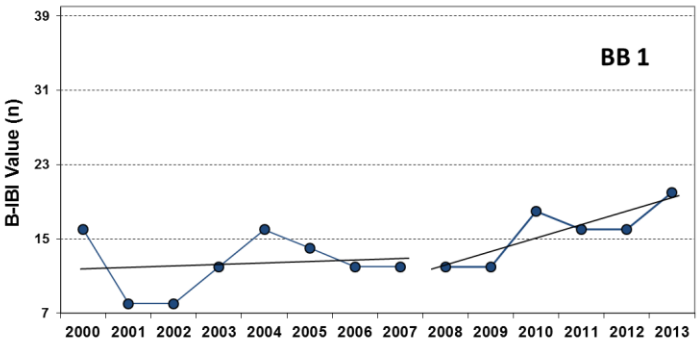
## Appendix 13-2. Stream Summary for Great Swamp stream sites




**BLACK BROOK 1 – BB1**. Just W of Southern Boulevard, S of Noe Pond, Chatham Township. Small, slow flow vulnerable to changes in rainfall. Downstream from eutrophic golf course pond and heavily traveled road. Poor DO. High pH. Sediment choked; oil films. Road- and golf course-related chemicals.

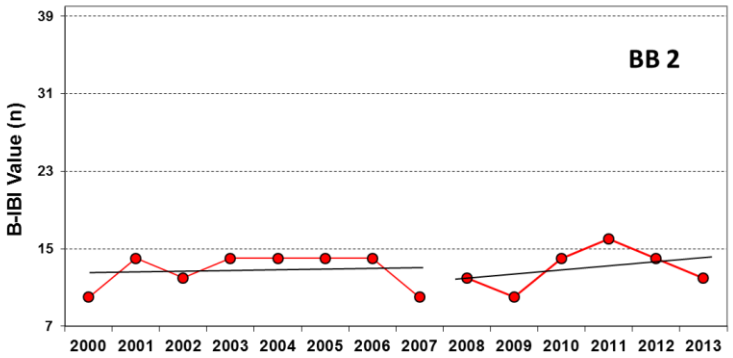
***Rating***: Group II pattern. Generally "very poor". Slightly better recently.

***Action***: Bank stabilization would help but low flow, highway runoff and upstream pond productivity will severely limit improvement. Riparian buffer mowed in 2008 should be allowed to regrow.

**BLACK BROOK 2 – BB2.** A drainage channel from Chatham Township Sewage Treatment Plant. Sandy, man-made "stream" with minimal suitable substrate. Downstream from culverts under Tanglewood Lane. TDS >NJ standard 2010, 2011, 2012.

***Rating:*** Group II pattern. Usually along the "very poor"/ "poor" borderline. Little change through study.

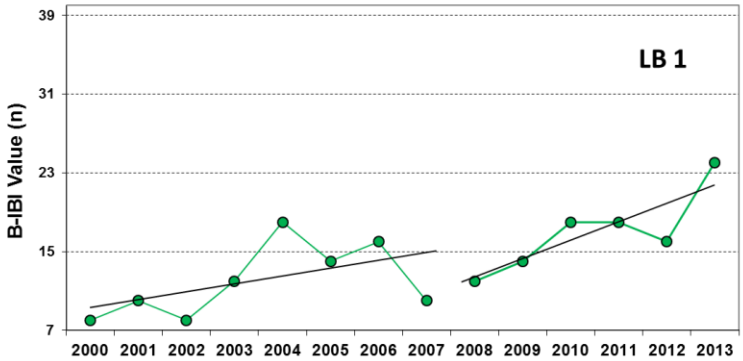
***Action:*** Hard to imagine how to substantially improve this site for MIVs. STP plans to eliminate this “stream”.




**LOANTAKA BROOK 1 – LB1.** Downstream from Green Village Road bridge in Green Village. Upstream bank erosion produces sandy sediment and high turbidity. Diluted but still high TDS (>NJS). Poor MIV habitat substrate. Some trash present..

