment Unit: <u>WP-25</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/27/11</u>	Stream Name: <u>Mulatto Canyon</u>	Latitude: <u>35,53724107</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Lee Ranch</u>	Longitude: <u>-107,57379609</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> 2	Assessment Unit: <u>WP-23/WP-24</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to 0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> <u>40</u> %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	* (1)	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	(1)	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau -- LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Lee Ranch 7	Upstream	WP-23
8	downstream	
9	Upstream, channel splits	WP-24
10	Right bank	

NOTES:

* vegetation composition varies due to presence of salt cedar within channel. However, salt cedar is not dense and co-occurs with upland plants around study reach. This site does not warrant a 2 rating for vegetation differences. This is not a riparian corridor @ any point.

salt bush, salt cedar and drop seed grass.

Modifications: Roads and mining activity

Lee Ranch Photos



Lee Ranch-1



Lee Ranch-2



Lee Ranch-3



Lee Ranch-4



Lee Ranch-7



Lee Ranch-8

Lee Ranch Photos



Lee Ranch-9



Lee Ranch-10

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Inditos Draw	San Juan	14080106
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. NM 509 (Continental Divide) to large, breached road berm.	35.6493/-107.8325	35.6412/-107.788
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Lee Ranch/El Segundo Mine

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos, GW depth
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.6412/-107.788	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-32, downstream assessment location
Location 2 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Breached berms exist but do not impound water.
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads, mining
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges storm water only. Receiving stream flows only in response to precipitation events.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	<i>Please explain hydrologic impact</i> Mining
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: : Sections of channel above and below the roads and discharge points have similar HP characteristics and scores and well data does not indicate an impact on UAA determination.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
<p>According to the New Mexico Office of State Engineer's permitted well data, there are 10 wells within 1.5 miles of the assessed reach. Four of these wells have permitted diversions. Three wells are recorded as either stock or domestic water use and are permitted for a 3 acre feet (AF) per year withdrawal and the other is a mining activity well which is one of twelve authorized diversion wells used to satisfy the 1500 AF/yr withdrawal right. For the purposes of this HP assessment the three 3 AF/yr wells are considered de minimis and do not impact the UAA conclusion. The mining well has a recorded depth to water of 385 feet and there is no recorded use (pumping data) of the well on file. There is no direct evidence that this well impacts the UAA conclusion.</p>

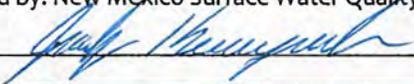
ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau

Signed: 

Date: 10/11/12

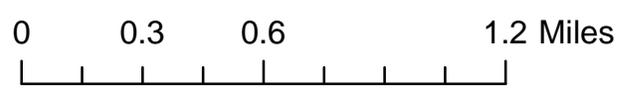
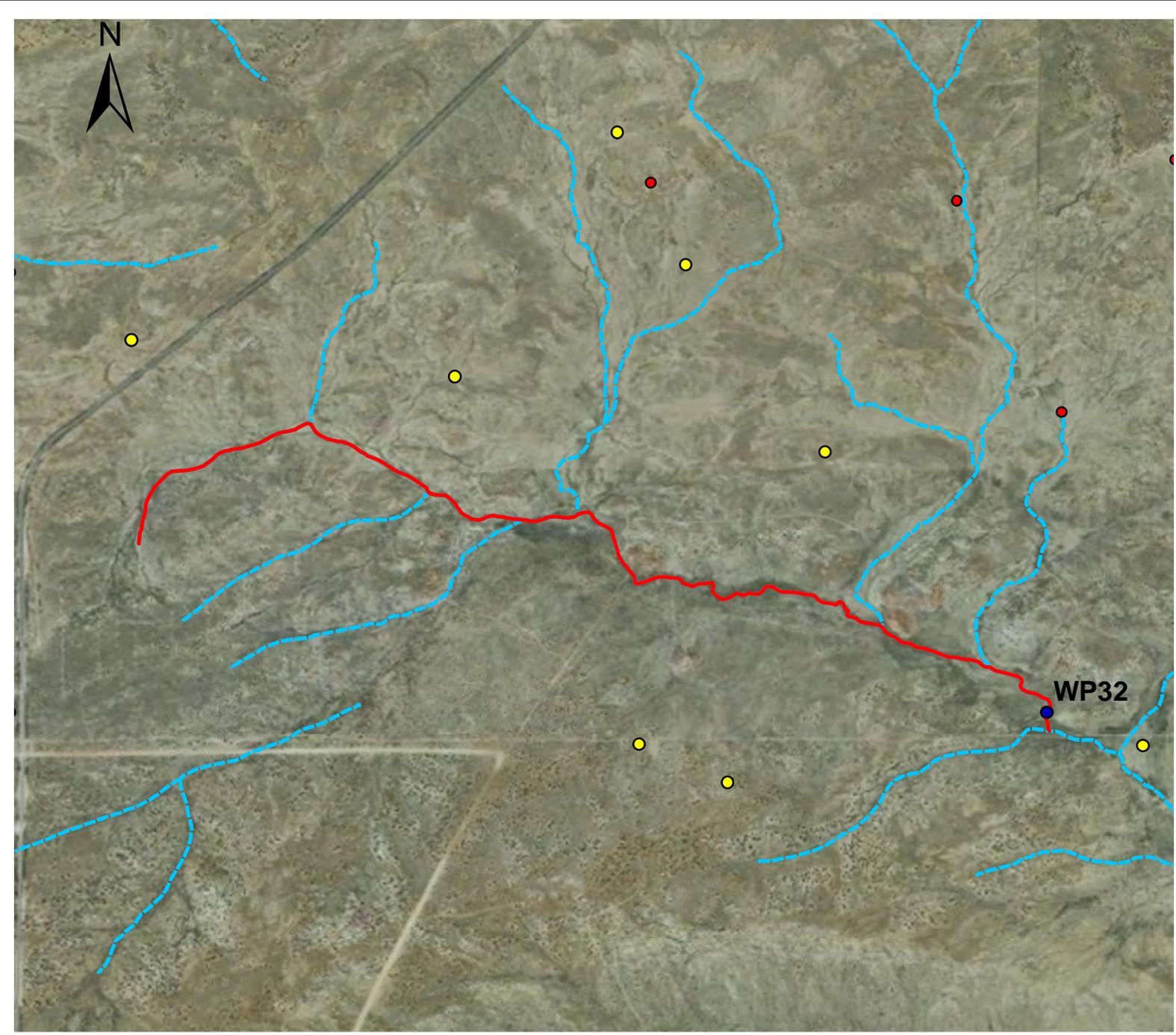
EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



Legend

- Hydrology Protocol Waypoints
- OSE Well Locations
- Outfall Location
- NHD Base Stream Channel
- Proposed Ephemeral Segment



Site: Lee Ranch Coal Co. El Segundo Mine (Inditos Draw)

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/27/11</u>	Stream Name: <u>Inditas Draw</u>	Latitude: <u>35.64124679</u>
Evaluator(s):	Site ID: <u>Lee Ranch / El Segundo</u>	Longitude: <u>-107.78886987</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-32</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

Lee Ranch Inditos Draw Photos



Lee Ranch-22



Lee Ranch-23



Lee Ranch-24

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Defiance Draw	Lower Colorado	15020006
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo, West Defiance road to McKinley County Road 1	35.5812/-108.9600	35.5825/-108.9190
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		McKinley

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.5812/-108.9600	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-48, upstream assessment location
Location 2 (lat/long): 35.5825/-108.9190	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-47, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-0.5 to 0.5 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

If yes for any of above, please explain why these conditions do not impact the UAA conclusion that *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:*

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads.
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges storm water from large retention ponds only in response to precipitation events.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road and discharge point have similar HP characteristics and scores and well data does not indicate an impact on UAA determination.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
According to the New Mexico Office of State Engineer's permitted well data, there is one well within 0.5 miles of the assessed reach. This well has a permitted withdrawal of 29 acre feet (AF) per year and a depth to water of 25 feet. There is no recorded use (pumping data) of the well on file. There is no direct evidence that this well impacts the UAA conclusion.

