



## MEMORANDUM

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TO: Nathan Pence and Rick Illgner  
FROM: Ed Oborny (BIO-WEST)  
DATE: **October 11, 2013**  
SUBJECT: EA HCP Bio-monitoring Update – **Week 9**

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### **BIO-MONITORING UPDATES**

#### **Comal System:**

The total system discharge at Comal Springs is  $\approx 127$  cfs. Weekly habitat evaluations continue to occur and will do so until total springflow increases above 150 cfs. The next full system critical period sampling is not scheduled until total springflow declines below 100 cfs. As per the Section 6.3.4 of the HCP ( $< 150$  cfs trigger), presence absence dip netting for the fountain darter is to take place every other month below 150 cfs. Thus far, fountain darter presence/absence dipnet sampling has been conducted in August and October.

As per the Section 6.3.4 of the HCP ( $< 120$  cfs trigger), Comal Springs riffle beetle and Comal Springs salamander sampling is to take place every other week below 120 cfs. Critical Period sample events for the riffle beetle have been conducted twice but are now suspended with flows increasing above 120 cfs. As mentioned last week, every other week sampling for the Comal Spring riffle beetle will extend through October as part of the Fall Comprehensive sampling. Comal Springs salamander sampling has been conducted one time subsequent to the  $< 120$  cfs trigger. As total system discharge is presently  $> 120$  cfs, Critical Period salamander sampling has been suspended. Should total system discharge decline below 120 cfs, both the riffle beetle and salamander Critical Period sampling components will be resumed. Fall comprehensive sampling on the Comal system is scheduled to start on October 24<sup>th</sup>.

#### **San Marcos System:**

The total system discharge for San Marcos Springs is  $\approx 112$  cfs. As described in previous memorandums, no critical period sampling for the San Marcos system is scheduled until total springflow declines below 95 cfs (Texas wild-rice physical measurements) or below 85 cfs (full Critical Period sampling event). Fall comprehensive sampling was initiated Thursday, October 10<sup>th</sup>.

#### **WEEK 9 (October 6 – 11) CONDITIONS AND ACTIVITIES:**

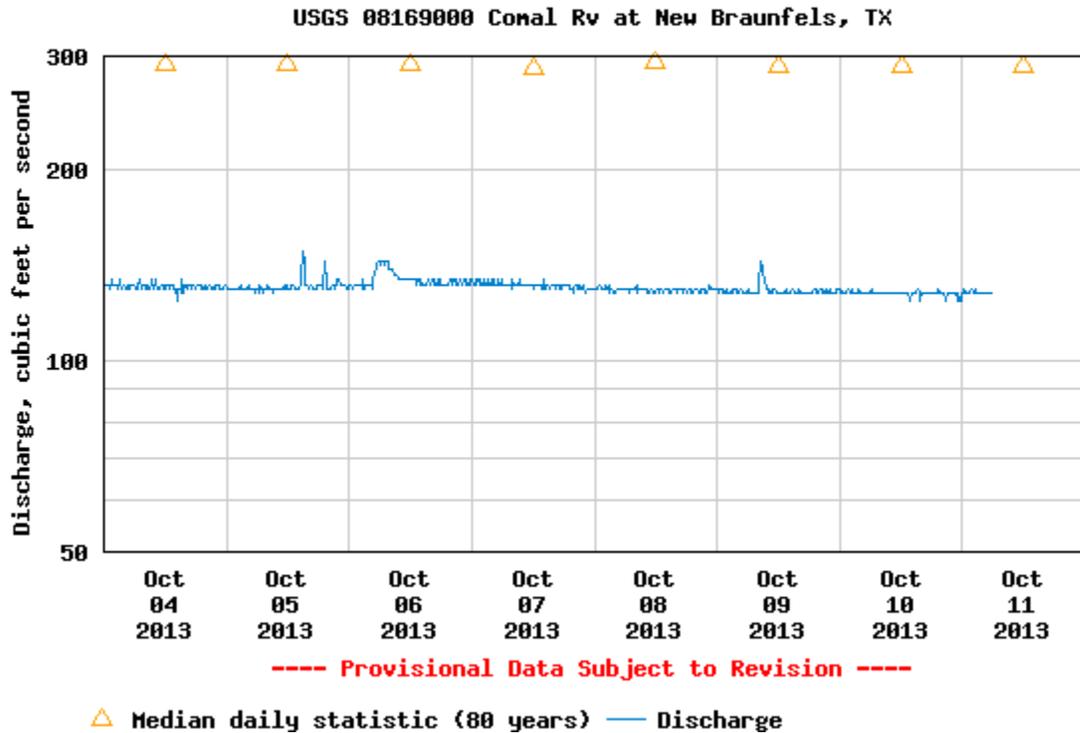
**Comal:** Weekly habitat observations and photo documentation were conducted on Thursday, October 10<sup>th</sup>. Note: All photographs in this memorandum were taken on October 10<sup>th</sup> unless otherwise noted on the photograph. Routine discharge measurements were also conducted on October 10<sup>th</sup>.