***Rating:*** Group II pattern. Generally in the "very poor" range. Taxa & intolerant indicators up in 2013.

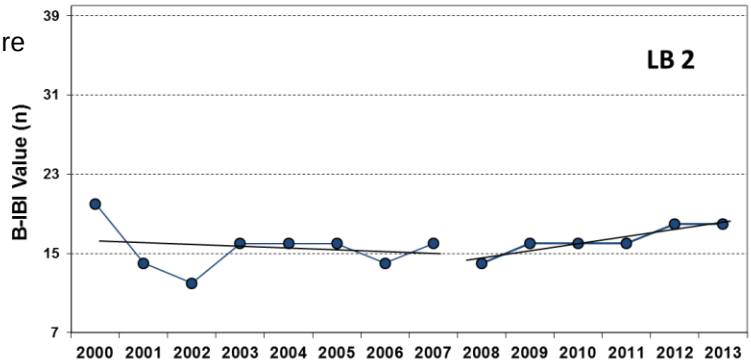
***Action:*** Upstream stream-bank stabilization needed to curb sedimentation. Trash cleanup would help.




**LOANTAKA BROOK 2 – LB2**. Downstream from Kitchell Pond. Decent MIV substrate. Often high temperature and other pond byproducts, i.e., turbidity,organic detritus, low oxygen. High TDS (>NJS). Lingering "chemical smell" from upstream Morris Township Sewage Treatment Plant. Bad bank erosion above and below site.

***Rating***: Group I pattern. On the "poor" to "very poor" borderline. Minimal change during the study period.

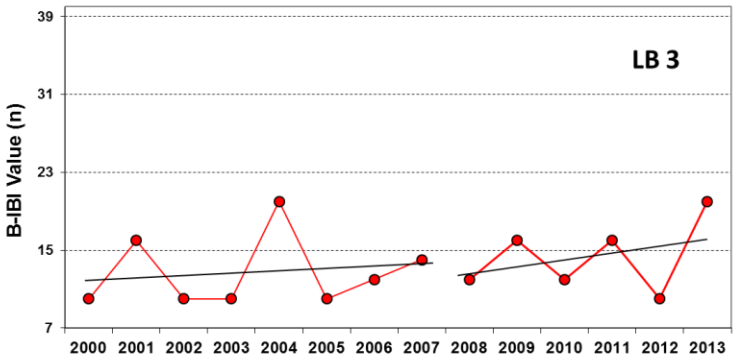
***Action***: Kitchell Pond eutrophy yields algal/organic fallout & low DO. Continue Goose-control efforts. Bank stabilization needed all along this stream.



**LOANTAKA BROOK 3 – LB3.** Downstream from Morris Township Sewage Treatment Plant. Strong "chemical" smell. Very poor MIV substrate – shifting sand. Very high TDS –from upstream and/or STP sources. >>NJS.

***Rating:*** Group II pattern. "Very poor", with little change over the study. 2013: increase in Taxa.

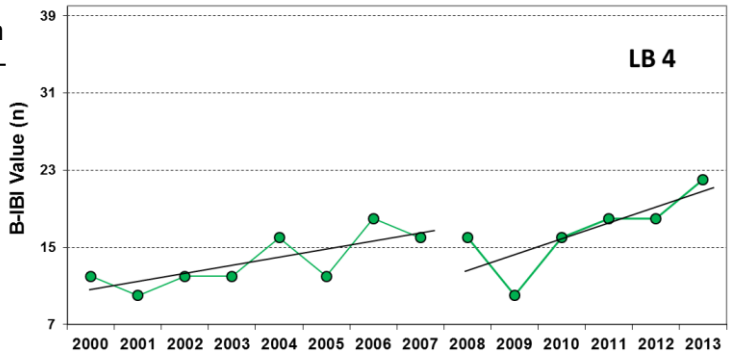
***Action:*** Providing cobble substrate would improve MIV habitat. Stream bank stabilization is needed. Upstream source of high TDS needs remediation.




**LOANTAKA BROOK 4 – LB4.** Just downstream from Morris Township Municipal Pool at Fanok Road. Channelized ditch. Highest TDS; >>NJ standard; from upstream source. Comparatively little MIV substrate; fine silt.

***Rating:*** Group II pattern. "Very poor" but slightly improving toward the"poor" range with site move slightly downstream in 2006. 2013: big jump in taxa.

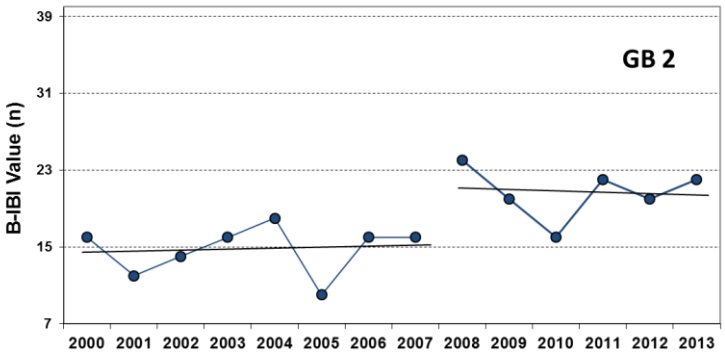
***Action:*** Curb upstream stream-bank erosion & could add MIV cobble. Upstream source of TDS needs remediation.