ATTACHMENTS:

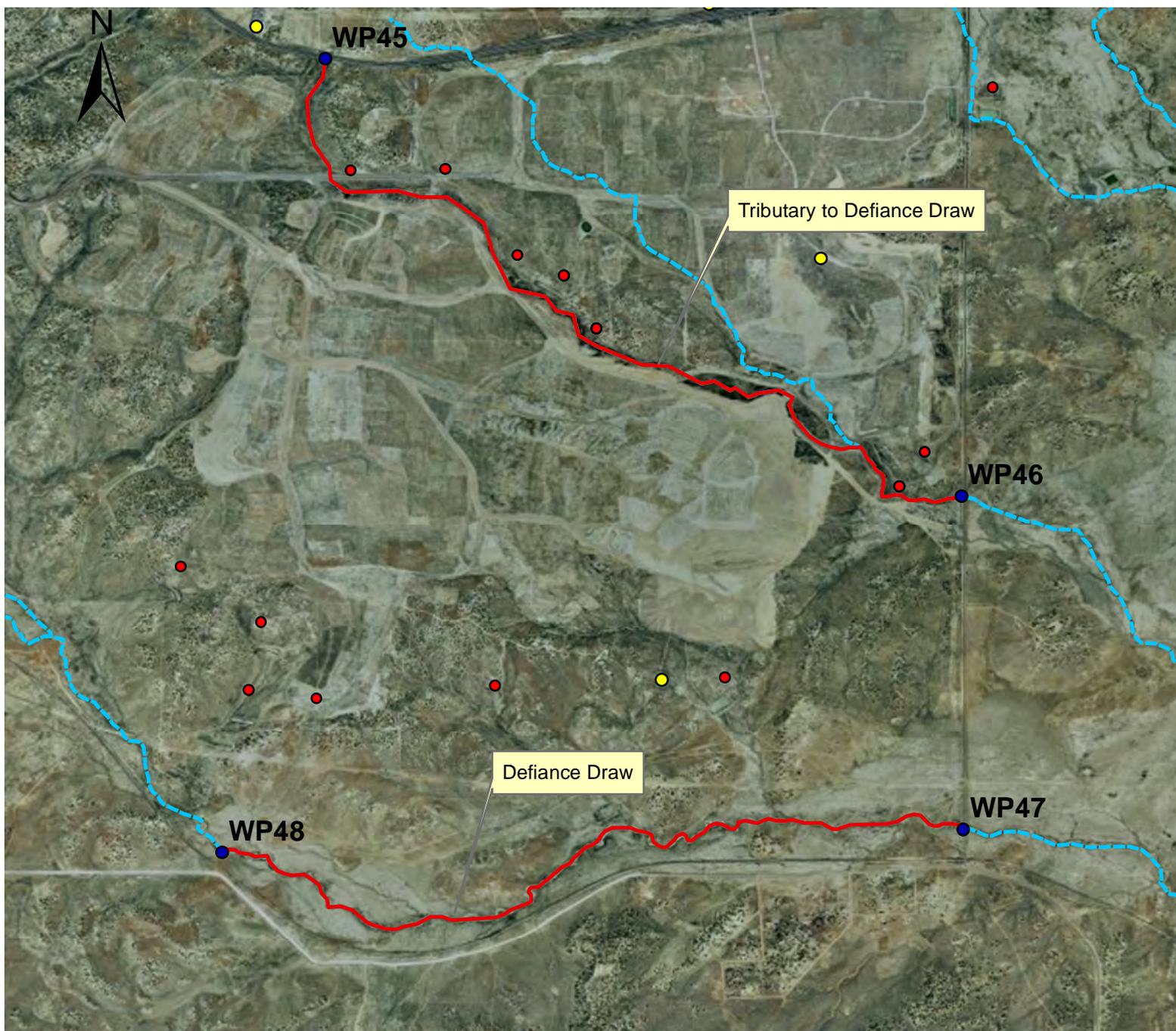
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.25 0.5 1 Miles

Legend

- Hydrology Protocol Waypoints
- OSE Well Locations
- Outfall Location
- NHD Base Stream Channel
- Proposed Ephemeral Segments



Site: Chevron Mining Inc. McKinley Mine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Defiance Draw</u>	Latitude: <u>35.58123973</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Chevron / McKinley</u>	Longitude: <u>-108.9600179</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-48</u>	Drought Index (12-mo. SPI Value): <u>-0.5 to 5 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 100% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30% cloud cover <input checked="" type="checkbox"/> clear/sunny <p align="center"><i>varied</i></p>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	*1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
McKinley 9	upstream	WP#48
10	downstream	

NOTES:

* Upland species and salt cedar present along banks, some vegetation in channel, but limited due to soils and dry conditions

only discharge is storm water runoff
Rancher and roads

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Defiance Draw</u>	Latitude: <u>35.58251442</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Chevron / McKinley</u>	Longitude: <u>-108.91900453</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> 2	Assessment Unit: <u>WP-47</u>	Drought Index (12-mo. SPI Value): <u>-0.05 to 5 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 100% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30% cloud cover <input checked="" type="checkbox"/> clear/sunny <u>varied</u>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	*1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
McKinley 7	downstream	WP-47
8	upstream	

NOTES:

* grasses and annuals consistently along stream bottom but smaller and less densely growing along banks. stream bottom is sandy. Looks like channel scours when large flow is present.

Vegetation along banks - salt bush, rabbit bush, grasses, gum weed and scattered annuals (mustards + tumbleweed @ slope near road.)

only discharge is storm water runoff.
Road channels the streambed.

McKinley Defiance Draw Photos



McKinley-7



McKinley-8



McKinley-9



McKinley-10

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed Tributary to Defiance Draw	Lower Colorado	15020006
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo, Defiance Draw from NM 264 to McKinley County Road 1	35.6251/-108.9543	35.6010/-108.9191
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		McKinley

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.6251/-108.9543	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-45, upstream assessment location
Location 2 (lat/long): 35.6010/-108.9191	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-46, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-0.5 to 0.5 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	See additional comments.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharge storm water from large retention ponds in response to precipitation events.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road and discharge point have similar HP characteristics and score.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
<p>According to the New Mexico Office of State Engineer's recorded permitted well data, there are five permitted wells within 1.0 mile of the assessed reach. Four of these have recorded diversion rights of 3 acre feet (AF) per year which for the purposes of this HP assessment are considered de minimis. The other permitted well has a recorded diversion right of 16.1 AF/yr but data regarding pumping rates are not available. The recorded depth to water ranges from 71 feet to 602 feet with the majority of wells recording a depth to water that exceeds 500 feet. There is no direct evidence that these wells impact the UAA conclusion.</p>

ATTACHMENTS:

