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

New Mexico Environment Department
June 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.

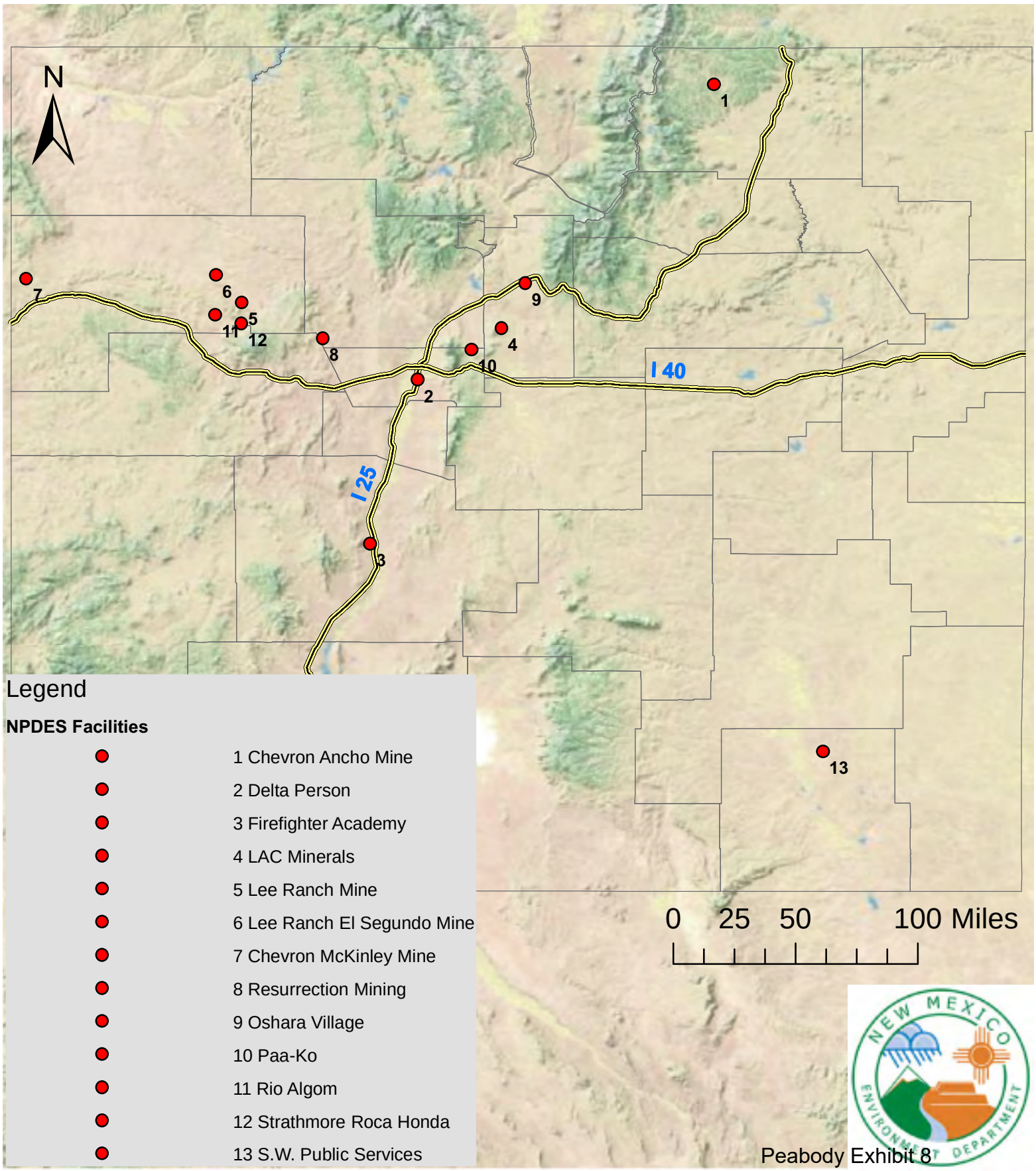
Background and Objectives

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 Faciility Locations



Peabody Exhibit 8

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.

	Upstream		Downstream		Total Length	Facility
Watercourse Description	**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 Latitude	Upstream Longitude	Downstream Latitude	Downstream Longitude	Total Length (mi)	Facility Name
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

Addendum to the *Use Attainability Analysis for Unclassified Non-Perennial Watercourses with NPDES Permitted Facilities, June 2012*

EPA Technical Approval – January 30, 2013

As described in the June 2012 use attainability analysis (UAA) report, the ***Hydrology Protocol* (HP)** is a technical document that was developed to distinguish between ephemeral, intermittent and perennial streams and rivers in New Mexico. It also generates documentation of the uses supported by those waters as a result of the flow regime. Amendments to the state's water quality standards during the 2005 and 2009 triennial revisions, and subsequent approvals by the state's Water Quality Control Commission (WQCC) and EPA allow the use of the Surface Water Quality Bureau's (SWQB) HP to support the revisions of standards for ephemeral waters. This protocol can be used to provide technical support for a UAA, to determine the hydrology of unclassified waters, or to identify unclassified waters within an otherwise classified segment. The process for implementation of the HP was approved as an appendix to the SWQB's **Water Quality Management Plan/Continuing Planning Process (WQMP/CPP)** document by the WQCC on May 10, 2011, and by EPA on December 23, 2011.