**GREAT BROOK 2 – GB2.** Upstream from Woodland Road bridge, Harding Township = GSWA sampling site. MIV substrate limited to coarse gravel. Typically storm-related high turbidity and heavy sedimentation. Mussel population present.

***Rating*:** Group I pattern. Generally "poor" in recent years. Improving over the study period.

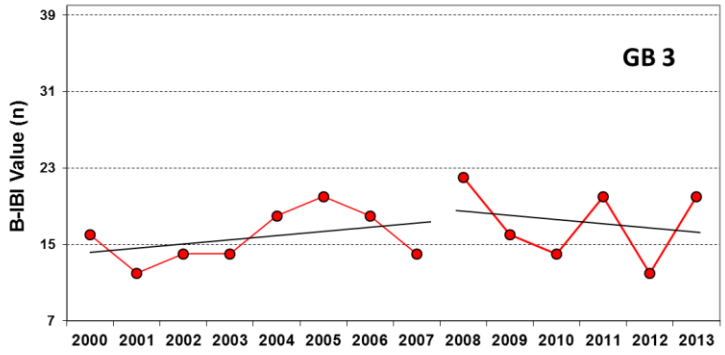
***Action*:** Upstream erosion source(s) need stabilization.



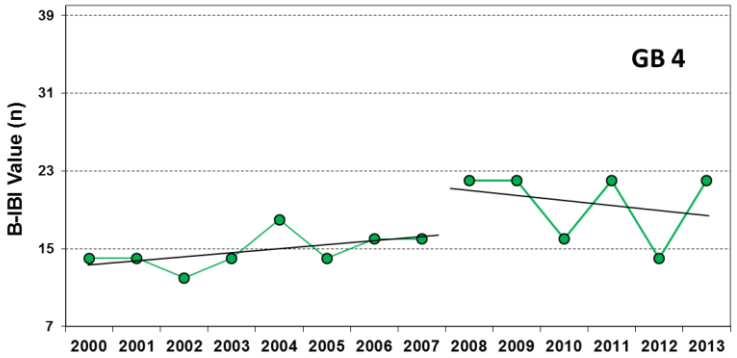

**GREAT BROOK 3 – GB3.** Below Silver Lake Dam, Harding Township. Terrific MIV habitat but with high temperature and turbidity from silt and organic matter from lake above.

***Rating:*** Group I pattern. Ups and downs through "poor" – partly driven by blackfly flux and earlier sampling dates.. 2013: blackflies down, Taxa way up.

***Action:*** Rain-storm flooding stirs up and distributes silt & turbidity. Control high-volume flow?



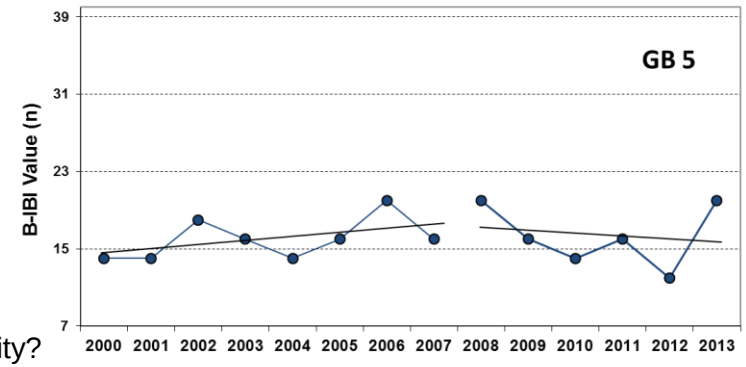
**GREAT BROOK 4 – GB4.** Downstream from bridge entrance to the office complex off Blackberry Lane (James Street intersection) in Morris Township. Slow flowing, silty water with high TDS from nearby parking lots and detention basins. Often low DO.




***Rating:*** Group I pattern. Ups and downs through "poor" – partly driven by blackfly flux. 2013: blackflies down; Taxa way up.

***Action:*** Mowed riparian vegetation is returning and should be encouraged. Sedimentation from upstream sources (including I-287?) is bad. Would benefit from reduction in local source (parking lot salting?) of high TDS.