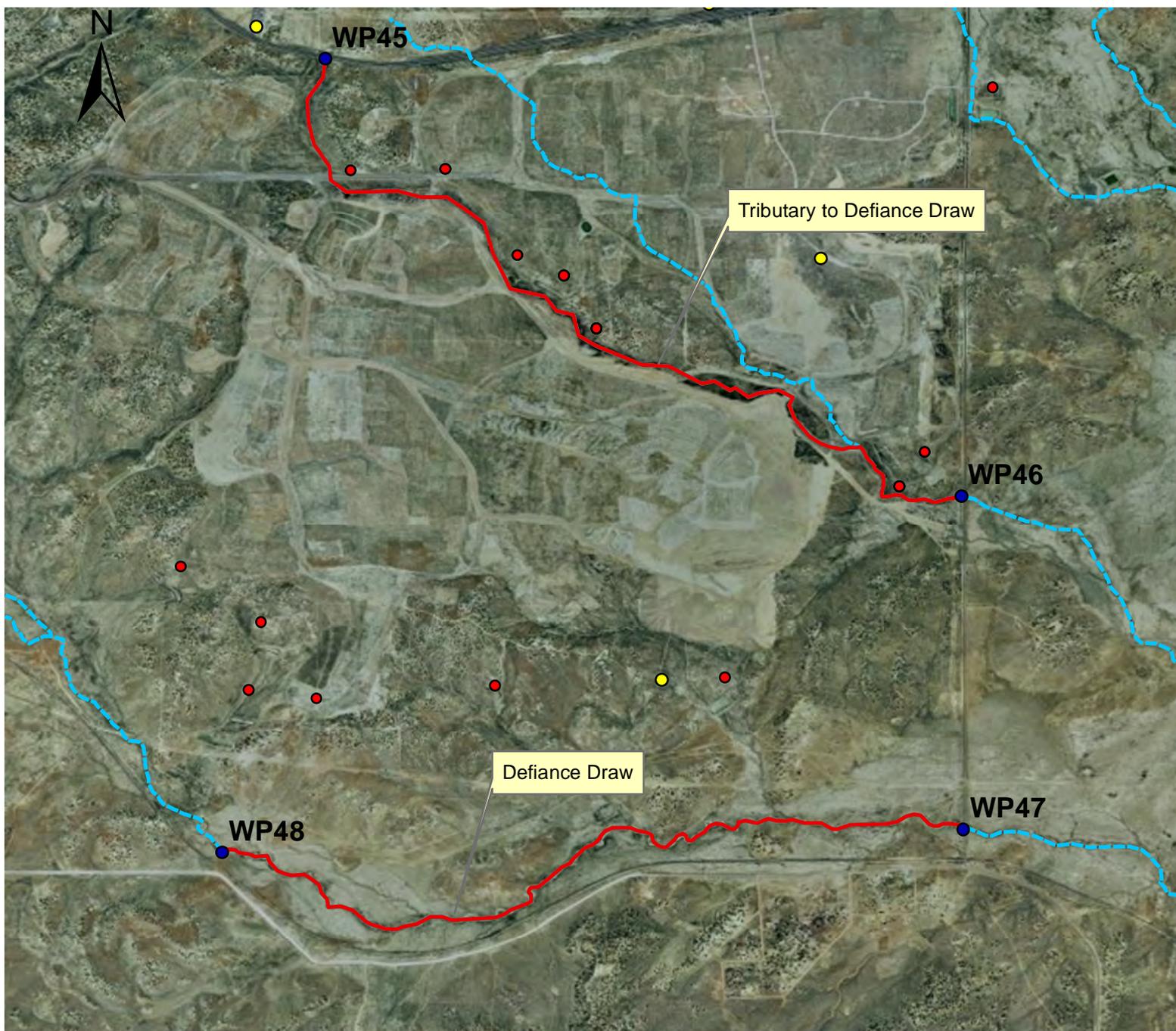
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u><i>Andy Krueger</i></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If no, see attached reasons.</i>	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.25 0.5 1 Miles

Legend

- Hydrology Protocol Waypoints
- OSE Well Locations
- Outfall Location
- NHD Base Stream Channel
- Proposed Ephemeral Segments



Site: Chevron Mining Inc. McKinley Mine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>DeFrance Draw Trib</u>	Latitude: <u>35.62518442</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Chevron / McKinley</u>	Longitude: <u>-108.95430035</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-45</u>	Drought Index (12-mo. SPI Value): <u>-0.5 to 5.0 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input checked="" type="checkbox"/> clear/sunny <i>varied</i>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
McKinley 1	downstream	WP-45
2	upstream	

NOTES:

Vegetation dense within channel: mostly salt bush with rabbit bush and sage common, grasses occur along bottom of channel.

assessed south of highway 264, road does channelize streambed.

only discharge due to storm runoff, roads.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Defiance Draw Trib</u>	Latitude: <u>35.60104716</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Chevron/McKinley</u>	Longitude: <u>-106.91912794</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-46</u>	Drought Index (12-mo. SPI Value): <u>-0.5 to 5.0 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input checked="" type="checkbox"/> clear/sunny <u>varied</u>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

McKinley Defiance Draw Tributary



McKinley-1



McKinley-2



McKinley-3



McKinley-4



McKinley-5

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Canon del Piojo	Middle Rio Grande	13020204
Reach Description:	Upstream lat/long:	Downstream lat/long:
Canon del Piojo to the confluence with Salado Creek	35.2742/-107.1997	35.2879/-107.1918
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Resurrection Mining

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.2797/-107.1962	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-93, upstream assessment location
Location 2 (lat/long): 35.2870/-107.1933	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-92, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.59 to -1.30 (June 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

If yes for any of above, please explain why these conditions do not impact the UAA conclusion that *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:*

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	No permitted wells at site. See additional comments for details.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Facility outfall discharges to unnamed upstream tributary to Canon del Piojo only in response to large

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
		precipitation events. Last discharge event, 1980.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Please explain hydrologic impact Cattle
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Upstream and downstream sections of the channel with regards to the discharge point have similar HP characteristics and scores. Cattle use does not appear to alter UAA conclusion.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
The New Mexico Office of State Engineer's well records indicate that there are five recorded wells in the greater area (radius 1.5 miles) of the assessment reach. Two of these wells are located at the site but neither is in operation nor do they have permitted diversion rights. The groundwater level in the area is between 200 – 350 feet and the only permitted diversion well (stock water) has a permitted withdrawal of 3 acre feet per year which for the purposes of this HP assessment is considered de minimis.

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by:		
Signed: 	Date: <u>10/11/12</u>	
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No		
If no, see attached reasons.		
Signed: _____	Date: _____	

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.125 0.25 Miles

Legend

-  OSE Well Locations
-  Hydrology Protocol Waypoints
-  Outfall Location
-  Proposed Ephemeral Segment
-  NHD Base Stream Channel



Site: Resurrection Mining Co.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/12/11</u>	Stream Name: <u>Cañon de Piojo</u>	Latitude: <u>35.27973964</u>
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Mining, Energy and Tech.</u>	Longitude: <u>-107.19627048</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-93</u>	Drought Index (12-mo. SPI Value): <u>-1.59 to -1.30 NOAA</u>
WEATHER CONDITIONS	NOW: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>85</u> %cloud cover ___ clear/sunny	PAST 48 HOURS: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover ___ clear/sunny <u>unknown, seems dry</u>
	Has there been a heavy rain in the last 48 hours? ___ YES <u>X</u> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <u>X</u> YES ___ NO Diversions ___ YES <u>X</u> NO Discharges ___ YES <u>X</u> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	<u>0</u>
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	<u>0</u>
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	<u>0</u>
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	<u>0</u>
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	<u>1</u>	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	<u>1</u>	0
SUBTOTAL (#1.1 – #1.6)				<u>2</u>

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Mining, Energy & Tech 18	upstream	
19	downstream	} WP-93
20	downstream	

NOTES:

Dominant vegetation: salt cedar, grasses, Juniper

WP-93 is just upstream of road crossing.