The SWQB utilized the HP in accordance with Subsection C of 20.6.4.15 NMAC to evaluate and complete UAAs for 18 unclassified, non-perennial waters associated with 13 NPDES permitted facilities located[1] throughout New Mexico. The 18 unclassified, non-perennial waters include:

Bracket Canyon
Tributary to Bracket Canyon
Gachupin Canyon
Unnamed Arroyo (at Delta Person)
Unnamed Arroyo (at Firefighters Academy)
Cunningham Gulch
Mulatto Canyon Arroyo
Inditos Draw
Unnamed Tributary to Kim-me-ni-oli Wash
Defiance Draw
Unnamed Tributary to Defiance Draw
Canon del Piojo
Unnamed Tributary to Canon del Piojo
Unnamed Tributary to Arroyo Hondo
Unnamed Tributary to San Pedro Creek
Arroyo del Puerto
Unnamed Tributary to San Mateo Creek
Unnamed Arroyo (at SW Public Services)

The results support a finding that the streams are ephemeral and that the appropriate water quality standards designation for these streams is under Section 20.6.4.97 NMAC. The UAAs for these streams were submitted to EPA Region 6 for informal review and found to meet technical requirements. In accordance with the regulations (Subsection C of 20.6.4.15 NMAC) and the WQMP/CPP procedures, the draft UAAs were posted on the SWQB's water quality standards website for a 30-day public comment period ending on August 27, 2012. Responses

[1] See Table 1 of the UAA report for upstream and downstream locations, total stream length and NPDES permitted facility associated with each water body.

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream[1]

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:**
☒ Unclassified 20.6.4.98 or 99 NMAC ☐ 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	☒ eph ☐ int ☐ per	WP-25, upstream assessment location
Location 2 (lat/long): 35.5372/-107.5738	☒ eph ☐ int ☐ per	WP-23/WP-24, downstream assessment location
Location 3 (lat/long):	☐ eph ☐ int ☐ per	
☐ Additional location results attached.		

Hydroclimatic Conditions		**If "yes" please describe.**
Drought (SPI Value < - 1.5)	☐ yes ☒ no	-1.29 to -0.8 (May 2011, NOAA)
Recent Rainfall (within 48 hours)	☐ yes ☒ no	
Gauge data available?	☐ yes ☒ 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	☐ yes ☒ no	
Channelization/roads	☒ yes ☐ no	Roads and mining activity
Groundwater pumping	☒ yes ☐ 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	☐ yes ☒ no	
Existing point source discharge	☒ yes ☐ no	Discharges storm water to large retention pond, receiving stream flows only in response to precipitation events.
Planned point source discharge	☐ yes ☒ no	
Other modifications e.g., land use practices	☐ yes ☒ 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: 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.		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	☐ yes ☒ no	
Fish	☐ yes ☒ no	
Recreation (contact use)	☐ yes ☒ 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, permit # RG35275 is associated with the NPDES facility for which the assessed reach is the receiving waters. There are 12 currents 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.

ATTACHMENTS:

