



Appendix E

Level 1 Hydrology Protocol Results
for E Drainage

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
E1-Drainage	Mimbres	13030202
Reach Description:	Upstream lat/long:	Downstream lat/long:
See additional comments section	32.6991/-108.15656	32.6988/-108.15609
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		E1-16

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	Aerial photos, "ground truthing", drainage profiles, reconnaissance
Reasoning:	Why is the stream homogeneous? See report section 4.2.1

Hydrology Protocol Results		Notes
E1-16 (lat/long): 32.6991/-108.15656	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 0, see field form and photos for additional information
<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	
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 type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
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

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

Hydrologic and Other Modifications	If "yes" please describe.
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime:	

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:
A single assessment unit (E1-16) was identified within sub-watershed E1 (Figure E-1 below). As shown in the plan and profile plots presented below (Figure E-1) both the basin slope (approximately 1%) and degree of valley confinement is relatively constant along its entire length. The constant valley slope and complete lack of compositional or density differences between the stream banks and uplands (Photos E1-1 and E1-2) suggest that fluvial processes, including sediment sorting and channel construction, are extremely rare within sub-watershed E1 and that this drainage is appropriately classified as an ephemeral channel.

ATTACHMENTS:

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

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 expedited UAA process set forth in Subsection C of 20.6.4.15 NMAC.

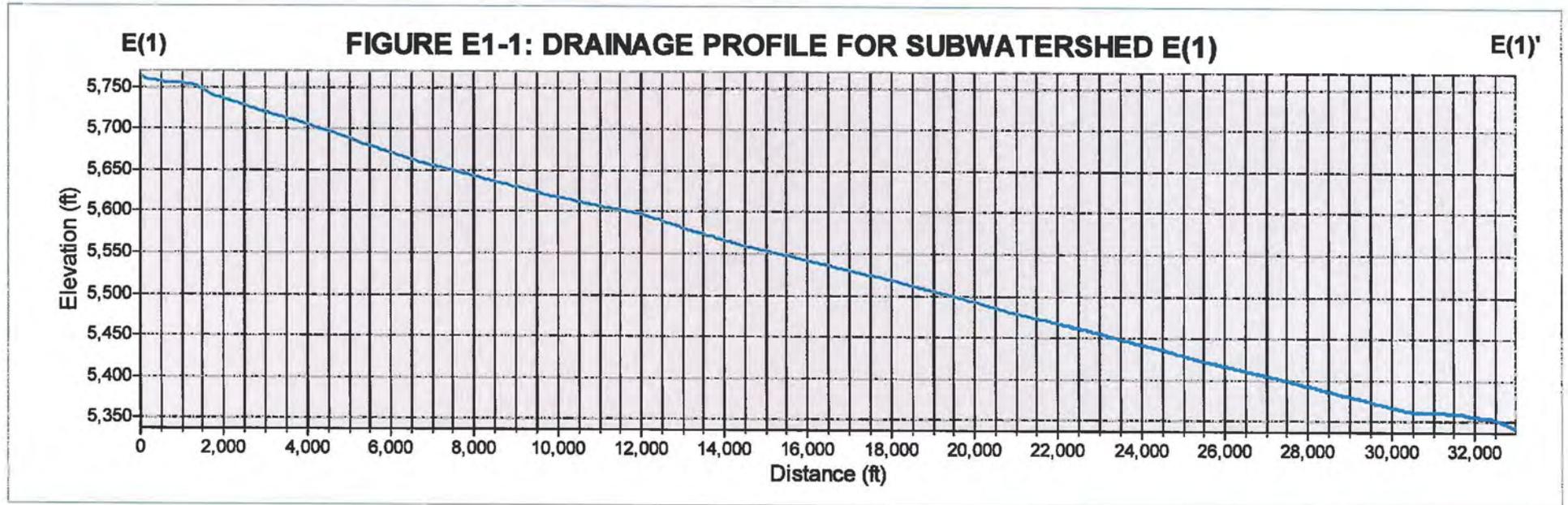
Submitted by:	
Signed: <u>Benny Foster</u>	Date: <u>10/31/2012</u>
Surface Water Quality Bureau concurs with recommendation. <input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, see attached reasons.	
Signed: _____	Date: _____

EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____



E1 Drainage Photographs (E1-16 Reach) – Total HP score of 0 (ephemeral stream)



E1-1: Photographic reference of representative channel bottom and vegetation characteristics.