Road crossing and cattle are the only modifications observed.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/12/11</u>	Stream Name: <u>Cañon del Piojo</u>	Latitude: <u>35.28702813</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Mining, Energy and Tech</u>	Longitude: <u>-107.19336637</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-92</u>	Drought Index (12-mo. SPI Value): <u>-1.59 to -1.30 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input type="checkbox"/> clear/sunny <u>unknown, seems dry</u>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

Mining Energy Canon del Piojo Photos



Mining Energy- 14



Mining Energy-15



Mining Energy-16



Mining Energy-17



Mining Energy-18



Mining Energy-19



Mining Energy-20

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed tributary to Canon del Piojo	Middle Rio Grande	13020204
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unnamed tributary to Canon del Piojo from outfall 001 to Canon del Piojo.	35.2647/-107.1994	35.2742/-107.1997
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Resurrection Mining

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.2656/-107.2043	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-85/WP-86, upstream assessment location
Location 2 (lat/long): 35.2742/-107.1997	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-87/WP-88, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.59 to -1.30 (June 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	A rancher's pond exists on a tributary to the assessed arroyo, but not within the assessed reach.
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	No permitted diversions at site. See additional comments for details.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Facility outfall discharge to receiving stream only in response to precipitation events. Last discharge, 1980.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Upstream and downstream sections of the channel with regards to roads and discharge point have similar HP scores.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
<p>The New Mexico Office of State Engineer's well records indicate that there are five recorded wells in the greater area (radius 1.5 miles) of the assessment reach. Two of these wells are located at the site but neither is in operation nor are they permitted for diversion. The groundwater level in the area is between 200 – 350 feet and the only permitted diversion well (stock water) has a permitted withdrawal of 3 acre feet per year which for the purposes of this HP assessment is considered de minimis.</p> <p>WPs 85/86 were initially part of the assessed unnamed arroyo reach but were later excluded from the proposed segment because any potential outfall discharge would not flow through this section of the HP assessment. The field sheets for the assessed unnamed arroyo to Canon del Piojo include the portion of the reach that would receive potential outfall discharge down to WP 87/88.</p>

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by:	
Signed: <u><i>[Signature]</i></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If no, see attached reasons.</i>	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.125 0.25 Miles

Legend

-  OSE Well Locations
-  Hydrology Protocol Waypoints
-  Outfall Location
-  Proposed Ephemeral Segment
-  NHD Base Stream Channel



Site: Resurrection Mining Co.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/12/11</u>	Stream Name: <u>Unnamed Trib</u>	Latitude: <u>35.26563629</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Mining, Energy and Tech</u>	Longitude: <u>-107.20431813</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-85/WP-86</u>	Drought Index (12-mo. SPI Value): <u>-1.59 to -1.30</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 50% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input type="checkbox"/> clear/sunny <u>UNKNOWN - seems dry</u>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Mining, Energy + Tech 1	upstream	WP-86
2	downstream	

NOTES:

Veg: grasses, yucca, juniper, cholla in adj uplands
 Rabbit brush, grasses consistent within arroyo
 - adjacent uplands > bank and channel

Rancher pond upstream of WP-85, some roads

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 7/12/11	Stream Name: Unnamed Trib	Latitude: 35.27435103	
Evaluator(s): EB, HP	Site ID: Mining, Energy, and Tech	Longitude: -107.19972270	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: WP-87/WP-88	Drought Index (12-mo. SPI Value): -1.59 to -1.30 NoAA	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 25% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input type="checkbox"/> clear/sunny unknown - soils dry	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. <input checked="" type="checkbox"/> 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg. <input checked="" type="checkbox"/> 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Mining, Energy + Tech 4	upstream	WP-88
5	downstream	
6	@ confluence w/cañon del Piojo	WP-87
12	upstream @ confluence w/cañon del Piojo	
13	downstream @ confluence w/cañon del Piojo	

NOTES:

* Comp + density differences: little vegetation in channel, but terraces support upland species and plants within stream are upland.

- Veg = salt brush, snakeweed, rabbit brush, nightshade, grasses

Mining Energy Unnamed Tributary Photos



Mining Energy-1



Mining Energy-2



Mining Energy-4



Mining Energy-5



Mining Energy-6



Mining Energy-12

Mining Energy Unnamed Tributary Photos



Mining Energy-13

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed tributary to Arroyo Hondo	Upper Rio Grande	13020201
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unclassified ephemeral arroyo, Oshara Village outfall to confluence with Arroyo Hondo	35.6010/-105.9997	35.6100/-106.0055
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Oshara Village

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.6097/-106.0013	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-7, upstream assessment
Location 2 (lat/long): 35.6100/-106.0055	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-9, downstream assessment
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

If yes for any of above, please explain why these conditions do not impact the UAA conclusion that *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:*

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	culvert just downstream from outfall
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	No pumping at site but pumping does occur within the greater area. See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Short duration batch discharges daily during winter months.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Channel returns to natural conditions after culvert. Upstream and downstream sections of the channel with regards to existing discharge have similar HP characteristics and scores.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

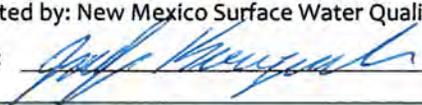
Additional Comments:
There are no permitted well at the site but according to OSE well records there are approximately 15 domestic wells within a 1.5 mile radius of the assessed reach. These wells have diversion right between 1 and 3 AF/yr and are considered de minimis with regards to the HP assessment. According to the OSE records, the local groundwater level is 350 feet. There is no direct evidence that these wells impact the UAA conclusion.

ATTACHMENTS:

