



MEMORANDUM

TO: Nathan Pence
FROM: Brad Littrell (BIO-WEST)
DATE: **October 3, 2014**
SUBJECT: EA HCP Biological Monitoring – **Week 25**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

At the time of this memorandum, the total system discharge at Comal Springs was 91 cfs (Figure 1). This week marks the twenty-fifth consecutive week below 150 cfs, and therefore, the required weekly habitat evaluation was conducted on October 2nd. Weekly habitat evaluations and memorandums will continue to occur until total system discharge at Comal Springs/River increases and consistently stays above 150 cfs. At present, HCP species specific low-flow monitoring activities are being dictated by the <120 cfs trigger. The next full system Critical Period monitoring effort will be triggered when total system discharge consistently declines below 50 cfs. However, the <50 cfs Full Critical Period event appears unlikely this fall considering the recent increases in total system discharge and the fact that the fall Comprehensive sampling will be conducted in late October/early November.

The following activities associated with HCP Biological Monitoring at Comal Springs were completed this week and are anticipated for next week:

CRITICAL PERIOD MONITORING

- September 29 – October 5
 - Flow partitioning transects in the Upper Spring Run area and Landa Lake on October 2nd.
 - Comal Springs discharge measurements were taken on October 2nd.
 - Weekly photo documentation and habitat evaluation on October 2nd.
- October 6 - 12
 - Comal Springs salamander sampling.
 - Comal Springs discharge measurements.
 - Flow partitioning transects in the Upper Spring Run area and Landa Lake.
 - Weekly photo documentation and habitat evaluation.

SAN MARCOS SYSTEM:

The total system discharge for San Marcos Springs/River is recording 103 cfs this morning. Since the total system discharge has remained below 105 cfs consistently, Texas wild-rice physical measurements in vulnerable stands were conducted on October 2nd. A Critical Period full sampling event is not triggered until total system discharge declines below 100 cfs. A separate <100 cfs Full Critical Period event is unlikely the remainder of the year considering the fall Comprehensive sampling will be initiated in less than two weeks (October 13th).

COMAL SPRINGS/RIVER - WEEK 25 CONDITIONS:

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Thursday, October 2nd.

