

NC Ecological Flows Science Advisory Board

Trial Balloon

June 18, 2013

Concerns

- Biological-Environmental Classifications (BEC) do not appear to be a viable tool for stream classification
- Biological data used in the BEC were from wadeable streams
- Potential for future water withdrawals appears greater for streams larger than those sampled and analyzed in the BEC
- 80% flowby appears overly protective

Trial Balloon Objectives

- To present an alternative method of developing ecological flows somewhat based on a water withdrawal permitting program currently used in SC
- To suggest how these flows might be used by the NCDWR for planning purposes

Attributes Needed for a Desirable Ecological Flow Planning Tool

- Specific for physiographic regions
- Accounts for seasonal needs of the aquatic resources
- Based on the needs of specific stream biota
- Relatively easy to understand and use
- Balances the needs of humans and aquatic resources

Physiographic Regions

- Lower Coastal Plain Streams (tidally influenced and not part of this trial balloon)
- Upper Coastal Plain Streams
- Piedmont Streams
- Mountain Streams

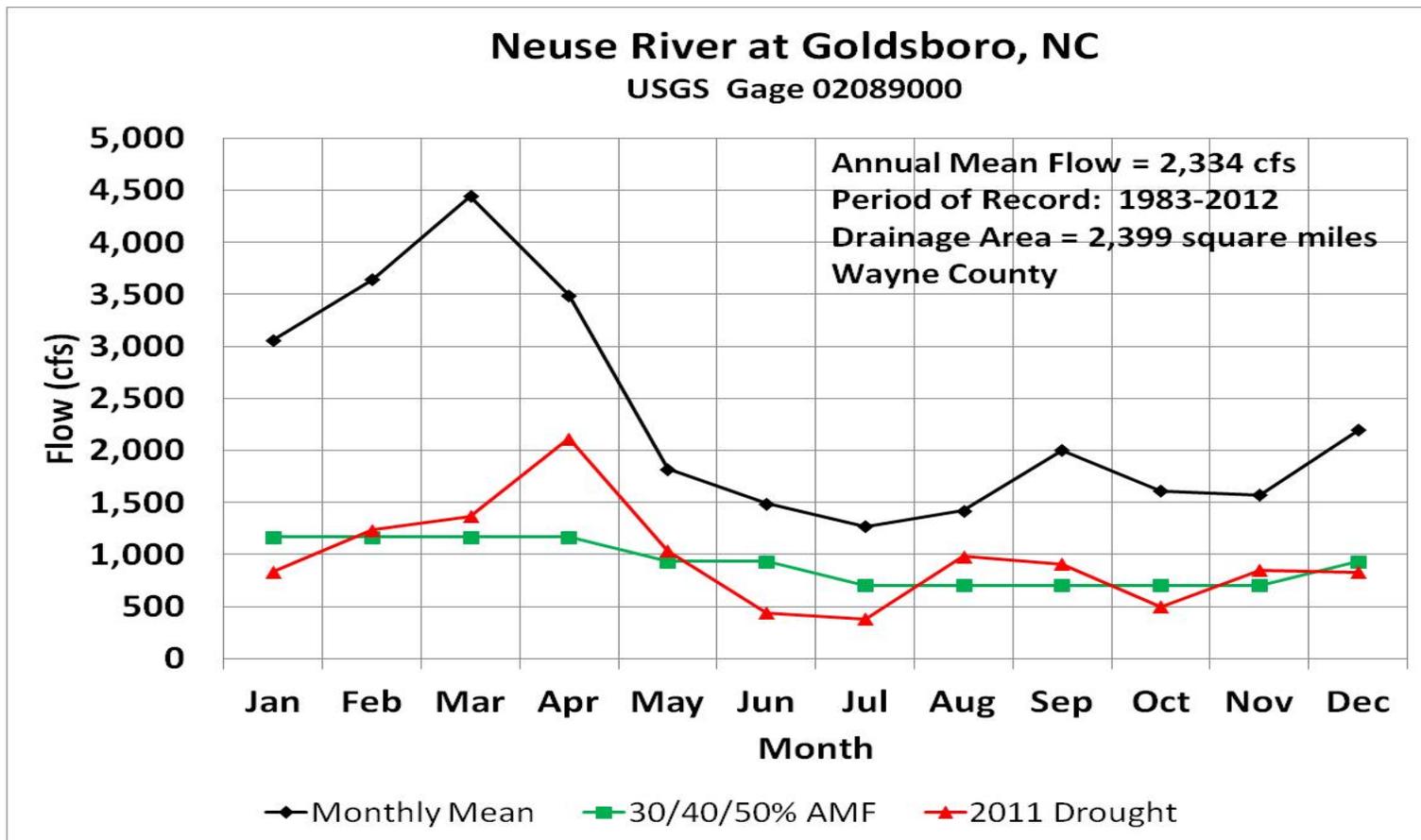
Upper Coastal Plain Streams

(Anadromous fish)

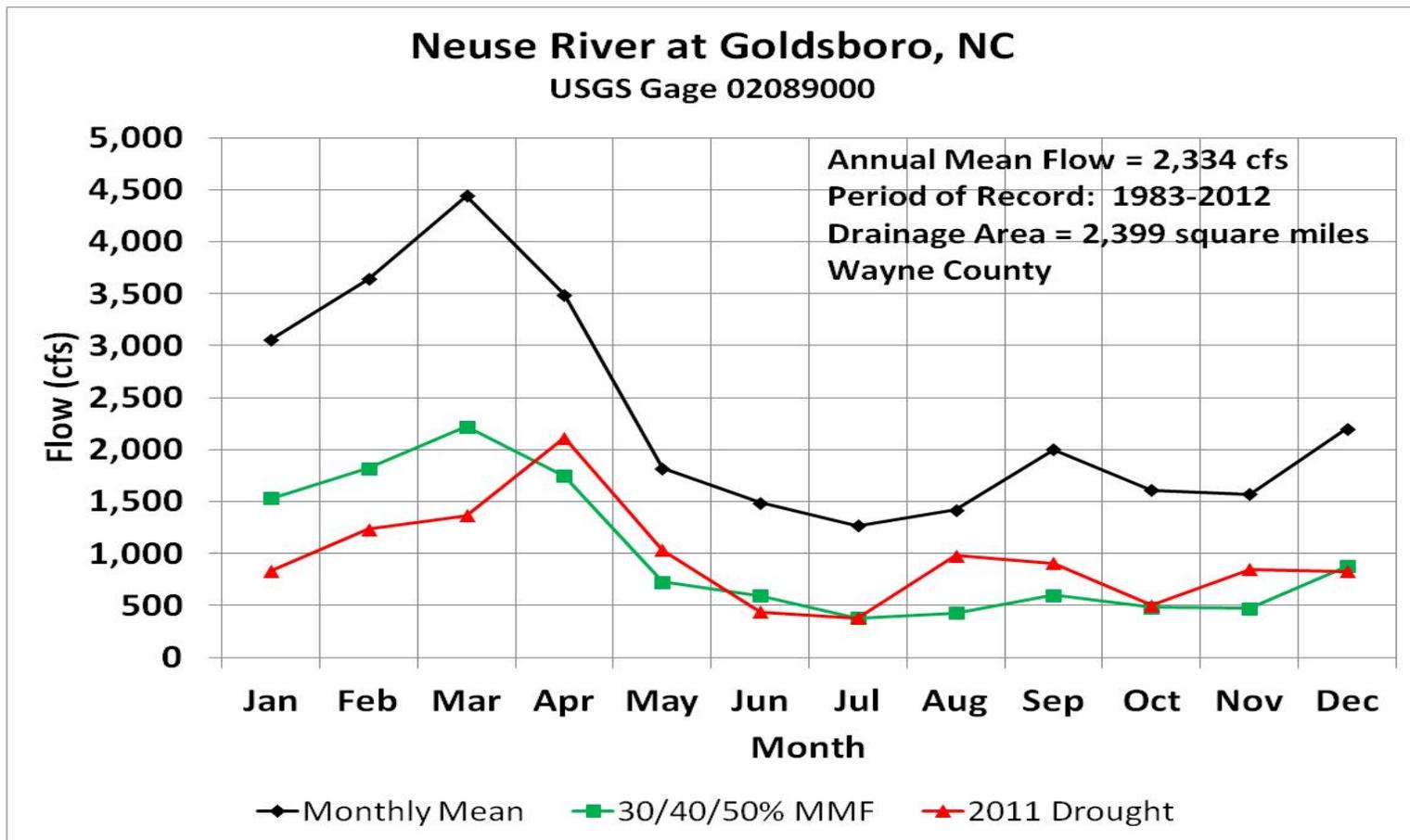
- High flow (Jan-April) – 50%*
- Transition flow (May, June, and Dec) – 40%*
- Low flow (July-Nov) – 30%*