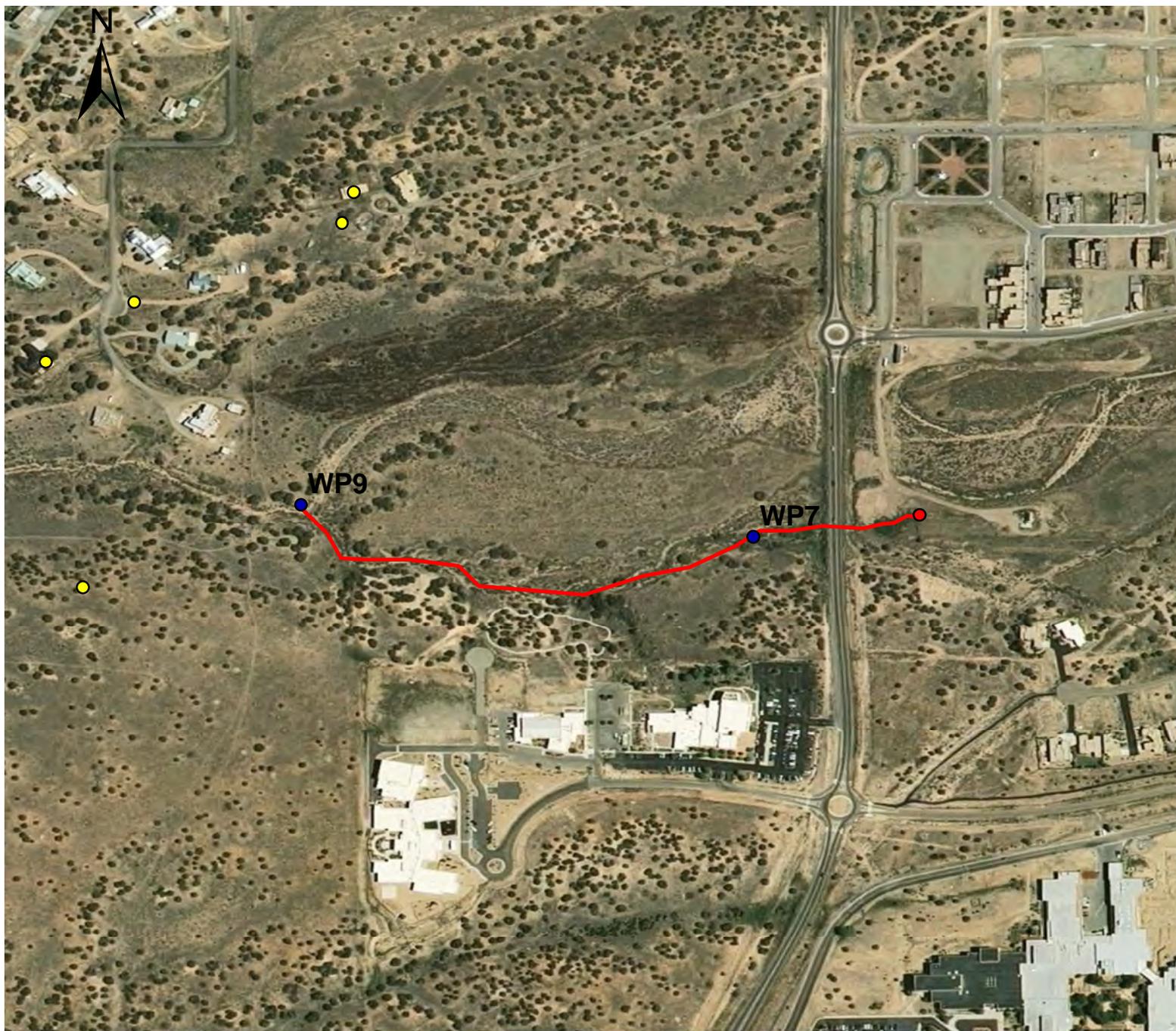
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.045 0.09 0.18 Miles

Legend

- Hydrology Protocol Waypoints
- OSE Well Locations
- Outfall Location
- Proposed Ephemeral Segment



Site: Oshara Village Water Reclamation

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>Unnamed trib to Arroyo Honda</u>	Latitude: <u>35.60978657</u>
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>Oshara</u>	Longitude: <u>-106.00131224</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-7</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Oshara JAA 5	looking NE	
6	looking downstream	(typical bank level)
7	looking downstream	
8	looking upstream	
9	left bank	
10	right bank	

NOTES:

Dominant veg: Rabbit bush, blue grama. and some juniper

modifications: roads.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>Arroyo Honda ^{near} trib</u>	Latitude: <u>35.61009183</u>	
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>Oshara</u>	Longitude: <u>-106.00559700</u>	
TOTAL POINTS: <u>2</u> <small>Stream is at least intermittent if ≥ 12</small>	Assessment Unit: <u>WP-9</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event.
	OTHER:		
	Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section		

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2
If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.				

NMED Surface Water Quality Bureau - LEVEL 1 Hydrology Determination Field Sheet

Date: 10-31-11	Stream Name: unnamed arroyo	Latitude: 35.6096
Evaluator(s): SL, JK	Site ID: Oshara WWTP, (QC)	Longitude: 106.0022
TOTAL POINTS: <i>Streams with least water millenial = 18</i>	Assessment Unit: <i>upstream</i> <i>blw Richards Section</i>	Drought Index (12-mo. SPI Value): -1.25 to -1.99
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30% cloud cover <input checked="" type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30% cloud cover <input checked="" type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach - riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg. 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 - #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 10-31-11	Stream Name: unnamed arroyo	Latitude: 35.6093
Evaluator(s): SL, JK	Site ID: ^{blw} Oshara WWTP, (QC)	Longitude: 106.0034
TOTAL POINTS <small>(Stream with least intermittent = 12)</small>	Assessment Unit: ^{Downstream} lower part abv section	Drought Index (12-mo. SPI Value): -1.25 to -1.99
WEATHER CONDITIONS	NOW:	Has there been a heavy rain in the last 48 hours? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
	PAST 48 HOURS:	**Field evaluations should be performed at least 48 hours after the last known major rainfall event.
	Arroyo Hondo	OTHER: Stream Modifications <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Diversions <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Discharges <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Oshara Village
	___ storm (heavy rain) ___ rain (steady rain) ___ showers (Intermittent) 30 %cloud cover <input checked="" type="checkbox"/> clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (Intermittent) 30 %cloud cover <input checked="" type="checkbox"/> clear/sunny
		**Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				0

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

Oshara Village Photos



Oshara-5



Oshara-6



Oshara-7



Oshara-8



Oshara-9



Oshara-10

Oshara Village Photos



Oshara-14



Oshara-15



Oshara-16

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:		Basin:	8-digit HUC:
Unnamed tributary to San Pedro Creek		Upper Rio Grande	13020201
Reach Description:		Upstream lat/long:	Downstream lat/long:
Unclassified ephemeral arroyo, PAA-KO Outfall 001 to San Pedro Creek		35.2059/-106.3201	35.2089/-106.3084
Current WQS			Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC			PAAKO

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.2059/-106.3201	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-17, upstream assessment location
Location 2 (lat/long): 35.2058/-106.3172	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-19, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < -1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	No pumping at site, but pumping does occur within the greater area. See additional comments.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Facility is a WWTP with 0.1 MGD design flow. Discharge is to golf course irrigation pond and then receiving stream. No discharge to the receiving reach has been documented to date.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
<p>If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Discharge from pond, has not been documented and upstream and downstream section of the receiving reach have similar HP characteristics.</p>		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<p>If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:</p>		

Additional Comments:
<p>According to the New Mexico Office of State Engineer's (OSE) well data, all of the permitted wells in the area are greater than 1.0 mile away from the assessed reach and the vast majority are domestic wells. Permitted withdrawal for these domestic wells range between 1 and 3 acre feet (AF) per year which for the purposes of this HP are considered de minimis withdrawals. There is one permitted well with a 1408 AF/yr diversion right which lies 2.0 miles to the south of the assessed reach. According to OSE records this well is one of nine wells use to populate and satisfy the total diversion right of 1408 AF/yr. The average depth to water in the area is between is 120 – 250 feet and there is no direct evidence that these wells impact the UAA conclusion.</p>