## RESULTS:

Since last week memorandum, a few small rainfall events have occurred as evident in the Figure 1 screen capture from the USGS streamflow website. Even with these events, total system discharge has slowly declined to around 127 cfs.

### Discharge, cubic feet per second

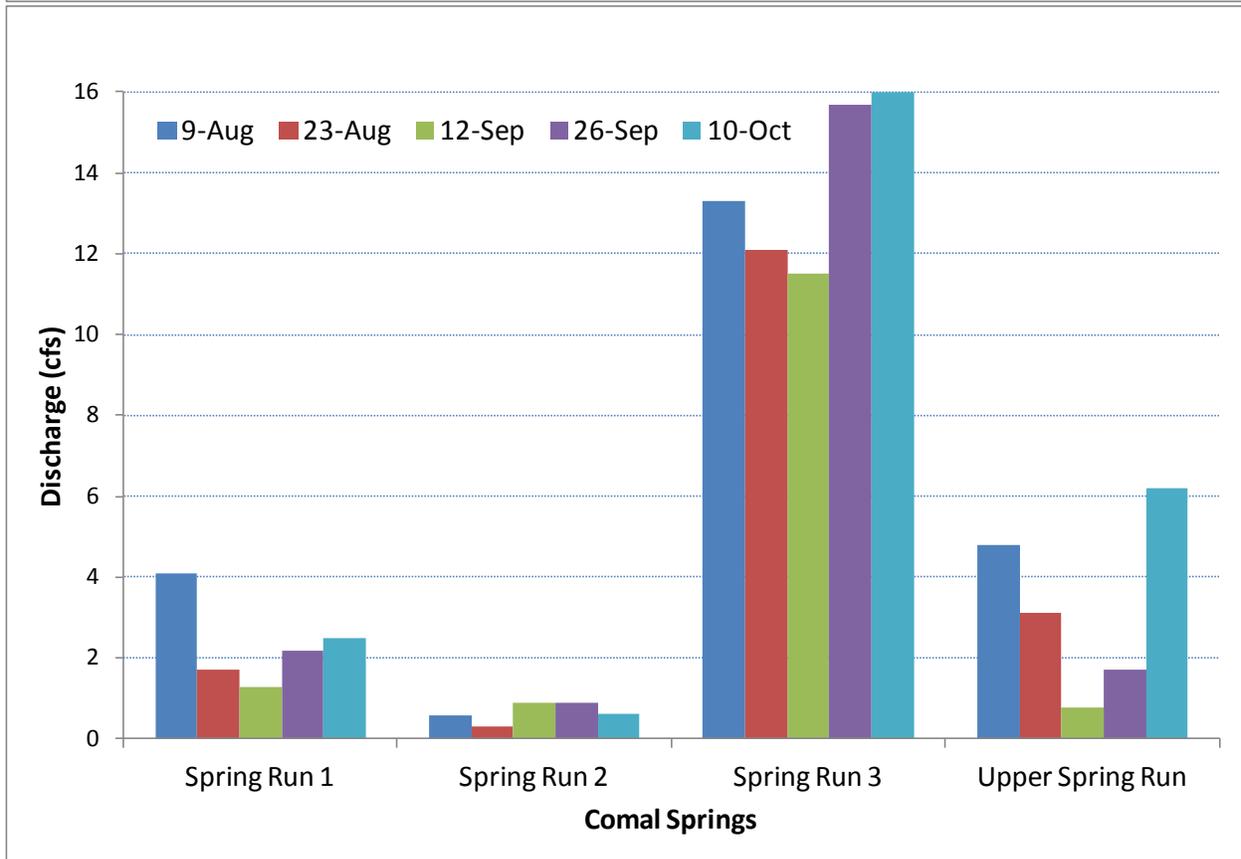
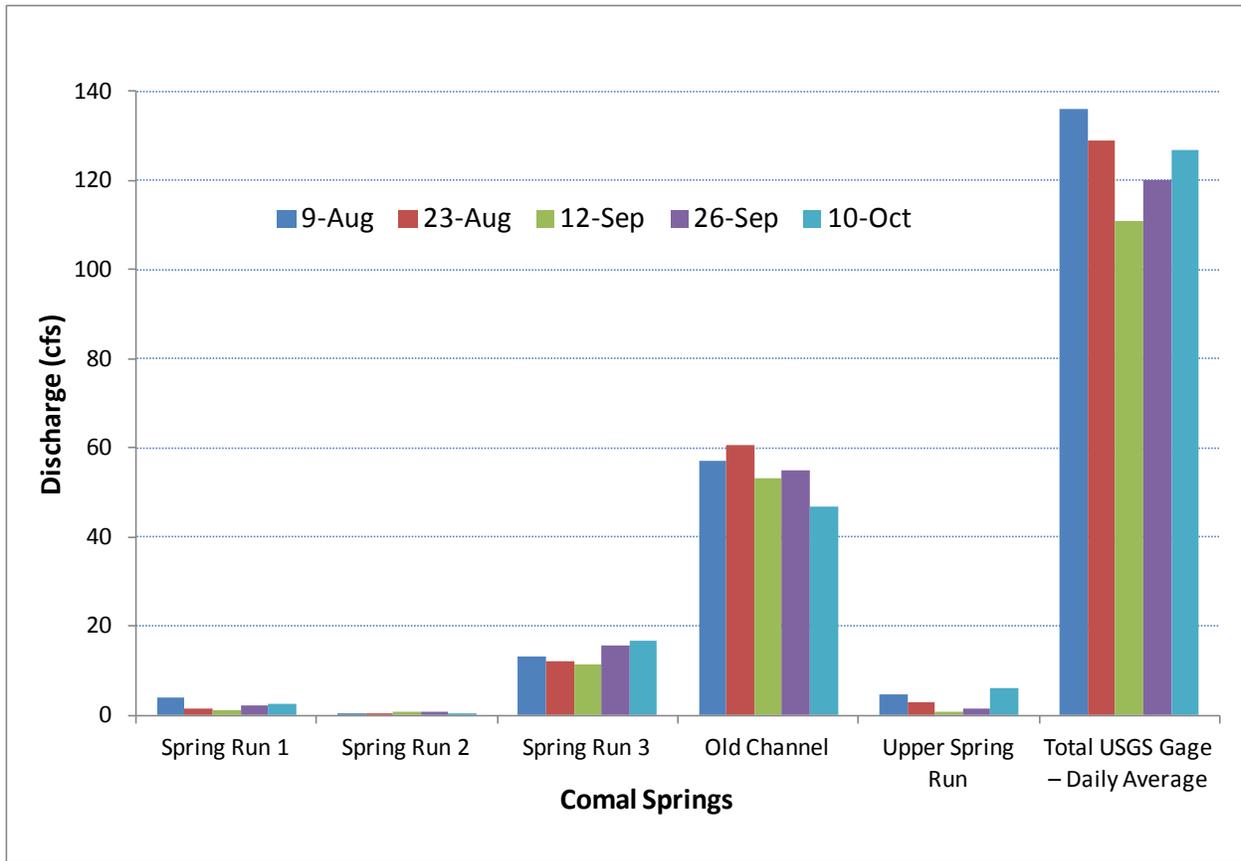
Most recent instantaneous value: 127 10-11-2013 05:45 CDT