* Percentage of Annual Mean Flow (cfs) or Percentage of Monthly Mean Flows

Neuse River Flows



Neuse River Flows



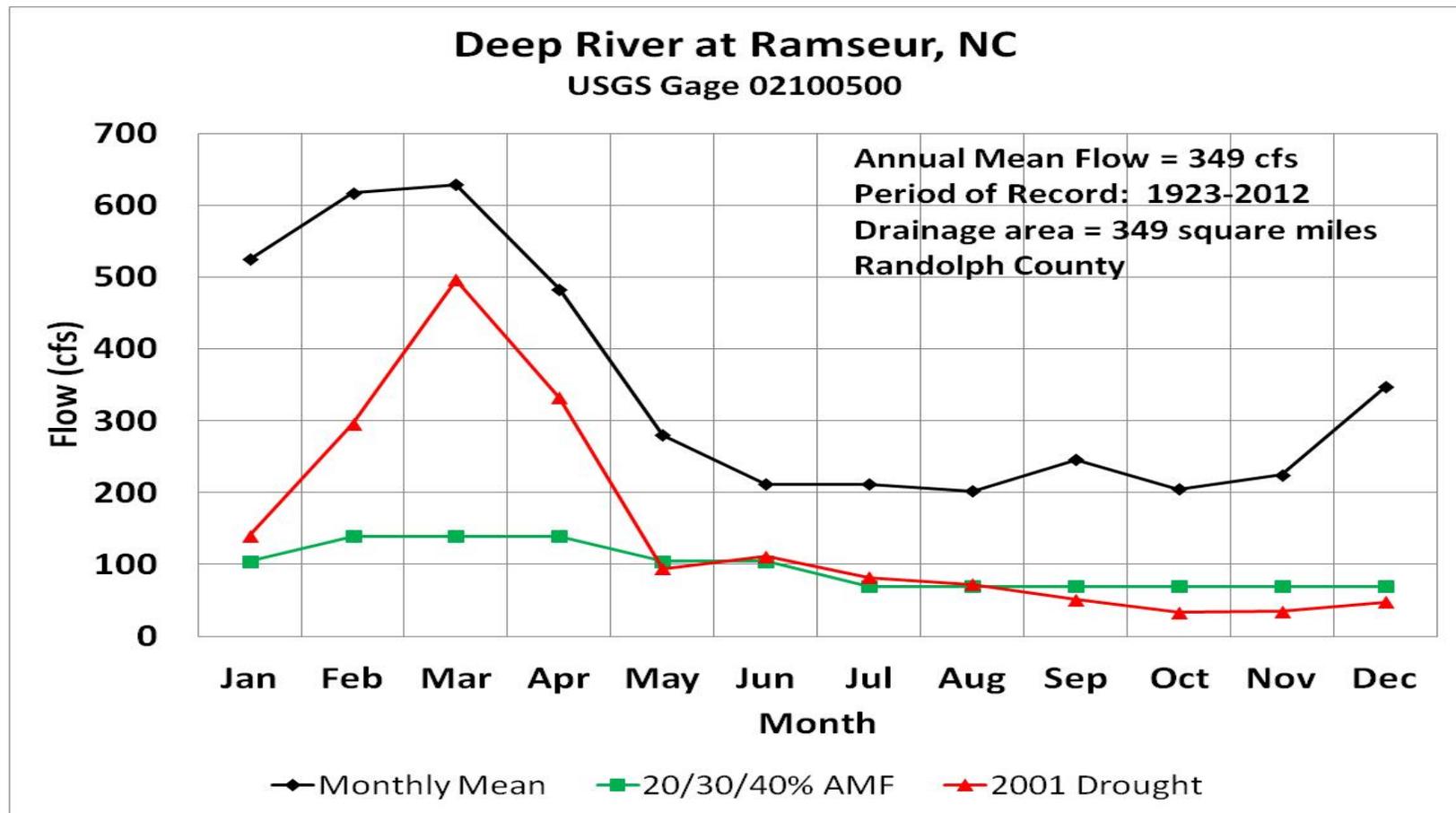
Piedmont Streams

(Cyprinids and Catostomids)

