MEMORANDUM

TO:	Nathan Pence
FROM:	Ed Oborny (BIO-WEST)
DATE:	**November 7, 2014**
SUBJECT:	EA HCP Biological Monitoring – **Week 30**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

The total system discharge at Comal Springs/River was 122 cfs this morning following some nice rains over the recharge zone this past week (Figure 1). Although discharge has not completely stabilized, it is evident when it does it will be well below 150 cfs. As such, this week marks the 30th consecutive week for the required weekly habitat evaluations. Weekly habitat evaluations and memorandums will continue to occur until total system discharge at Comal Springs/River increases and consistently stays above 150 cfs. HCP species specific low-flow monitoring activities relating to the < 120 cfs trigger for the Comal Springs salamander and Comal Springs riffle beetle were temporarily suspended to await flow stabilization. Fall Comprehensive sampling will conclude next week with the fountain darter visual SCUBA survey in Landa Lake and retrieval of Comal Springs riffle beetle cotton lures from the 4-week set.

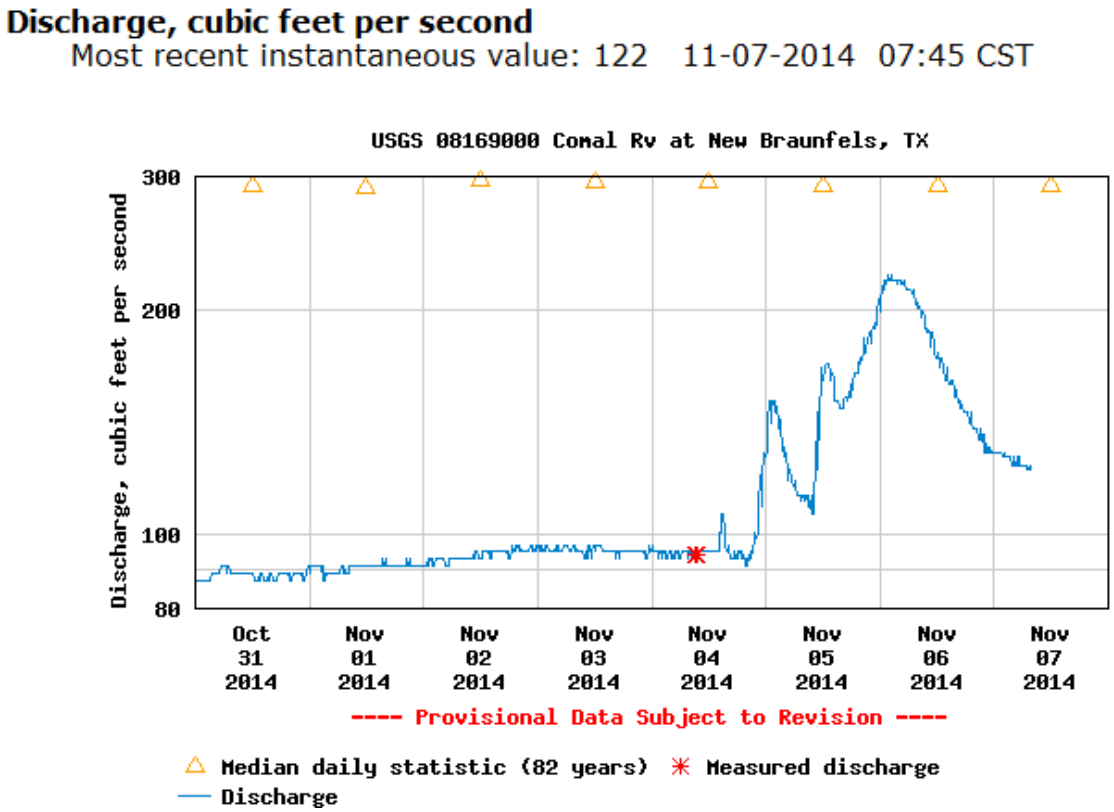

Figure 1: Screen shot of USGS webpage for the ***COMAL*** gage (08169000) showing total system discharge over the past week.

SAN MARCOS SYSTEM:
The total system discharge for San Marcos Springs/River is approximately 106 cfs this morning. Fall Comprehensive sampling was completed this week and data reduction and analysis has commenced. No Critical period sampling activities were conducted this week or are anticipated for next week.

COMAL SPRINGS/RIVER - WEEK 30 CONDITIONS:
Weekly habitat observations and photo documentation associated with HCP biological monitoring were conducted on Friday, November 7th.

OBSERVATIONS AND ACTIVITIES:
The increase in total system discharge this week (Figure 1) resulted in increases in surface habitat for the major spring runs, Upper Spring run and Spring Island areas relative to water level and discharge. Figure 2 shows some wetted surface area present at the Spring Run 1 headwaters which is a welcome site although longitudinal surface connectivity to the remaining sections of Spring Run 1 has not yet been re-established. Increased lateral surface area was quite evident in the Spring Run 1 main channel downstream of the main orifices where surface flow picks back up (Figure 3). The Upper Spring Run reach experienced only slight improvements following the influx of rain and subsequent small pulses that surprisingly did very little to flush existing patches of green algae from the reach (Figure 4). Increased upwelling areas were evident in the Spring Island area this week causing some (but not drastic) improvements in water levels around Spring Island (Figure 5) and the return of a surface pool (but no surface flow) in Spring Run 6 (Figure 6). As total system discharge was above 120 cfs the later part of this week, no Comal Springs salamander surveys were conducted. Should total system discharge settle out above 120 cfs, HCP Species Specific sampling will revert back to being regulated by the < 150 cfs trigger. If it declines below 120 cfs, Comal Springs salamander surveys will be reinstated next week.

