Cienega Quarterly Walkthrough Wet/Dry Mapping
Data Collection Guidelines: GPS and the 20-Foot Rule

**Begin and End Flow**

![Diagram of Begin Flow (BF) and End Flow (EF)]

- Take 3 GPS readings at each of these locations.

Mark the start and end of flowing segments that are at least 20 feet long. Any flowing segment less than 20 feet long will have a single point taken and length estimated.

Flow segments are considered distinct if separated by at least 20 feet of dry channel.

If the gap between two flowing segments is less than 20 feet, there is no need to take GPS readings at the beginning and end of flow. On the GPS datasheet, note that the flow is intermittent.

This allows for variations in flow connectivity that may occur due to diurnal fluctuation in groundwater levels. Look for signs of overnight flow, such as algae or moist soils.

**Pools**

![Diagram of Main Channel, Pool Length, Pool Width, Side Pool (SIDE), Isolated Pool (ISO), Midstream Pool (MID)]

- Take GPS readings in the middle of the pool. Measure depth at the deepest spot, and approximate length and width relative to the main channel as shown.

- Pools that are less than 5 feet diameter or less than 4 inches deep are not documented unless fish are present.

Note the type of pool on the GPS datasheet. Indicate all that apply.

- **Midstream Pool**: a pool in the middle of the channel. In flowing segments, look for areas where the water’s surface is still, with no ripples to indicate flow.

- **Side Pool**: a pool located to the side of, but still connected to the main channel.

- **Isolated Pool**: a pool disconnected from the main channel and/or a flowing segment.

Adapted from the 2008 Arizona NEMO Guide; Updated July 2018
Consistency of the time of year that monitoring is conducted is key for calculating trends.

Coordinate monitoring dates and methodology with other creeks for comparability, such as with PAG, The Nature Conservancy and Bureau of Land Management creeks.

At minimum, record wet/dry locations and flow lengths in the driest season of the year (typically May/Jun.). The wettest season is also important to understand the full habitat extent (Aug./Sep. or Feb./Mar.). If additional resources are available, four seasons are ideally recommended.

Share data with others such as the Arizona drought impact reporting system and Watershed Management Group’s River Run Network.

Couple wet/dry monitoring with groundwater level data and notes of restoration efforts or other interrelated impacts on flow length.

When monitoring baseflow, do not conduct monitoring less than three days following rain. Water should be clear, without evidence of runoff.

• Tricky Situations
  Flow Width
  Only measure channel length, not width.
  Side Channels
  You do not need to take GPS readings for side channels, but you can make a note on the datasheet.

• History
  The health of phreatic (groundwater-dependent) streams have great importance to desert regions’ wildlife habitat. Their geographically segmented nature tends to grow and shrink with seasons, drought or human impacts. These changes can be understood through wet/dry mapping. PAG developed these methods on Cienega Creek and uses results to represent local riparian health conditions. As a result of the 2017 Heritage Waters Resolution by PAG’s Regional Council, PAG has created this guide to enhance accounting metrics for riparian areas.

• Protocols
  PAG uses 20 feet as a threshold because it captures more data and GPS technology has improved accuracy since the NEMO 30-foot rule was established.
  Remember that it is the length, not width of channel, that counts as a threshold for observations.
  If a regular/common pool is smaller than the thresholds provided in this guide, please note that site as well.
  Have fun and enjoy the stream!

• Taking Notes
  Please note erosion, invasive or endangered species and human influences.
  Indicate the presence or absence of fish and frogs in every flow segment and pool. Provide a positive identification of the species, if possible.
  Note landmarks to back up the data points. Marking up printed maps is advised as a backup as well.
  Field notes should include date, names of observers, weather conditions (date of last rain) and riparian phenology (seasonal habitat observations).
  PAG uses the following abbreviations to ease note-taking and data processing:

<table>
<thead>
<tr>
<th>BF, EF</th>
<th>Begin Flow or End Flow</th>
<th>US, DS</th>
<th>Upstream or Downstream</th>
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</thead>
<tbody>
<tr>
<td>ISO</td>
<td>Isolated Pool</td>
<td>RR, RL</td>
<td>River Right or River Left</td>
</tr>
<tr>
<td>MID</td>
<td>Midstream Pool</td>
<td>WL</td>
<td>Wildlife</td>
</tr>
<tr>
<td>SIDE</td>
<td>Side Pool</td>
<td>Cwood</td>
<td>Cottonwood</td>
</tr>
<tr>
<td>HC</td>
<td>Head Cut</td>
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</tbody>
</table>

• Recommendations
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  At minimum, record wet/dry locations and flow lengths in the driest season of the year (typically May/Jun.). The wettest season is also important to understand the full habitat extent (Aug./Sep. or Feb./Mar.). If additional resources are available, four seasons are ideally recommended.
  Share data with others such as the Arizona drought impact reporting system and Watershed Management Group’s River Run Network.
  Couple wet/dry monitoring with groundwater level data and notes of restoration efforts or other interrelated impacts on flow length.
  When monitoring baseflow, do not conduct monitoring less than three days following rain. Water should be clear, without evidence of runoff.