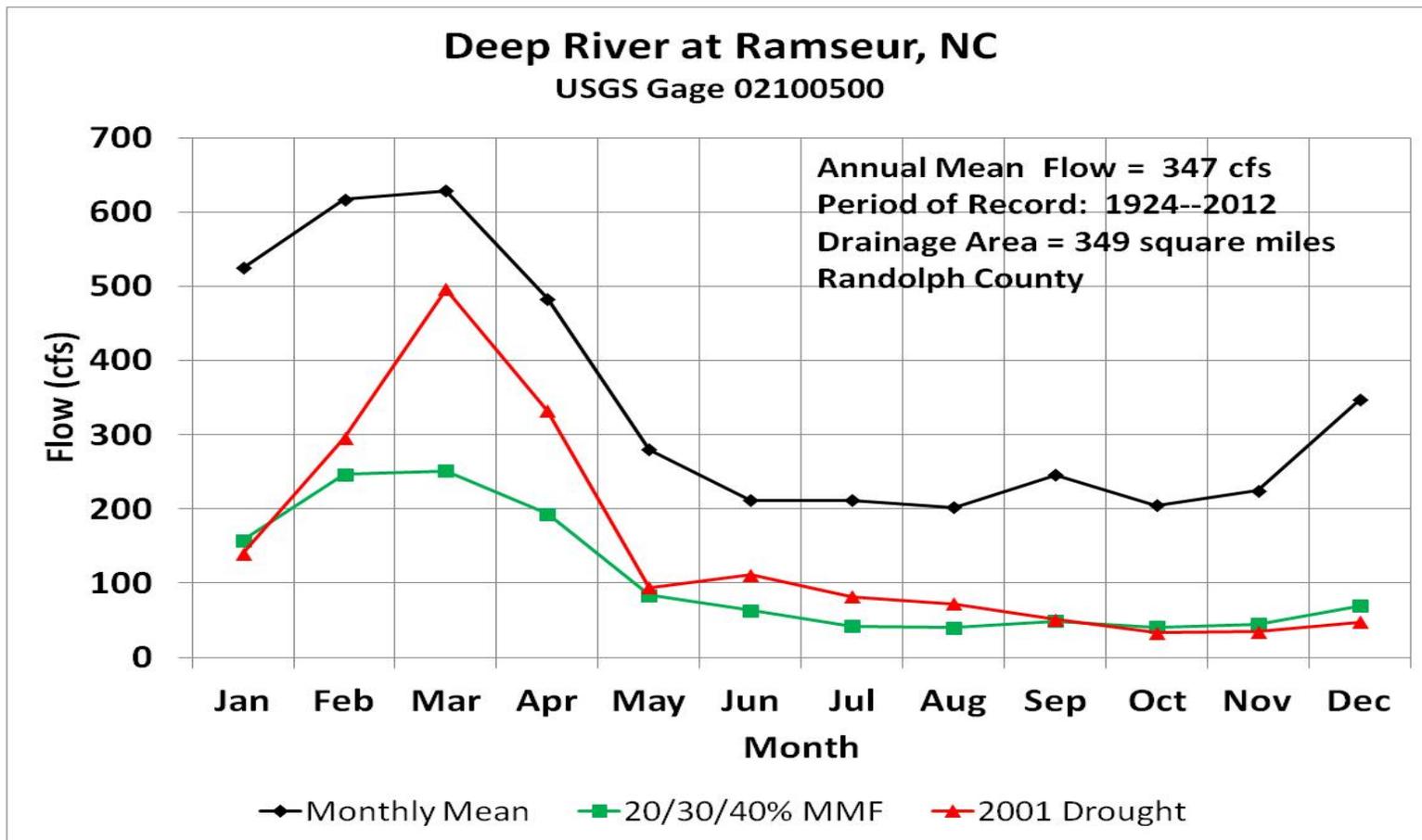
- High flow (Feb-April) – 40%*
- Transition flow (May, June, and Jan) – 30%*
- Low flow (July-Dec) – 20%*