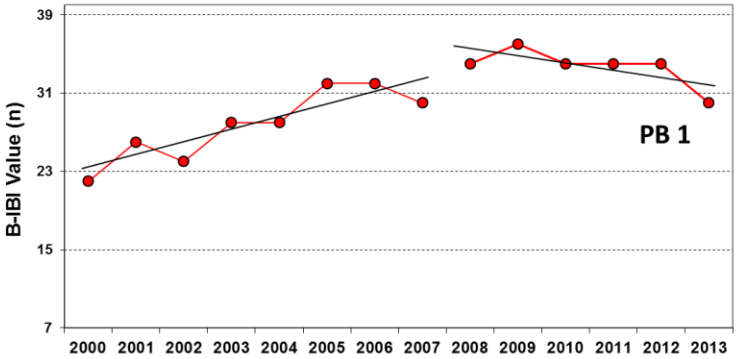
**GREAT BROOK 5 – GB5**. Downstream from Foote's Pond on James Street in Morristown. The pond and dam were reworked in 2006. GB5 has very high temps, high organic detritus, high pH, and low oxygen from its decay; all related to eutrophic pond. Clogged with filamentous algae. Very high turbidity in 2013. Golf course upstream.




***Rating*:** Group I pattern. Along the "poor"/"very poor" line. Ups and downs through "poor" – partly driven by blackfly flux, Little change over study.

***Action:*** Control upstream nutrients and lake productivity?

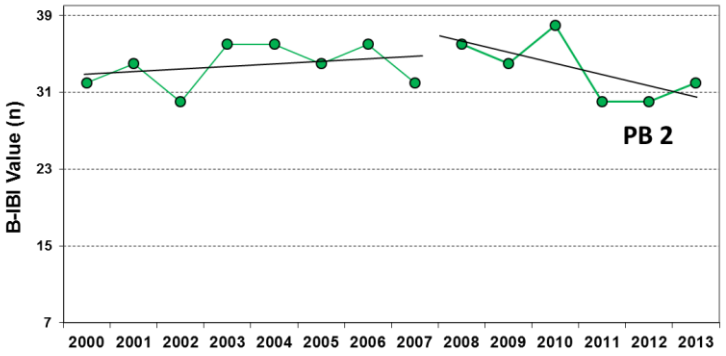
**PRIMROSE BROOK 1 – PB1.** Downstream from Lee's Mill Road bridge, Harding Township. Good quality MIV habitat. Modest sediment issues.




***Rating*** Group I pattern.

***Action:*** Nicely protected site. No improvements suggested.

**PRIMROSE BROOK 2 – PB2.** A lovely site, down embankment opposite the intersection of Youngs Road and Bailey's Mill Road, Harding Township. Good canopy cover and lots of cobble substrate but building sedimentation/ turbidity issues. Mt Kemble Pond influence?



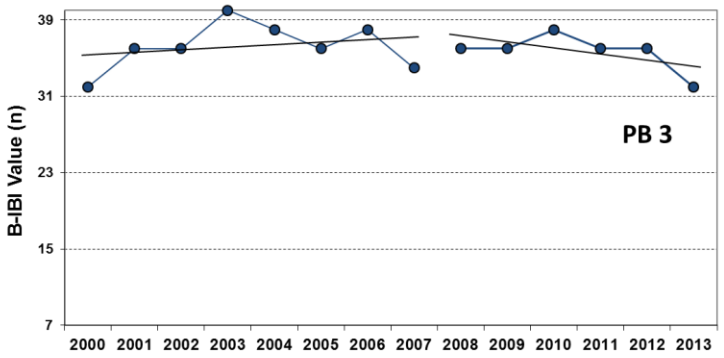

***Rating:*** Group I pattern. Consistently in the "good" category. 2013: recovery after two bad years; up in Taxa, especially in caddisfly diversity.

***Action:*** Should be left in its current, natural condition. Sedimentation sources bear watching.

**PRIMROSE BROOK 3 – PB3**. Downstream side of Tempe Wick Road in Harding Township. Nearly ideal MIV Substrate despite busy roadway.

***Rating*:** Group I pattern. Consistently with scores in the upper "good" range. Little change over study period. Often matches or exceeds our "reference" site – IG1

***Action*:** Despite roadway and upstream impoundment, conditions are good here.




**PASSAIC RIVER 1 – PR1.** 200 yds downstream from Osborn Pond at Lee's Mill Road, Bernards Township. The river surrounds a gravel-bar island. Influenced by high temperatures and organic detritusfrom the pond. Biota-spillover from the pond (especially amphipods) and detrital filtering caddisfly larvae often dominate. Waterfowl gather upstream.