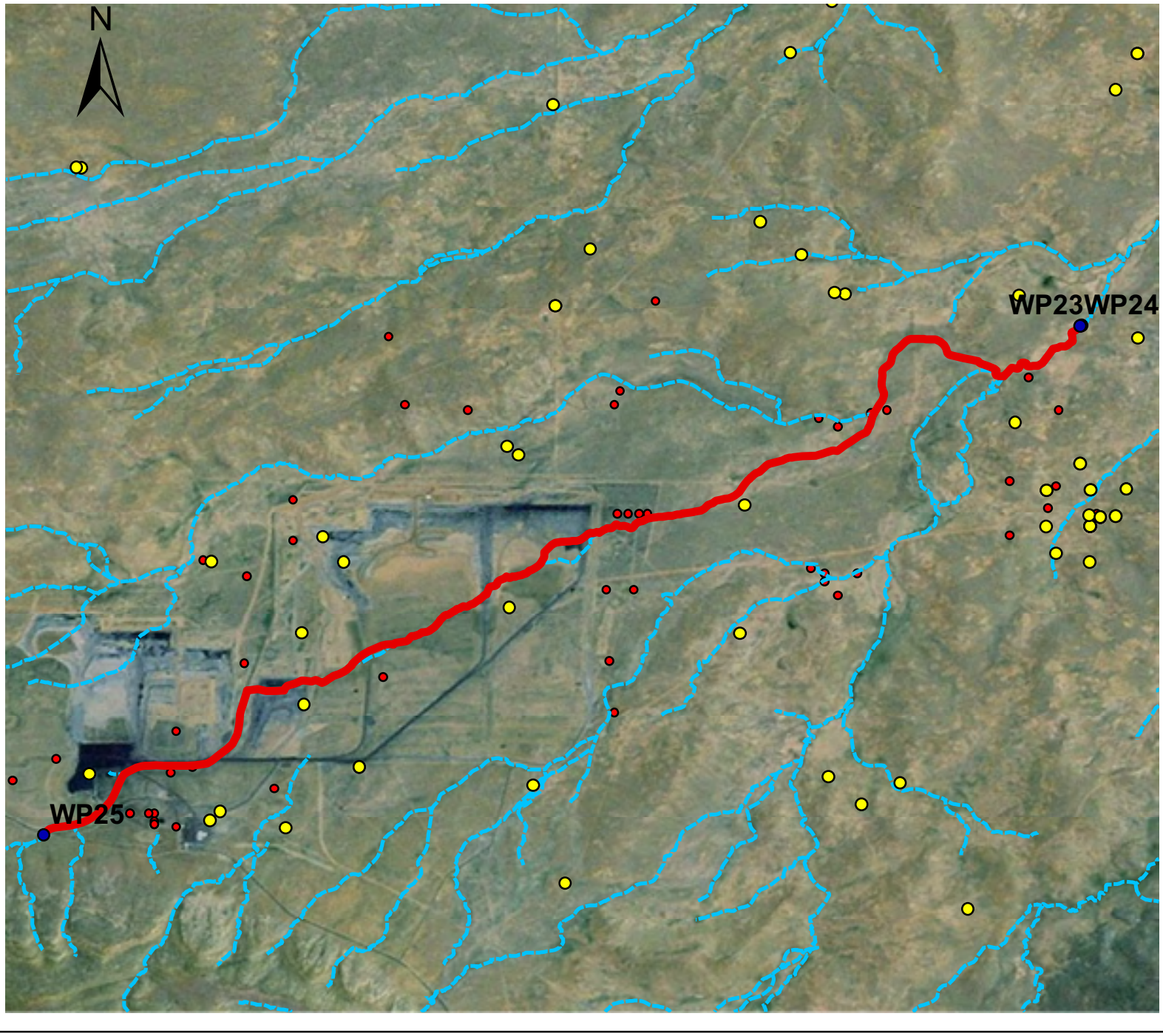
☒ Map and Photos (required)
☒ Hydrology Protocol Field Sheets for all locations (required)
☐ Level 2 Analysis (optional)
☐ Additional sites and/or documentation (optional)

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 0.5 1 2 Miles

Legend

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

Peabody Exhibit 8

Site: Lee Ranch Coal Co. (Mulatto Canyon)

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

Date: 6/27/11	Stream Name: Mulatto Canyon	Latitude: 35,48528103
Evaluator(s): EB, HP	Site ID: LEE Ranch	Longitude: -107.67962980
TOTAL POINTS: 2 *Stream is at least intermittent if ≥ 12*	Assessment Unit: WP-25	Drought Index (12-mo. SPI Value): -1.29 to -0.8 NOAA

WEATHER CONDITIONS	NOW:	PAST 48 HOURS:	Has there been a heavy rain in the last 48 hours?
	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover X clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover X clear/sunny	___ YES X NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event.

OTHER:
Stream Modifications X YES ___ NO
Diversions ___ YES X NO
Discharges ___ YES X 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 distict 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 1	Downstream	
2	Upstream	WP-25
3	"	
4	"	

NOTES:

Plants: Four wing salt bush, tumbleweed

Modifications: Roads and mining activity

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

Date: 6/27/11	Stream Name: Mulatto Canyon	Latitude: 35,53724107
Evaluator(s): EB, HP	Site ID: Lee Ranch	Longitude: -107,57379609
TOTAL POINTS: 2 *Stream is at least intermittent if ≥ 12*	Assessment Unit: WP-23 / WP-24	Drought Index (12-mo. SPI Value): -1.29 to 0.8 NOAA

	NOW:	PAST 48 HOURS:	Has there been a heavy rain in the last 48 hours?
WEATHER CONDITIONS	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) 40 %cloud cover ___ clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover X clear/sunny	___ YES X NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event.

OTHER:
Stream Modifications X YES ___ NO
Diversions ___ YES X NO
Discharges ___ YES X 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 distict 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 with in 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