E1-2: Photographic reference for indicators 1.1 through 1.6. Photograph of stream bed. Indicator 1.6 scored as 0 - vegetation in stream bed is prevalent and consistent with bank and upslope areas. No water or biotic indicators of water observed along survey reach.

E1 Drainage Photographs (E1-16 Reach) – Total HP score of 0 (ephemeral stream)



E1-3: Photographic reference for indicator 1.5. Photograph of the stream bank and upland areas. Indicator 1.5 scored as 0 - no vegetative compositional or density differences observed between the banks and the upland area.

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

Date: 6/13/2011	Stream Name: E1	Latitude: N 32.69910
Evaluator(s): Fulton/Barry	Site ID: E1-16	Longitude: W 108.15656
TOTAL POINTS: 0 <i>Stream is at least intermittent if ≥ 12</i>	Assessment Unit: E Drainage (E1-16)	Drought Index (12-mo. SPI Value): -1.1

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

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools <u>or</u> of riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				0
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 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 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				0

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perennality. <u>If the indicator is present</u> record score below and tally with previous score to compute TOTAL.				
1.13. Seeps and Springs	Seeps and springs are found within the study reach.		Seeps and springs are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.		Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)				0

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
E2-Drainage	Mimbres	13030202
Reach Description:	Upstream lat/long:	Downstream lat/long:
See additional comments section	32.69114/-108.14323	32.689800/-108.142860
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		E2-17

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	Aerial photos, "ground truthing", drainage profiles, reconnaissance
Reasoning:	Why is the stream homogeneous? See report section 4.2.1

Hydrology Protocol Results		Notes
E2-17 (lat/long): 32.69114/-108.14323	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 1, see field form and photos for additional information
<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	
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 type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
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>

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

Hydrologic and Other Modifications	If "yes" please describe.
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime:	

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:

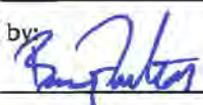
Similar to sub-watershed E1, a single assessment unit (E2-17) was identified within sub-watershed E2 (Figure E2-1). As shown in the plan and profile plots presented below (Figure E2-1) both the basin slope (approximately 1.5%) and degree of valley confinement is relatively constant along its entire length. Unlike sub-watersheds E1 and E3, a distinct channel bed can be observed within this assessment unit (Photo E2-1), however, no distinct compositional or density difference was observed between the stream bank and upland vegetation characteristics (Photos E2-1 and E2-2) and rooted vegetation was observed consistently within the channel bottom throughout this assessment unit (Photos E2-3 and E2-4). Based on the observed characteristics of this representative assessment unit, fluvial processes within sub-watershed E2 occur in direct response to rainfall events with enough frequency to have constructed a definable channel bottom and banks but without the necessary duration or magnitude to maintain or construct a complex stream channel free of rooted vegetation. Sub-watershed E2 is appropriately classified as an ephemeral channel.

ATTACHMENTS:

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

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 expedited UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by:		Date: <u>10/31/2012</u>
Signed: <u></u>		

Surface Water Quality Bureau concurs with recommendation. Yes No

If no, see attached reasons.

