



Appendix C

Level 1 Hydrology Protocol Results
for C Drainage

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
C-Drainage	Mimbres	13030202
Reach Description:	Upstream lat/long:	Downstream lat/long:
See additional comments section	32.72488/-108.0883	32.66566/-108.0928
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		C-19, C-4, C-5, C-6,

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
C-19 (lat/long): 32.72488/-108.0883	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per Final score: 2, see field form and photos for additional information
C-4 (lat/long): 32.70919/-108.0975	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per Final score: 6, see field form and photos for additional information
C-5 (lat/long): 32.68615/-108.10046	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per Final score: 2, see field form and photos for additional information
C-6 (lat/long): 32.66566/-108.0928	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per Final score: 7, 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	

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.
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
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:
<p>Four assessment units were identified within sub-watershed C (Figure C-1 below). Starting at the upstream end, these assessment units are identified as C-19, C-4, C-5, and C-6. The most upstream assessment unit (C-19) was selected to represent the headwater portions of this, and other, sub-watersheds within this portion of the AOC. Assessment unit C-4 was located at a significant change in basin slope downstream of tributary inflow. The lower two assessment units (C-5 and C-6) are located within the downstream portions of sub-watershed C intended to represent hydrologic processes of larger watersheds within this portion of the AOC.</p> <p>As shown in the plan and profile plots presented below the basin slope progressively decreases, as expected, in the downstream direction. Similarly, the degree of valley confinement decreases in the downstream direction. These trends in channel slope and confinement are typical and represent the relative dominance of colluvial versus alluvial channel forming processes and are reflected in the composition of the channel bed itself. That is, the upstream reaches of sub-watershed C (C-19 and C-4) are bedrock and cobble dominated stream channels indicative hill slope processes (Photos C19-1 and C4-2) whereas the downstream assessment units (C-5 and C-6) are a mixture of sand/gravel/cobble (Photos C5-1 and C6-3) and reflect the dominance of riverine processes. However, despite the influence of riverine processes within the lower assessment units we find throughout sub-watershed C that the channel is dominated by sand, cobbles and bedrock with very little difference between the "riparian" and upland vegetation. Furthermore, at all assessment units we observed that rooted upland plants occurred, with varying degrees of density, throughout the stream channel. The weight of evidence clearly indicates that sub-watershed C is an ephemeral channel that flows only in direct response to significant rainfall events.</p>

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)

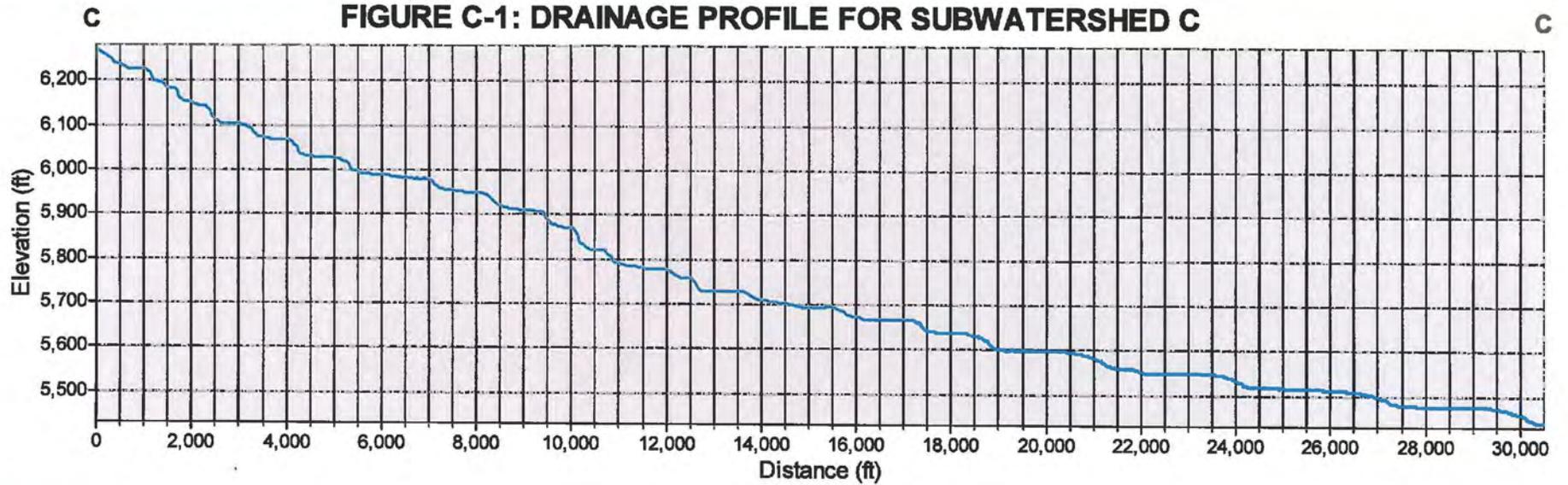
CONCLUSION:

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



FIGURE C-1: DRAINAGE PROFILE FOR SUBWATERSHED C



C Drainage Photographs (C-19 Reach) – Total HP score of 2 (ephemeral stream)



C19-1: Photographic reference to representative channel bottom characteristics.



C19-2: Photographic reference for indicators 1.1 through 1.6. Photograph from upper extent of survey reach facing downstream. Rooted vegetation present in channel is present but inconsistent (see subsequent photograph). No water or biotic indicators of water observed along survey reach.

C Drainage Photographs (C-19 Reach) – Total HP score of 2 (ephemeral stream)



C19-3: Photographic reference for indicator 1.6. Portions of the survey reach devoid of vegetation as a result of bed material and lack of moisture rather than an indicator of persistence of flow. Indicator 1.6 scored as 1 – few rooted plants present in streambed.

C Drainage Photographs (C-19 Reach) – Total HP score of 2 (ephemeral stream)



C19-4: Photographic reference for indicator 1.5. Photograph of upland area and upland vegetation. Indicator 1.5 scored as 1 - evident variation in vegetative density but no dramatic difference in composition. No distinct riparian zone observed.



C19-5: Photographic reference for indicators 1.5 and 1.6. There is a variation in vegetative density but no dramatic difference in composition. Portions of the survey reach few rooted plants present in streambed as a result of bed rock in channel.

C Drainage Photographs (C-4 Reach) – Total HP score of 6 (ephemeral stream)



C4-1: Photographic reference for indicator 1.1 to 1.6. Streambed is predominantly bedrock. Vegetation present where deposition has occurred. No water or biotic indicators of water observed along survey reach.



C4-2: Photographic reference for indicator 1.6. Indicator 1.6 scored as 2 – few rooted upland plants present in streambed. Lack of vegetation present in streambed likely result of flow regime and presence of bedrock rather than result of persistent water.

C Drainage Photographs (C-4 Reach) – Total HP score of 6 (ephemeral stream)



C4-3: Photographic reference for indicator 1.5. Photograph of bank and upland vegetation. Indicator 1.5 scored as 1 - evident variation in vegetative density but no dramatic difference in composition. No distinct riparian zone observed.

C Drainage Photographs (C-4 Reach) – Total HP score of 6 (ephemeral stream)



C4-4: Photographic reference for indicators 1.8 through 1.10. Photograph of the entrenchment transect location. Indicator 1.8 scored as 1.5 - stream is somewhat confined with an inactive floodplain.

Indicator 1.9 scored as 0 - no riffle-pool sequence observed (also refer to other photos).

Indicator 1.10 scored as 1.5 - particle sizes within the channel are similar to upland material but are noticeably larger (primarily sands and gravels where bedrock is not present).

C Drainage Photographs (C-4 Reach) – Total HP score of 6 (ephemeral stream)



C4-5: Photographic reference for indicator 1.5. Photographs of bank and upland vegetation. Evident variation in vegetative density but no dramatic difference in composition. There is no distinct riparian vegetation corridor.