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau

Signed: *[Signature]*

Date: 10/11/12

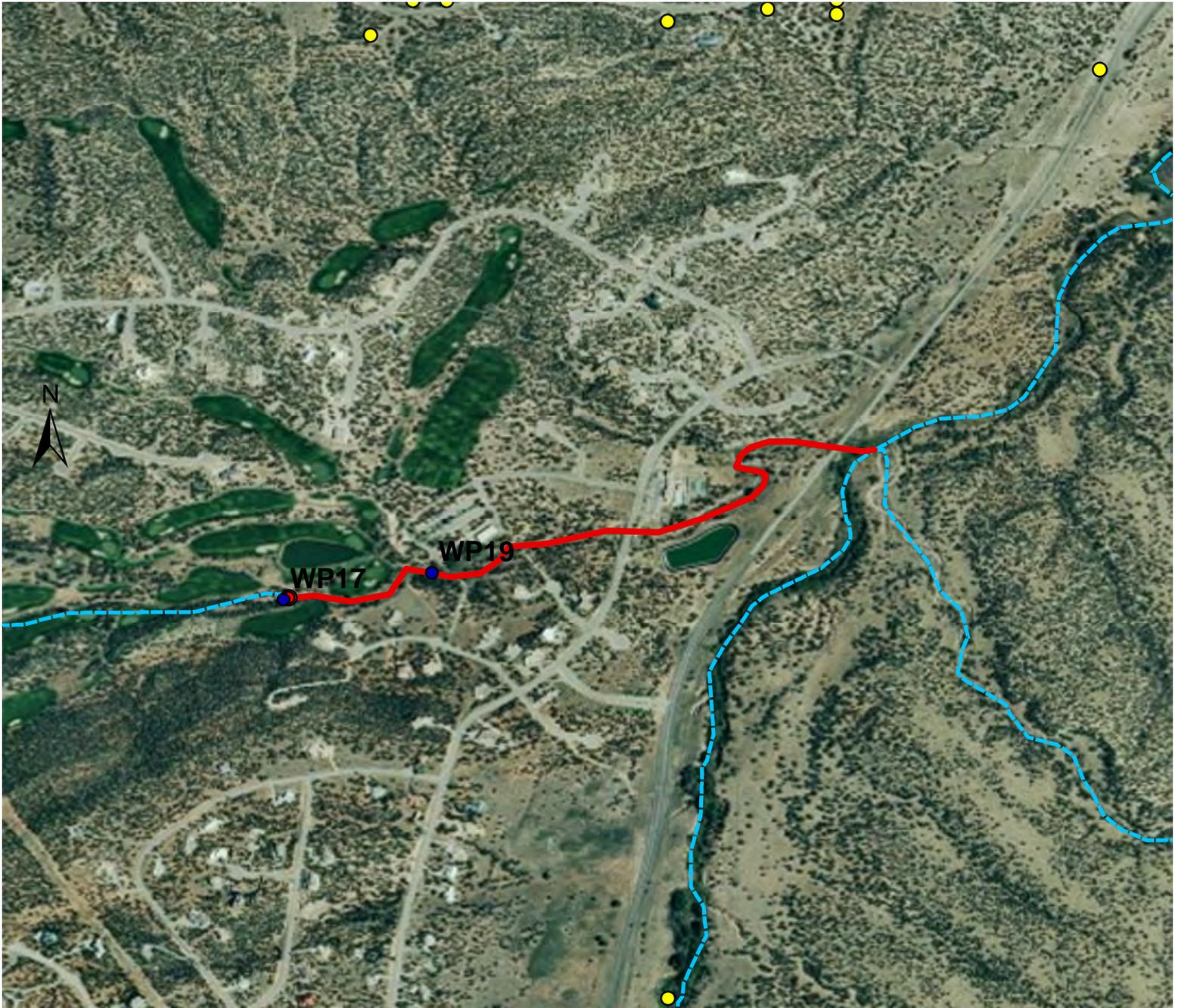
EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.125 0.25 Miles

Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment
- - - NHD Base Stream Channel



Site: Paa-Ko Community Sewer Association

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>unnamed arroyo feeding San Pedro creek</u>	Latitude: <u>35,20593710</u>
Evaluator(s):	Site ID: <u>PAALO</u>	Longitude: <u>-106.32010120</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-17</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8</u> NOAA
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Diversions <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Discharges <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2
If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.				

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
PAARLO JAA 42	looking downstream	WP-17
43	looking upstream	

NOTES:

Dominant plant in channel: Galleta grass, cheat grass

Plants along banks: Juniper, piñon pine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/22/11</u>	Stream Name: <u>Unnamed arroyo feeding San Pedro creek</u>	Latitude: <u>35.20580460</u>
Evaluator(s): <u>EB, HP, MK</u>	Site ID: <u>PAAKO</u>	Longitude: <u>-106.31726000</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-19</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
PAAL0 JAA 47	looking downstream	WP-19
48	looking upstream	

NOTES:

Dominant Plants: Rabbit bush, one seed juniper, piñon pine, galleta grass

Note: In the channel there is mostly grass, while trees are mainly on the banks. There are 1 cottonwood and 2 russian olives in the channel. They are very established and do not indicate currently wet conditions.

Paa-Ko UAA Photos



Paa-Ko-42



Paa-Ko-43



Paa-Ko-47



Paa-Ko-48

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Arroyo del Puerto	Middle Rio Grande	13020207
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. Mine entrance road to San Mateo Creek	35.4110/-107.8371	35.3390/-107.7945
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Rio Algom

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos, topo maps
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation.

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.4110/-107.8371	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-40, Upstream assessment location.
Location 2 (lat/long): 35.3768/-107.8073	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-41, Near Outfall.
Location 3 (lat/long): 35.3390/-107.7945	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-41, Downstream assessment location.
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

If yes for any of above, please explain why these conditions do not impact the UAA conclusion that *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:*

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Road, channelized in mining areas.
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	No pumping at site but pumping does occur within the greater area. See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Storm runoff only. Receiving stream flows only in response to precipitation events.

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact Mining
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road have similar HP characteristics and score.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
According to the New Mexico Office of State Engineer's recorded permitted well data, there are three wells associated with permit # B00994 that are within 1.1 miles of the assessed reach. This permit has a total diversion right of 5227 acre feet (AF) per year which is divided between 7 points of diversion, three of which are relatively near (less than 0.24 miles) the assessed reach. Current usage from these wells is not available. There are approximately three domestic wells (3 AF/yr) that are within 2 miles. Average depth to water is between 80 - 190 feet and there is no direct evidence that these wells impact the UAA conclusion.

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u>[Signature]</u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.45 0.9 Miles

Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment



Site: Rio Algom Mining, Ambrosia Lake Mine

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Arroyo del Puerto</u>	Latitude: <u>35.41107136</u>
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Rio Algom / Ambrosia Lake</u>	Longitude: <u>-107.83712295</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-40</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input checked="" type="checkbox"/> clear/sunny <i>varied</i>

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Ambrosia 1	upstream	WP-40
2	downstream	

NOTES:

Veg = salt bush, rabbit bush, upland grasses

Note: upstream of WP-40 appears to be a low area that may collect water based on russian olive, salt cedar + willow.

This area upstream of WP-40 is dramatically different from WP-40 and should not be included in the assessment area.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Arroyo del Puerto</u>	Latitude: <u>35.37687272</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Rio Alagon / Ambrosia Lake</u>	Longitude: <u>-107.80733645</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> <u>2</u>	Assessment Unit: <u>WP-41</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30 %cloud cover <input checked="" type="checkbox"/> clear/sunny <u>varied</u>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges <input checked="" type="checkbox"/> YES ___ NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Arroyo del Puerto</u>	Latitude: <u>35.33907290</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Rio Algon / Ambrosia Lake</u>	Longitude: <u>-107.79450378</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i> 2	Assessment Unit: <u>WP-42</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30% cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 30% cloud cover <input checked="" type="checkbox"/> clear/sunny <i>varied</i>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges <input checked="" type="checkbox"/> YES ___ NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Ambrasia 5	upstream	WP-42 just upstream from confluence with San Mateo creek.
6	downstream	

NOTES:

veg in channel = snake weed, mexican hat flower,
salt bush, grasses.

modifications: highway,
storm water discharges only.
(last flow 2007)