Signed: _____

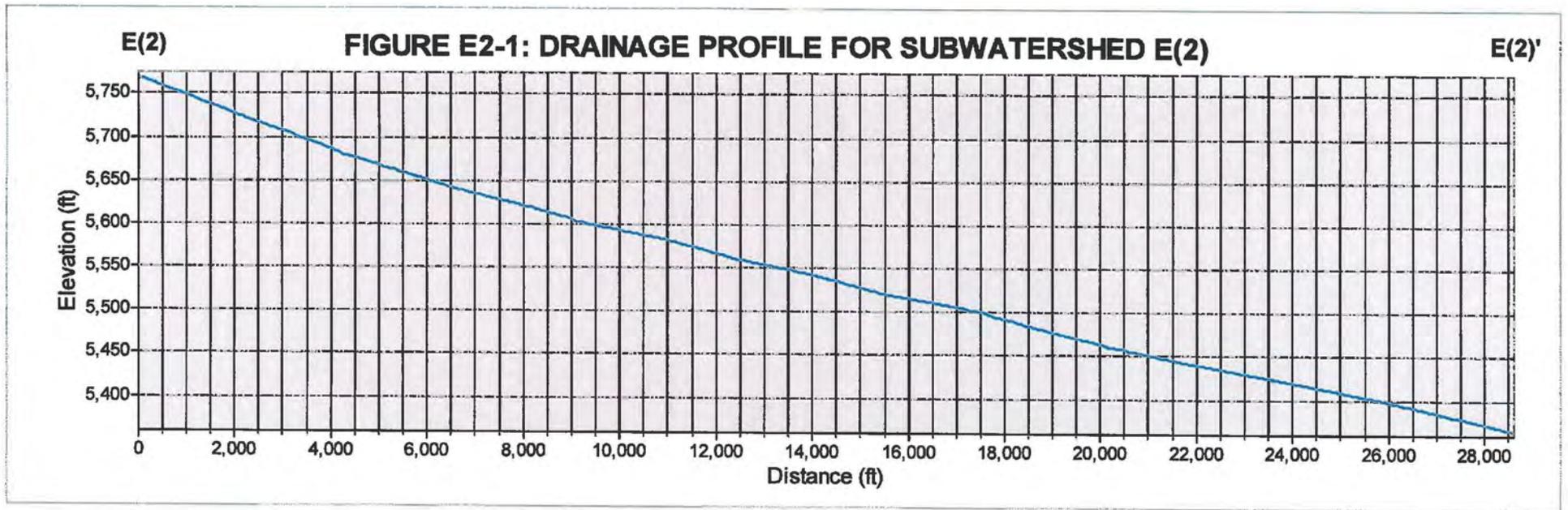
Date: _____

EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____



E2 Drainage Photographs (E2-17 Reach) – Total HP score of 1 (ephemeral stream)



E2-1: Photographic reference for indicator 1.1 through 1.6. Photograph of the stream channel and the bank and upland areas. Indicator 1.5 scored as 0 - no vegetative compositional or density differences observed between the banks and the upland area. No water or biotic indicators of water observed along survey reach.



E2-2: Photographic reference of channel bed and bank.

E2 Drainage Photographs (E2-17 Reach) – Total HP score of 1 (ephemeral stream)



E2-3: Photographic reference of in-channel vegetation.



E2-4: Photographic reference for indicator 1.6. Indicator 1.6 scored as 1. Rooted upland plants (grasses) are present in the streambed and consistently dispersed but are not prevalent throughout the channel.

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

Date: 6/13/2011		Stream Name: E2	Latitude: N 32.69114
Evaluator(s): Fulton/Barry		Site ID: E2-17	Longitude: W 108.14323
TOTAL POINTS: 1 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: E Drainage (E2-17)	Drought Index (12-mo. SPI Value): -1.1
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)				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.

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools or riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				1
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 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 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				1

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perennality. If the indicator is present record score below and tally with previous score to compute TOTAL.				
1.13. Seeps and Springs	Seeps and springs are found within the study reach.		Seeps and springs are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.		Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)				1

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
E3-Drainage	Mimbres	13030202
Reach Description:	Upstream lat/long:	Downstream lat/long:
See additional comments section	32.68408/-108.13315	32.682821/-108.133684
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		E3-18

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	Aerial photos, "ground truthing", drainage profiles, reconnaissance
Reasoning:	Why is the stream homogeneous? See report section 4.2.1

Hydrology Protocol Results		Notes
E3-18 (lat/long): 32.68408/-108.13315	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 0, see field form and photos for additional information
<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	
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 type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
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

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

Hydrologic and Other Modifications	If "yes" please describe.
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime:	

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:
 A single assessment unit (E3-18) was identified within sub-watershed E3 (Figure E3-1). The longitudinal profile of sub-watershed E3 shows slightly more variation than either E1 or E2; however much of this variability is in response to impacts associated with the road crossing. Within this assessment unit no defined channel was observed with very little, if any, evidence of fluvial processes (Photos E3-1 and E3-2). This drainage is appropriately classified as an ephemeral channel.