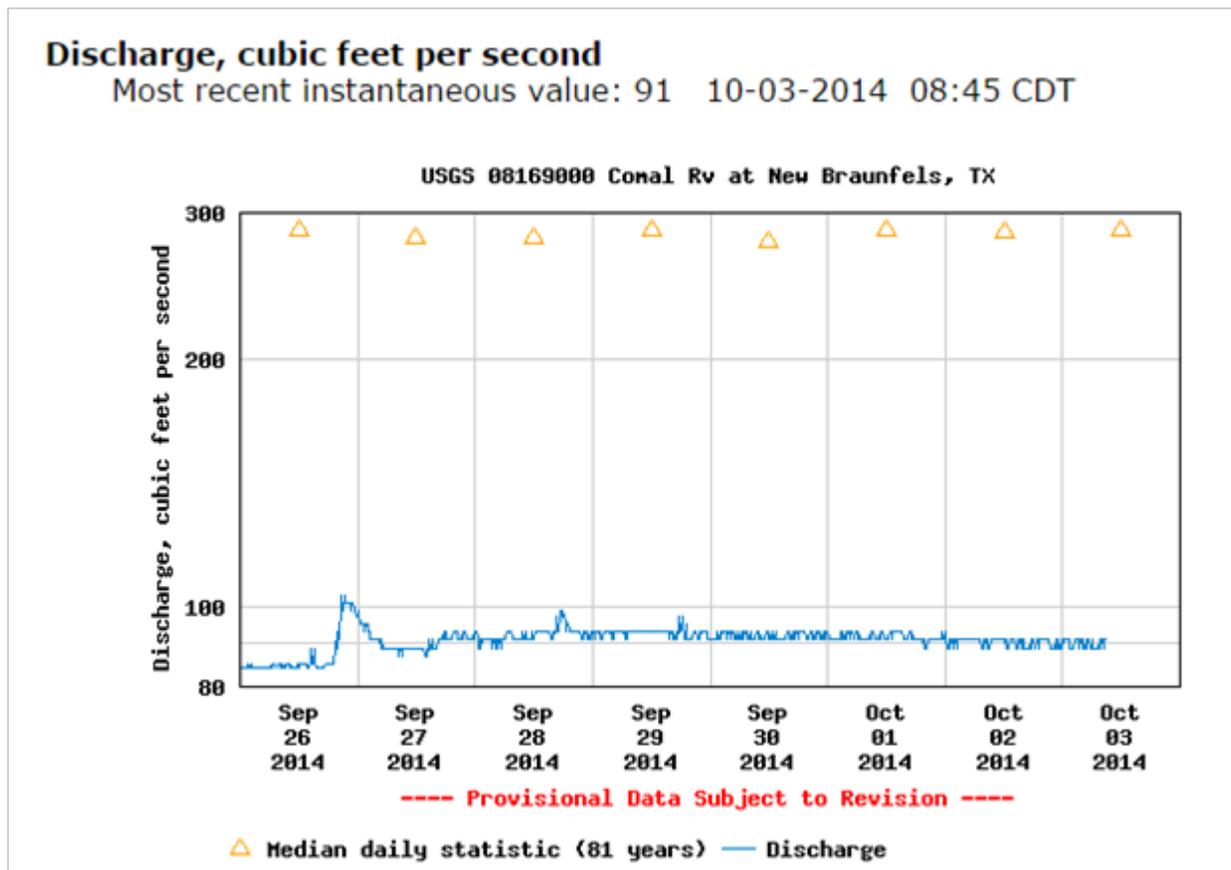


Figure 1: Screen shot of USGS webpage for the *COMAL* gage (08169000) showing total system discharge over the past week.

OBSERVATIONS AND ACTIVITIES:

Due to rain in the area on September 26, total system discharge bumped to over 100 cfs before stabilizing just above 90 cfs and remaining relatively constant all week (Figure 1). This increase in total system discharge compared to the last couple of months has led to increases in discharge within the individual spring runs. A measurable flow was detected in all the major spring runs (Spring Runs 1-3) for the first time since mid-August (Table 1). This has resulted in an increase in surface habitat compared to late August and September, particularly in Spring Run 2 (Figure 2). However, much of the upper portion of Spring Run 1 remains dry (Figure 3), and compared to typical conditions overall spring run surface habitat remains poor. Thick algae have returned to the Upper Spring Run reach (Figure 4). Although surface habitat conditions have improved slightly near Spring Island, exposed substrate is still present along the eastern outfall (Figure 5) and both channels associated with Spring Run 6 remain dry at the surface (Figure 6). However, it should be noted that water is present only a couple of inches under the gravel surface of Spring Run 6, as evidenced by the small pit someone dug near the outflow of the spring run (Figure 7).

Table 1. Comparison of discharge (cfs) throughout Comal Springs during 2014.

Date	April 23	July 17	July 31	Aug 14	Aug 28	Sept 4	Sept 11	Sept 25	Oct 2
Spring Run 1	3.1	0.7	1.1	0.2	0.06	0*	0*	0*	0.4
Spring Run 2	2.5	1.4	1.8	0.1	0	0	0	0.3	0.9
Spring Run 3	16.9	10.0	12.2	5.8	2.1	2.1	3.2	5.5	9.2
Old Channel	52.2	52.7	53.9	54.4	47.9	48.7	50.9	46.0	45.9
Upper Spring Run	2.3	0.6	2.1	0*	0*	0*	0*	0.6	2.0
Total USGS Gage	143.0	113.0	109.0	85.0	66.0	66.0	70.0	84.0	90.0

* Not measureable although still visual evidence of spring upwelling in select areas



Figure 2: Improved habitat conditions in Spring Run 2 following return of surface flow and completion of walls.



Figure 3: Upper portion of Spring Run 1 remains dry.



Figure 4: Thick algae have returned to the Upper Spring Run reach.



Figure 5: Exposed surface habitat on the eastern side of Spring Island.



Figure 6: Spring Run 6 still dry at the surface.



Figure 7: A small pit dug in Spring Run 6 showing water just a few inches below the surface.

Fountain darter habitat continues to be in poor condition in the Upper Spring Run reach but remains slightly improved relative to late August with small upwellings still evident within this reach. Quality fountain darter habitat persists in Landa Lake, but as noted in previous weeks, impacts continue to occur. The upper portion of the lake continues to be impacted by floating mats of aquatic vegetation (Figure 8). The Old Channel continues to support high quality fountain darter habitat with thriving restored native aquatic vegetation (Figure 9). The New Channel continues to support aquatic vegetation in areas above the confluence of the Old Channel. However, fountain darter habitat in the New Channel continues to be of lesser quality than in either Landa Lake or the Old Channel.



Figure 8: Floating vegetation mats in Landa Lake.



Figure 9: Thriving restored native aquatic vegetation in the Old Channel.

In summary, total system discharge, water level and habitat conditions were slightly improved compared to those reported last week. However, endangered invertebrate habitat continues to be impacted for surface dwelling invertebrates. Recent Comal Springs salamander counts were the lowest observed since initiation of the biological monitoring program. Fountain darters continue to persist in the Upper Spring Run reach despite months of extremely low spring flows in this area resulting in poor habitat conditions. Although overall fountain darter habitat conditions are better in Landa Lake, floating mats of aquatic vegetation are shading out important rooted vegetation in the upper portion of the lake. Decreased flows in the New Channel continue to impact fountain darter habitat conditions in that reach. Fortunately, the Old Channel continues to support high quality fountain darter habitat especially within the HCP restored reaches.

Please let me know if you have any questions.

Thanks,

Brad