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

During all full sampling and critical period events, discharge data is collected at HCP Bio-monitoring locations to relate directly to biological monitoring activities being conducted. We conducted discharge measurements Thursday morning (October 10<sup>th</sup>) with the results of that trip and all critical period measurements taken since the start of this event depicted in Figure 2.

The improvements in the main spring runs noted last week held steady this week although total system discharge has decreased slightly. Continuous surface water flow in Spring run 1 is still evident (Figure 3). As in all previous weeks, Spring run 3 continues to maintain connectivity throughout the run. Algae is still evident throughout the Upper Spring run reach (Figure 4) but not to the levels experienced in late August. Aquifer levels have not rebounded to the point yet to allow flow over the concrete structure at Spring run 5.



**Figure 2:** Discharge at measured sites since start of 2013 Critical Period sampling – All sites (Top) – Spring runs and Upper Spring run (bottom)



**Figure 3:** Looking upstream toward Spring run 1 main orifice. Continuous surface flow on river right (left side of photo).



**Figure 4:** Upper Spring run reach adjacent to Spring run 5. Note sporadic green algae.

The considerable improvements in surface water level and flow noted last week for Spring Island also held this week. Numerous spring upwellings were again observed and surface flow in both the northern and southern (Figure 5) runs of Spring run 6 was evident.