Rio Algom Ambrosia Lake Mine Photos



Rio Algom-1



Rio Algom-2



Rio Algom-3



Rio Algom-4



Rio Algom-5



Rio Algom-6

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed tributary to San Mateo Creek	Middle Rio Grande	13020207
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. Strathmore outfall 001 to confluence with San Mateo Creek.	35.3609/-107.6817	35.3440/-107.6771
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Strathmore

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos. topos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.3609/-107.6817	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-34, Upstream assessment location
Location 2 (lat/long): 35.3488/-107.6744	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-35, Downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	A road between WP-34 and WP-35

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	No discharge to date. Discharge would only occur when facility cannot land apply.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
<p>If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road and discharge point have similar HP characteristics and scores and don't appear to alter the UAA conclusion.</p>		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<p>If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:</p>		

Additional Comments:
<p>There are six recorded wells within 1.0 mile of the assessed reach. Three of these wells are associated with the permit facility under New Mexico Office of State Engineer permit # B01706 but these wells are not currently permitted for diversion. The recorded depth to water is 842 feet. Two permitted wells have diversion rights of 3 acre feet (AF) per year which are considered de minimis for the purposes of this HP assessment. The last well is an irrigation well which is located downstream of the assessed reach. There is no direct evidence that these wells impact the UAA conclusion.</p>

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau

Signed: _____

Date: _____

EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

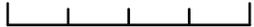
Signed: _____

Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.125 0.25 Miles



Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment
- - - NHD Base Stream Channel



Site: Strathmore Roca Honda Monitoring Wells

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Unnamed Trib 1</u> <small>(near SI)</small>	Latitude: <u>35,3695105</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Strathmore</u>	Longitude: <u>-107,68174248</u>	
TOTAL POINTS: <small>Stream is at least intermittent if ≥ 12</small>	Assessment Unit: <u>WP-34</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8</u> NOAA	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <u>25</u> %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <u>30</u> %cloud cover <input checked="" type="checkbox"/> clear/sunny <i>varied</i>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. *1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Unnamed Trib 2 (near Well 51)</u>	Latitude: <u>35.34888120</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Strathmore</u>	Longitude: <u>-107.67442599</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-35</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>30</u> %cloud cover ___ clear/sunny	PAST 48 HOURS: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>30</u> %cloud cover <u>X</u> clear/sunny <i>*varied</i>	Has there been a heavy rain in the last 48 hours? ___ YES ___ NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event.
			OTHER: Stream Modifications ___ YES <u>X</u> NO Diversions ___ YES <u>X</u> NO Discharges ___ YES <u>X</u> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				0

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

Strathmore San Mateo Photos



Strathmore-1



Strathmore-2



Strathmore-3



Strathmore-4



Strathmore-5

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed arroyo	Pecos	13060011
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unnamed tributary arroyo to Hart Canyon from Southern Union Road to Hart Canyon.	32.8263/-104.2398	32.8357/-104.2500
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		SW Public Service

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 32.8263/-104.2398	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-81, upstream assessment location
Location 2 (lat/long): 32.8357/-104.2500	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-82, downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-0.79 to -0.51 (June 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Roads

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Groundwater pumping	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	No pumping at site, but pumping occurs within 1.5 miles. See additional comments
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Discharges episodically, generally in the summer, when plant is in operation. The discharge is ~15gpm when in operation but typically soaks into the ground before reaching the receiving stream.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	<i>Please explain hydrologic impact</i> Cattle grazing impacts on channel morphology, channel widening and localized depressions created by concentrated use.
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Upstream and downstream sections of the channel have similar HP scores and there is no apparent effect on the ephemeral nature of channel regarding grazing use.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
Water discharged from the Southwest Public Service outfall does not enter a defined channel which would drain to the assessed arroyo. The local topographic slope dictates that if a discharge were of sufficient volume, it would ultimately drain to the assessed arroyo. Local groundwater pumping does not appear to affect this reach. NM Office of State (OSE) well records indicate that there are only two wells with permitted withdrawals of 1 and 3 acre feet per year within 1.5 miles of assessed reach. The average depth to water in the area is between is 40 - 50 feet and there is no direct evidence that these wells impact the UAA conclusion. For the purposes of this HP assessment these withdrawal are considered de minimis.

ATTACHMENTS:

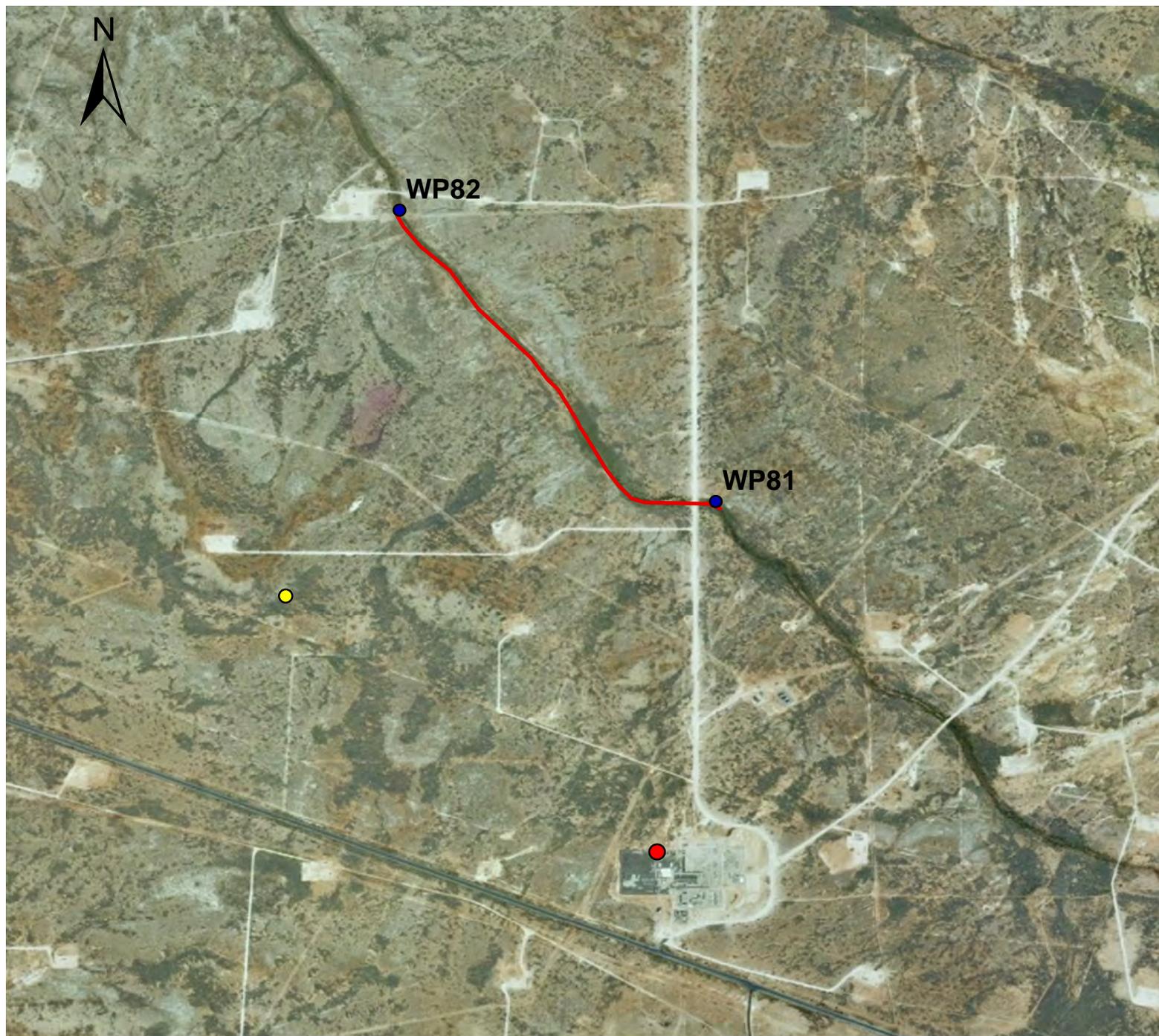
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau	
Signed: <u><i>[Signature]</i></u>	Date: <u>10/11/12</u>
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If no, see attached reasons.</i>	
Signed: _____	Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.125 0.25 0.5 Miles