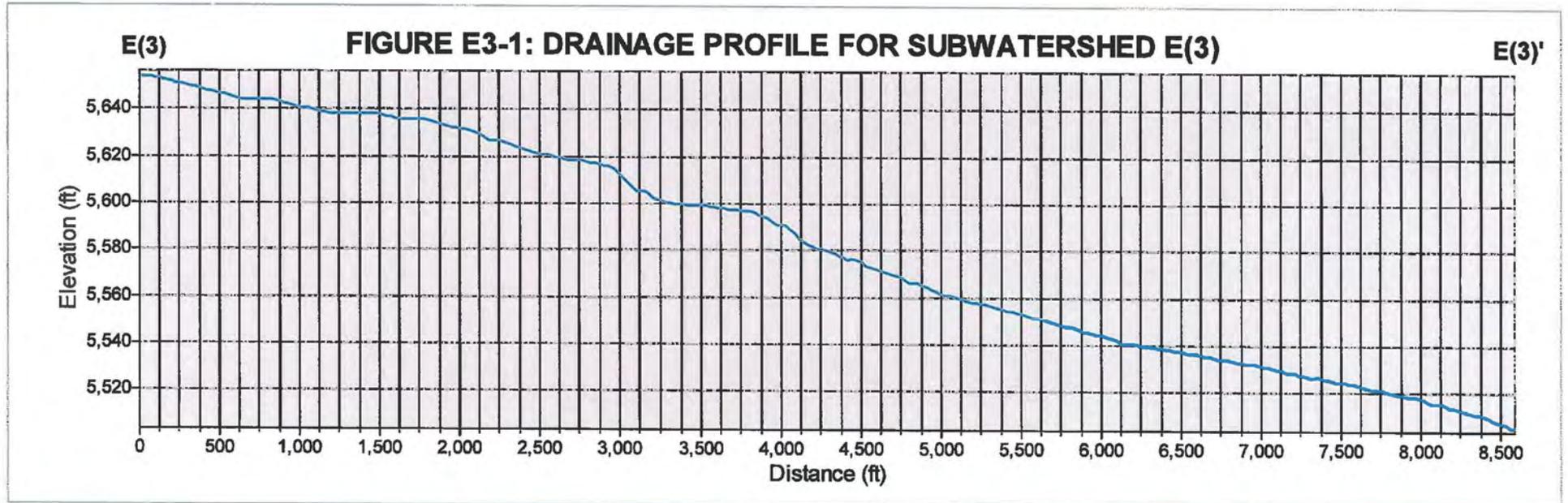
ATTACHMENTS:

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

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 expedited UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by: _____ Signed: <u>Benny Foster</u> _____	Date: <u>10/31/2012</u> _____
Surface Water Quality Bureau concurs with recommendation. <input type="checkbox"/> Yes <input type="checkbox"/> No If no, see attached reasons. Signed: _____ Date: _____	
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No If no, see attached reasons. Signed: _____ Date: _____	



E3 Drainage Photographs (E3-18 Reach) – Total HP score of 0 (ephemeral stream)



E3-1: Photographic reference for indicator 1.1 through 1.6. Photograph of the stream channel/lowland area and the bank and upland areas. Indicator 1.5 scored as 0 - no vegetative compositional or density differences observed between the banks and the upland area. No water or biotic indicators of water observed along survey reach.



E3-2: Photographic reference for indicator 1.5. Photograph of the stream bank and upland area. Indicator 1.6 scored as 0 - vegetation in stream bed is prevalent and consistent with bank and upslope areas.

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

Date: 6/13/2011		Stream Name: E3	Latitude: N 32.68408
Evaluator(s): Fulton/Barry		Site ID: E3-18	Longitude: W 108.13315
TOTAL POINTS: 0 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: E Drainage (E3-18)	Drought Index (12-mo. SPI Value): -1.1
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)				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.

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools or riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				0
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 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 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				0

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perennality. <u>If the indicator is present</u> record score below and tally with previous score to compute TOTAL.				
1.13. Seeps and Springs	Seeps and springs are found within the study reach.		Seeps and springs are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.		Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)				0