**Figure 5:** Bank to bank surface flow in southern run at Spring run 6 (Spring Island).

As the footprint of the Landa Lake walls construction project increased this week, I have included a couple of photos (Figures 6 and 7) showing the expanded bladder dam enclosure at the confluence of the combined Spring run 1 and 2 with Landa Lake.

Week 9 biological activities at Comal Springs included conducting Fall Comprehensive riffle beetle cotton lure retrieval at two of the three representative sample reaches. This riffle beetle collection represents the third 4-week count conducted since the inception of this critical period sampling event back in August. Comal Springs riffle beetles were the most abundant beetle collected at the Western Shoreline and Spring Run 3 study reaches this week. Lures at the Spring Island study reach lures will be retrieved on Sunday, October 13<sup>th</sup>. Table 1 shows the total Comal Springs riffle beetle counts per representative sample reach over time and in recent collections.



**Figure 6:** Landa Lake walls construction project - downstream view towards the lake.



**Figure 7:** Landa Lake walls construction project – upstream view towards Spring run 2.

**Table 1:** Comal Springs riffle beetles – Total Counts per area

Survey Date	Riffle Beetle Total Counts			
	Spring Run 3	Western Shoreline	Spring Island	Total
Long-term average (2004-2013)	152	146	132	430
May / June 2013 Spring sampling	124	68	97	289
August / Sept. 2013 Critical period (Sept. 9-15) 1 <sup>st</sup> 4-weeks	118	119	100	337
September 2013 Critical period (Sept. 23-29) 2 <sup>nd</sup> 4-weeks	109	188	66	363
<b>October 2013 Fall Comprehensive (Sept. 30 – October 11) 3<sup>rd</sup> 4-weeks</b>	78	63	To be sampled October 13	--
Lowest count per individual reach since going to cotton lures	53 (May 2010)	20 (May 2012)	20 (May 2010)	--
Lowest Total count since going to cotton lures (May 2010)	53	110	20	183

As evident in Table 1, the total Comal Springs riffle beetle counts in Spring Run 3 and Western Shoreline were less than the long-term average and May Comprehensive sampling as well as less than the first two critical period 4-week counts. A key observation was the amount of sediment that was covering the lures, especially at the Western Shoreline lure placement sites. Sedimentation from the adjacent hillside is common following rainfall events and thus, this sediment was likely caused by the rains the past few weeks. Controlling this sedimentation has been and will continue to be a focus of the Comal Springs riffle beetle HCP restoration work that is ongoing. Under average flow conditions, springflow typically disperses rainfall induced sediment from upwelling areas in a few days to a week. However, at lower than average flow conditions, this dispersal may be a slower process. We will continue to closely watch this rainfall / sedimentation / low flow dispersal phenomenon. Although counts were lower than average, both sites continue to support greater than the lowest recorded individual site samples (Table 1). As mentioned, the Spring Island lures will be retrieved on October 13 and Table 1 will be updated for next week's memorandum. As part of the Fall Comprehensive sampling, we continue to maintain duplicate sets of cotton lures within the study reaches enabling us to document 4-week counts every 2 weeks through October.

Similar to the first 8 week's memorandums, fountain darter habitat conditions in Landa Lake continue to look good with large expanses of bryophytes both as individual patches and within the other vegetation types. The floating vegetation mat condition in Landa Lake continues to be under control (Figure 8). In addition to the lake, fountain darter habitat continues to prosper in the Old Channel (Figure 9) and New Channel (Figure 10).



**Figure 8:** Floating vegetation mat condition in Landa Lake



**Figure 9:** Restored aquatic vegetation in Old Channel.



**Figure 10:** Expanses of *Cabomba* in the New Channel.

Overall, the Comal system continues to support quality fountain darter habitat conditions in Landa Lake and Old and New Channels. Reduced fountain darter habitat conditions continue to persist in the Upper Spring Run reach. Impacts to endangered Comal invertebrate surface habitat were alleviated to a modest degree with the recent increase and holding of surface water level and springflows in the main spring runs and Spring Island area. However, sedimentation along the western shoreline has impacted invertebrate habitat within this reach. Relative to average flow conditions, impacts to invertebrate habitats are still occurring in the Comal system.

### **San Marcos**

As mentioned in all previous updates related to the Comal system, no critical period sampling activities have been triggered this summer on the San Marcos system. Fall comprehensive sampling was initiated on the San Marcos system on Thursday, October 10<sup>th</sup>.

As always, please don't hesitate to contact me if you have any questions or concerns.

Ed