C Drainage Photographs (C-5 Reach) – Total HP score of 2 (ephemeral stream)



C5-1: Photographic reference for indicators 1.1 through 1.6. Indicator 1.6 scored as 2 – few rooted plants in the streambed. Lack of rooted plants is likely the result of the flow regime and granular bed material present rather than persistence of flow. No water or biotic indicators of water observed.



C5-2: Photographic reference for indicator 1.5. Indicator 1.5 scored as 0. Vegetation along streambank and uplands is sparse but consistent with no compositional or density differences between the two areas observed. Also refer to previous photograph.

C Drainage Photographs (C-5 Reach) – Total HP score of 2 (ephemeral stream)



C5-3: Photographic reference for indicator 1.6. Few rooted plants in the streambed: Lack of rooted plants is likely the result of granular bed material present.

C Drainage Photographs (C-6 Reach) – Total HP Score of 7 (ephemeral stream)



C6-1: Photographic reference for indicators 1.1 through 1.6. Indicator 1.6 scored as 2. Few rooted plants present in the streambed but inconsistently present. Lack of rooted plants is likely the result of the flow regime and granular bed material present rather than persistence of flow. No water or biotic indicators of water observed along survey reach.



C6-2: Photographic reference for indicator 1.5. Indicator 1.5 scored as 1 - evident variation in vegetative density but no dramatic difference in composition. No distinct riparian zone observed.

C Drainage Photographs (C-6 Reach) – Total HP Score of 7 (ephemeral stream)



C6-3: Photographic reference for indicator 1.8. Location of transect shown. Indicator 1.8 scored as 1.5. Stream is somewhat confined with an inactive floodplain.



C6-4: Photographic reference for indicator 1.9 and 1.10. Indicator 1.9 scored as 0 - riffle-pool sequence not observable along survey reach. Indicator 1.10 scored as 1.5 - particle sizes of the channel bed material is primarily coarse sand and gravel which is similar to but coarser than the material of the upland area. Substrate sorting not evident.

C Drainage Photographs (C-6 Reach) – Total HP Score of 7 (ephemeral stream)



C6-5: Photographic reference for indicator 1.6. Few rooted plants present in the streambed but inconsistently present. Lack of rooted plants is likely the result of granular bed material present.

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

Date: 6/12/2011		Stream Name: C Drainage	Latitude: N 32.72488
Evaluator(s): Clifton, Barry, Durham		Site ID: C-19	Longitude: W 108.0883
TOTAL POINTS: 2 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: C Drainage (C-19)	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)				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.

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)				2
<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)				2

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perenniality. <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)				2

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

Date: 6/12/2011		Stream Name: C Drainage	Latitude: N 32.70919
Evaluator(s): Barry		Site ID: C-4	Longitude: W 108.0975
TOTAL POINTS: 6 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: C Drainage (C-4)	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 _X_ clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover _X_ 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)				3

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)				4.5
<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)				6.0

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 plus SUPPLEMENTAL POINTS (#1.1 – #1.14)				6

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

Date: 6/12/2011		Stream Name: C Drainage		Latitude: N 32.68615	
Evaluator(s): Barry		Site ID: C-5		Longitude: W 108.10046	
TOTAL POINTS: 2 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: E Drainage (C-5)		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 <u>X</u> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event.		
	___ 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	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)				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.

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> riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				2
<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)				2

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)				2

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

Date: 6/12/2011		Stream Name: C Drainage	Latitude: N 32.66566
Evaluator(s): Barry		Site ID: C-6	Longitude: W 108.0928
TOTAL POINTS: 7 <i>Stream is at least intermittent if ≥ 1</i>		Assessment Unit: C Drainage (C-6)	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 ___X___ NO **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)				3

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)				5.5
<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)				7.0

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perenniality. 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.
	Present = 1.5
1.14. Iron Oxidizing Bacteria/Fungi	Seeps and springs are <u>not</u> found within the study reach.
	Absent = 0
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.
	Present = 1.5
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.
	Absent = 0
TOTAL plus SUPPLEMENTAL POINTS (#1.1 – #1.14)	
7	