Legend

- Hydrology Protocol Waypoints
- OSE Well Locations
- Outfall Location
- Proposed Ephemeral Segment



Site: Southwestern Public Services Co.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/6/11</u>	Stream Name: <u>Unnamed Arroyo</u>	Latitude: <u>32.82636833</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>SW Public Service</u>	Longitude: <u>-104.23983308</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-81</u>	Drought Index (12-mo. SPI Value): <u>-0.79 to -0.51</u>
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> 10 %cloud cover <input type="checkbox"/> clear/sunny

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg.	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be **EPHEMERAL**.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be **PERENNIAL**.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
SW Public Service 6	downstream	WP-81
7	upstream	
8	upstream	

NOTES:

Dominant species in channel: Panicum grass, black grama, galleta grass

Dominant species outside channel: galleta grass, mesquite

WP-81 is near a spring. Spring is currently dry but maybe a source of some water. No evidence that outfall reaches this arroyo.

Channel is split by road, both sides of road have been heavily modified by cattle. Cattle have trampled down pools and widened channel.

Standing water sometimes occurs in pools, based on cracked soil and thick green grass present @ some of the pool sites.

All are currently dry. Seems that storm water may collect in these areas

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>7/6/11</u>	Stream Name: <u>Unnamed arroyo</u>	Latitude: <u>32.83574479</u>
Evaluator(s): <u>EB, MK</u>	Site ID: <u>SW Public Service</u>	Longitude: <u>-104.25001029</u>
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-82</u>	Drought Index (12-mo. SPI Value): <u>-0.79 to -0.51</u>
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> %cloud cover <input type="checkbox"/> clear/sunny
	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event. OTHER: Stream Modifications <input checked="" type="checkbox"/> YES ___ NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section	

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs.	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow.	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc)	Dry channel. No evidence of base flows was found.
	6	4	2	0
1.2. Fish	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Fish are not present.
	3	2	1	0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Macroinvertebrates are not present.
	3	2	1	0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach.	Found with little difficulty but not consistently throughout the reach.	Takes 10 or more minutes of extensive searching to find.	Filamentous algae and/or periphyton are not present.
	3	2	1	0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach.	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach.	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two.	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands.
	3	2	1	0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg.	There are a few rooted upland plants present within the streambed/thalweg.	Rooted upland plants are consistently dispersed throughout the streambed/thalweg	Rooted upland plants are prevalent within the streambed/thalweg.
	3	2	1	0
SUBTOTAL (#1.1 – #1.6)				7

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
SW Public Service 9	upstream	WP-82
10	downstream	

NOTES:

vegetation in channel: Blue grama, mesquite

veg outside channel: black grama, gypsum ring stem
machacaerantha

channel is extremely wide and much evidence
of cattle.

Southwest Public Service UAA Photos



SW Public Services-6



SW Public Services-7



SW Public Services-8



SW Public Services-9



SW Public Services-10

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
Unnamed tributary to San Mateo Creek	Middle Rio Grande	13020207
Reach Description:	Upstream lat/long:	Downstream lat/long:
Unlined, unclassified, ephemeral arroyo. Strathmore outfall 001 to confluence with San Mateo Creek.	35.3609/-107.6817	35.3440/-107.6771
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		Strathmore

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	(ex. aerial photos, "ground truthing", Google™ Earth, etc.) ground truthing, aerial photos. topos
Reasoning:	Why is the stream homogeneous? similar geology, sinuosity and vegetation

Hydrology Protocol Results		Notes
Location 1 (lat/long): 35.3609/-107.6817	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-34, Upstream assessment location
Location 2 (lat/long): 35.3488/-107.6744	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	WP-35, Downstream assessment location
Location 3 (lat/long):	<input type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	A road between WP-34 and WP-35

¹ This form is designed for the UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	See additional comments.
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	No discharge to date. Discharge would only occur when facility cannot land apply.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>
<p>If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime: Sections of channel above and below the road and discharge point have similar HP characteristics and scores and don't appear to alter the UAA conclusion.</p>		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<p>If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:</p>		

Additional Comments:
<p>There are six recorded wells within 1.0 mile of the assessed reach. Three of these wells are associated with the permit facility under New Mexico Office of State Engineer permit # B01706 but these wells are not currently permitted for diversion. The recorded depth to water is 842 feet. Two permitted wells have diversion rights of 3 acre feet (AF) per year which are considered de minimis for the purposes of this HP assessment. The last well is an irrigation well which is located downstream of the assessed reach. There is no direct evidence that these wells impact the UAA conclusion.</p>

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (optional)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: New Mexico Surface Water Quality Bureau

Signed: *[Signature]*

Date: 10/11/12

EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

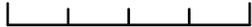
Signed: _____

Date: _____

New Mexico Environment Department Surface Water Quality Bureau Use Attainability Analysis



0 0.125 0.25 Miles



Legend

- OSE Well Locations
- Hydrology Protocol Waypoints
- Outfall Location
- Proposed Ephemeral Segment
- - - NHD Base Stream Channel



Site: Strathmore Roca Honda Monitoring Wells

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Unnamed Trib 1</u> <small>(near SI)</small>	Latitude: <u>35,3695105</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Strathmore</u>	Longitude: <u>-107,68174248</u>	
TOTAL POINTS: <small>Stream is at least intermittent if ≥ 12</small>	Assessment Unit: <u>WP-34</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8</u> NOAA	
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <u>25</u> %cloud cover <input type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <u>30</u> %cloud cover <input checked="" type="checkbox"/> clear/sunny <i>varied</i>	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. * 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: <u>6/28/11</u>	Stream Name: <u>Unnamed Trib 2 (near Well 51)</u>	Latitude: <u>35.34888120</u>	
Evaluator(s): <u>EB, HP</u>	Site ID: <u>Strathmore</u>	Longitude: <u>-107.67442599</u>	
TOTAL POINTS: <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: <u>WP-35</u>	Drought Index (12-mo. SPI Value): <u>-1.29 to -0.8 NOAA</u>	
WEATHER CONDITIONS	NOW: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>30</u> %cloud cover ___ clear/sunny	PAST 48 HOURS: ___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) <u>30</u> %cloud cover <u>X</u> clear/sunny <i>*varied</i>	Has there been a heavy rain in the last 48 hours? ___ YES ___ NO **Field evaluations should be performed <u>at least</u> 48 hours after the last known major rainfall event.
			OTHER: Stream Modifications ___ YES <u>X</u> NO Diversions ___ YES <u>X</u> NO Discharges ___ YES <u>X</u> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				0

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Photo Descriptions and NOTES

Photo #	Description (US, DS, LB, RB, etc.)	Notes
Strathmore 3	Upstream	WP-35
4	Downstream	
5	Downstream	

NOTES:

veg: blue grama grass is prevalent and dense with in streambed.

Strathmore San Mateo Photos



Strathmore-1



Strathmore-2



Strathmore-3



Strathmore-4



Strathmore-5