* Percentage of Annual Mean Flow (cfs) or Percentage of Monthly Mean Flows

Deep River Flows



Deep River Flows



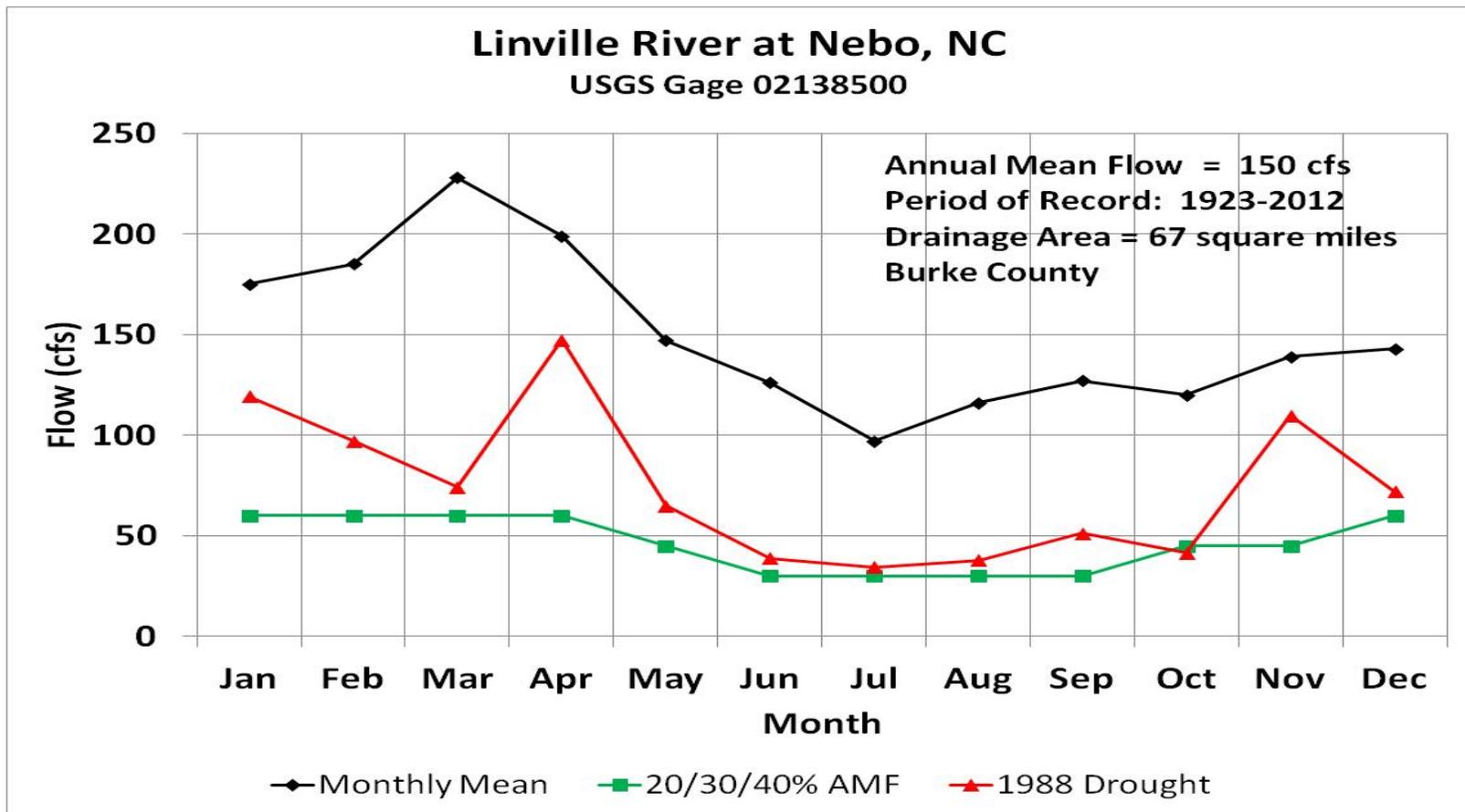
Mountain Streams

(Trout)