***Rating:*** Group I pattern. Little change over study period. 2013: Taxa up, especially caddisfly larval diversity.

***Action:*** Pond-driven high temperatures are unavoidable. Preventing nutrient-loading and eutrophication of Osborn Pond is important.


**PASSAIC RIVER 2 – PR2.** Downstream of I-287 bridges, Bernards Township. High sedimentation. Some flooding and highway debris present. Original, riffle habitat washed away by Hurricane Irene, fall 2011. Site moved downstream, it remains poor habitat.

***Rating:*** If last 2 "not-really-PR2" scores are ignored, Group I type pattern comes closer to a fit.

***Action:*** Plans to revise this study in the future call for the elimination of this site.

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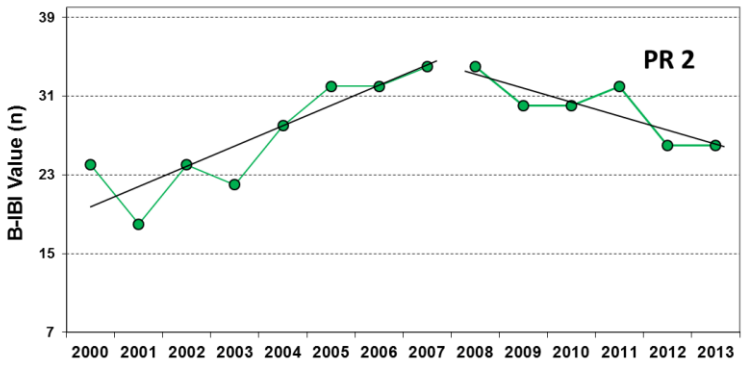
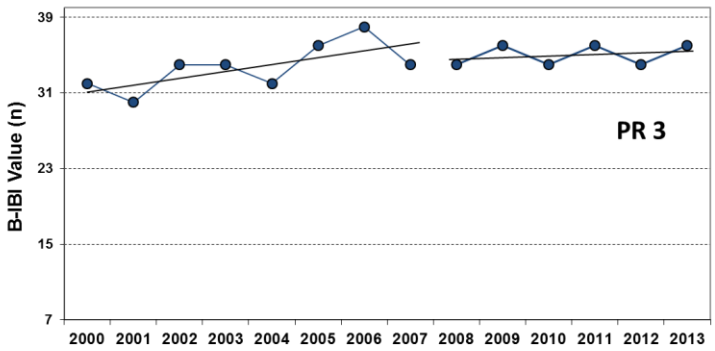


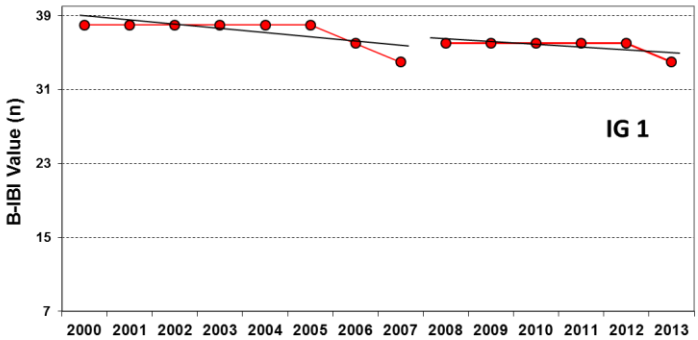

**PASSAIC RIVER 3 – PR3**. Off Hardscrabble Road (opposite Butternut Road) in Bernardsville. Cold, fast-flowing water over ideal substrate. Only drawback is close proximity of roadway. MIV community is species rich but very low in density.

***Rating*:** Group II pattern. Consistently in the "good" range.

***Action*:** Nothing to "fix" here. Maintaining current high-quality surroundings here and upstream will keep this portion of the upper Passaic River in strong contrast to sections found downstream of the Great Swamp.



**INDIAN GRAVE BROOK 1 – IG1.** Downstream of Chestnut Avenue bridge, Bernardsville. This tributary of the Passaic River hosts our "reference" site, i.e., a glimpse at the "ideal" regional MIV community living under minimally stressful conditions. Despite a location downstream from a bridge, Chestnut Avenue is lightly traveled and not a strong influence.




***Rating:*** Unique pattern. Technically a bit downhill through The study period, but really, shows essentially no change. Right at the top of the "good" category virtually every time.

***Action:*** Maintaining a riparian buffer of natural vegetation is valuable here.