Figure 2: Spring Run 1 headwaters – nice to see some water.

Figure 3: Spring Run 1 main channel looking upstream towards headwaters.

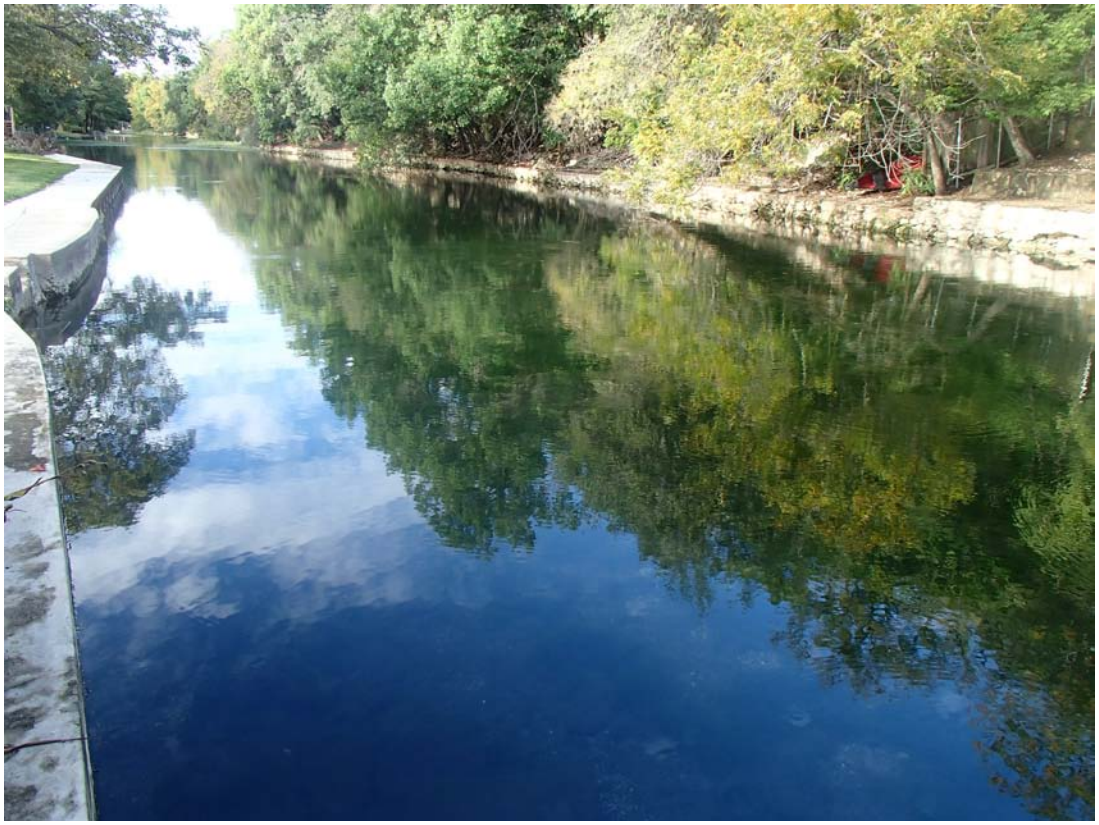

Figure 4: Upper Spring run reach – only minor improvements from last week.

Figure 5: Slightly improved water level conditions in the eastern outfall of Spring Island.

Figure 6: Surface pool exhibited in southern channel of Spring Run 6 on Spring Island.

Fountain darter habitat in the Upper Spring Run reach continues to be in poor condition relative to the rest of the Comal system. Quality fountain darter habitat continues to persist in Landa Lake although the rains this week did little to alleviate the condition of floating aquatic vegetation mats in the central portion of the lake (Figure 7). These mats will continue to be difficult to control until water levels come up enough to inundate the large stands of *Vallisneria* within the lake. As in all previous memos, the Old Channel continues to support high quality fountain darter habitat with restored native aquatic vegetation looking great (Figure 8) while the New Channel was still to turbid on Friday morning to make a formal habitat assessment (Figure 9).

.

Figure 7: Floating aquatic vegetation mat condition in Landa Lake.

In summary, total system discharge and water level conditions improved over the past week. Although improved relative to past months, endangered invertebrate habitat continues to be impacted for surface dwelling invertebrates. Although not without impacts, fountain darter habitat throughout the Comal system continues to support fountain darters as well as darter reproduction throughout the system. Fountain darters continue to persist in the Upper Spring Run reach with minor improvements to habitat conditions noted this week. Impacts to fountain darter habitat remain evident in Landa Lake with shading of rooted aquatic vegetation by thick mats of floating aquatic vegetation. The restored native aquatic vegetation areas in Landa Lake and the Old Channel continue to provide excellent fountain darter habitat.

Cheers!

Ed

Figure 8: Restored native aquatic vegetation in Old Channel.

Figure 9: Turbid conditions following rains in the New Channel of the Comal River.