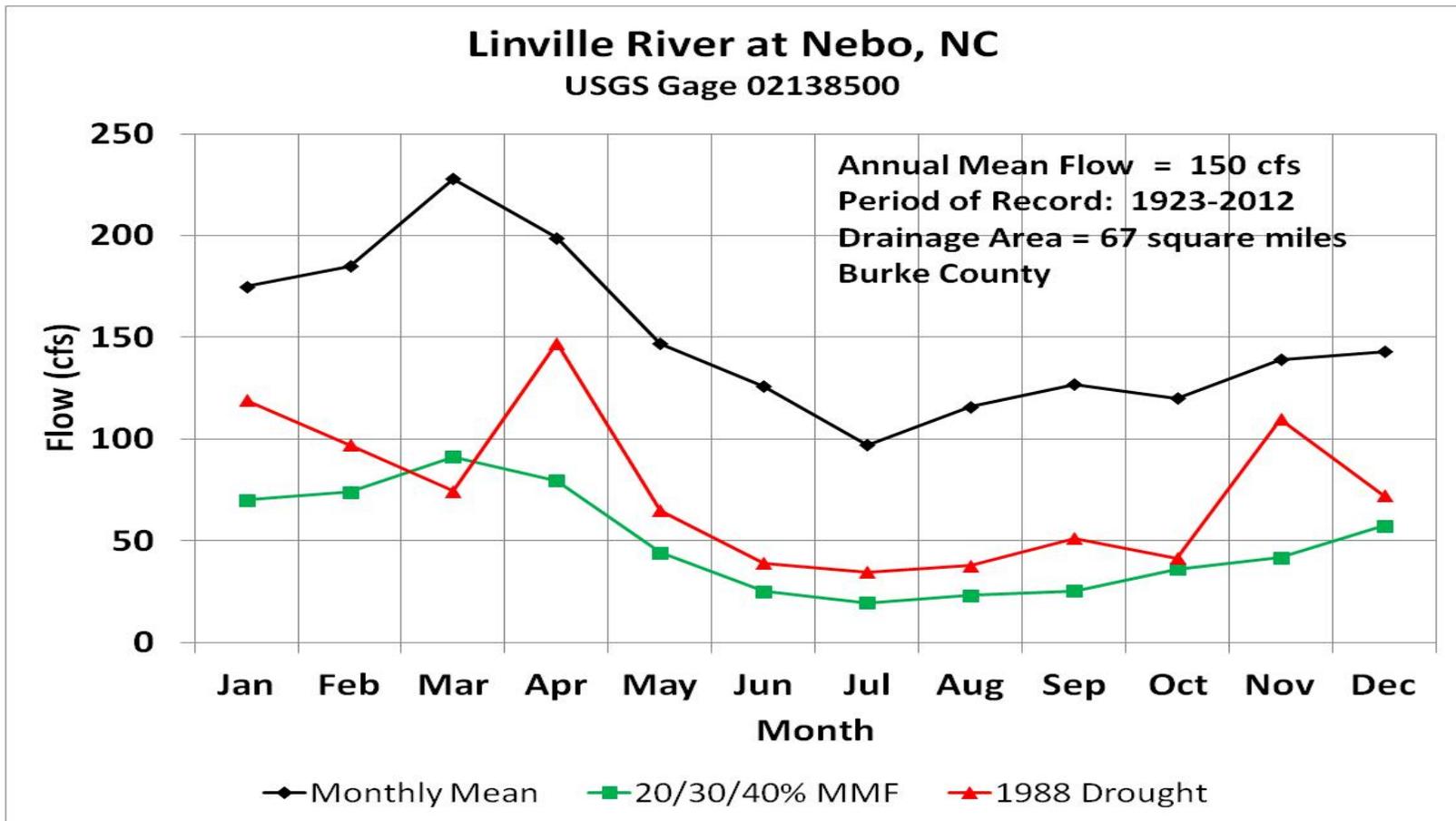
- High flow (Dec-April) – 40%*
- Transition flow (May, Oct, and Nov) – 30%*
- Low flow (June-Sep) – 20%*

* Percentage of Annual Mean Flow (cfs) or Percentage of Monthly Mean Flows

Linville River Flows



Linville River Flows



Benefits of Percentage Based Ecological Flows

- Appears to provide adequate protection for aquatic resources when compared to drought flows
- Appears to balance the needs for humans and the aquatic resources
- Thought to be easily incorporated into NCDWR models for planning purposes
- Does not preclude site specific studies