



## MEMORANDUM

TO: Nathan Pence  
FROM: Ed Oborny (BIO-WEST)  
DATE: **November 14, 2014**  
SUBJECT: EA HCP Biological Monitoring – **Week 31**

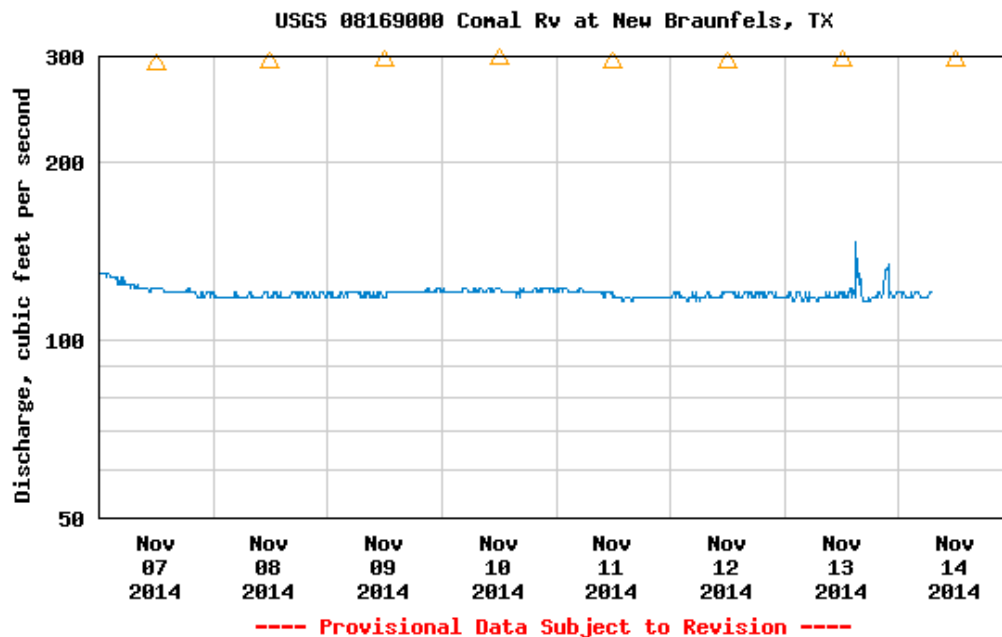
### BIOLOGICAL MONITORING UPDATES

#### COMAL SYSTEM:

The total system discharge at Comal Springs/River was 120 cfs this morning after holding steady the entire week (Figure 1). This week marks the 31<sup>st</sup> consecutive week for habitat evaluations and memorandums which 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 suspended this week as discharge continued to hover right around that mark. Fall Comprehensive sampling concluded this week with the fountain darter visual SCUBA survey in Landa Lake and retrieval of Comal Springs riffle beetle cotton lures. Should total system discharge drop consistently below 120 cfs next week, Comal Springs salamander surveys and spring run discharge measurements will be conducted.

#### Discharge, cubic feet per second

Most recent instantaneous value: 120 11-14-2014 06:45 CST



△ Median daily statistic (82 years) — Discharge

**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 105 cfs this morning. No Critical period sampling activities were conducted this week or are anticipated for next week.

**COMAL SPRINGS/RIVER - WEEK 31 CONDITIONS:**

Weekly habitat observations and photo documentation associated with HCP biological monitoring were conducted on Thursday, November 13<sup>th</sup>.

**OBSERVATIONS AND ACTIVITIES:**

The increase in total system discharge last week stabilized over the weekend and was very consistent this week (Figure 1). Stabilizing at approximately 30 cfs higher than two weeks ago continued to result 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 that surface discharge had returned to one of the two major orifice openings at the headwaters of Spring Run 1. Increased longitudinal and lateral surface area was also evident in the Spring Run 1 main channel downstream of the main orifices. The Upper Spring Run reach experienced slight improvements for the second week in a row. It was nice to see water in Spring Run 5 (Figure 3) again although it was not flowing over the concrete structure into the Upper Spring Run. Slight improvements in water level around Spring Island were evident again this week and standing water was still present in Spring Run 6 (Figure 4). As total system discharge hovered around the 120 cfs mark all week, no Comal Springs salamander surveys were conducted.



**Figure 2:** Spring Run 1 headwaters – discharge evident from major orifice nearest the sidewalk.





**Figure 3:** Spring Run 5 – Upper Spring Run.



**Figure 4:** Surface pool in southern channel of Spring Run 6 on Spring Island.

For the Comal Springs riffle beetle surveys, Table 2 shows the results of counts (adults and larvae) over the past several years of lower than average flows along with the long-term average for all non-critical period sample events. During the November 2014 sampling effort Comal Springs riffle beetle adults and larvae were collected at each of the study locations. As evident in Table 2, counts increased above long-term averages at both the Western Shoreline and Spring Island locations. Unfortunately four lures were missing in Spring Run 3 affecting the total count for beetles at this location. Figures 5 and 6 show the smiling crew conducting Comal Springs riffle beetle surveys yesterday near Spring Island on a brisk 39° F day (not to mention the 25 mph wind, but at least the water was warm ☺).

**Table 2:** Comal Springs riffle beetle counts (adult and larvae).

Survey Date	Comal Springs Riffle Beetle Counts (Adults and Larvae)			
	Spring Run 3	Western Shoreline	Spring Island	Total – Three sites combined
Long-term average	116	78	75	269
May / June 2013	124	68	97	289
August / Sept. 2013	118	119	100	337
September 2013	109	188	66	363
October 2013	78	63	88	229
April / May 2014	146	104	40	290
May 2014	138	98	42	278
June 2014	119	130	34	283
July 15 <sup>th</sup> 2014	146	143	A	NA
July 28 <sup>th</sup> 2014	77	220	57	354
August 13 <sup>th</sup> 2014	46 <sup>B</sup>	52 <sup>B</sup>	A	NA
September 11, 2014	37	67	30	134
October 16, 2014	71	77	40	188
November 13, 2014	47 <sup>C</sup>	87	103	237
Lowest count per site since going to cotton lures	37 (Sept. 2014)	20 (May 2012)	20 (May 2010)	--
Lowest Combined Count for all three sites since going to cotton lures (September 2014)				134

<sup>A</sup> Lures not available for collection during this sample event.

<sup>B</sup> Six lures at each sample reach had to be moved due to sites becoming too shallow or dry.

<sup>C</sup> Four lures missing at Spring Run 3.



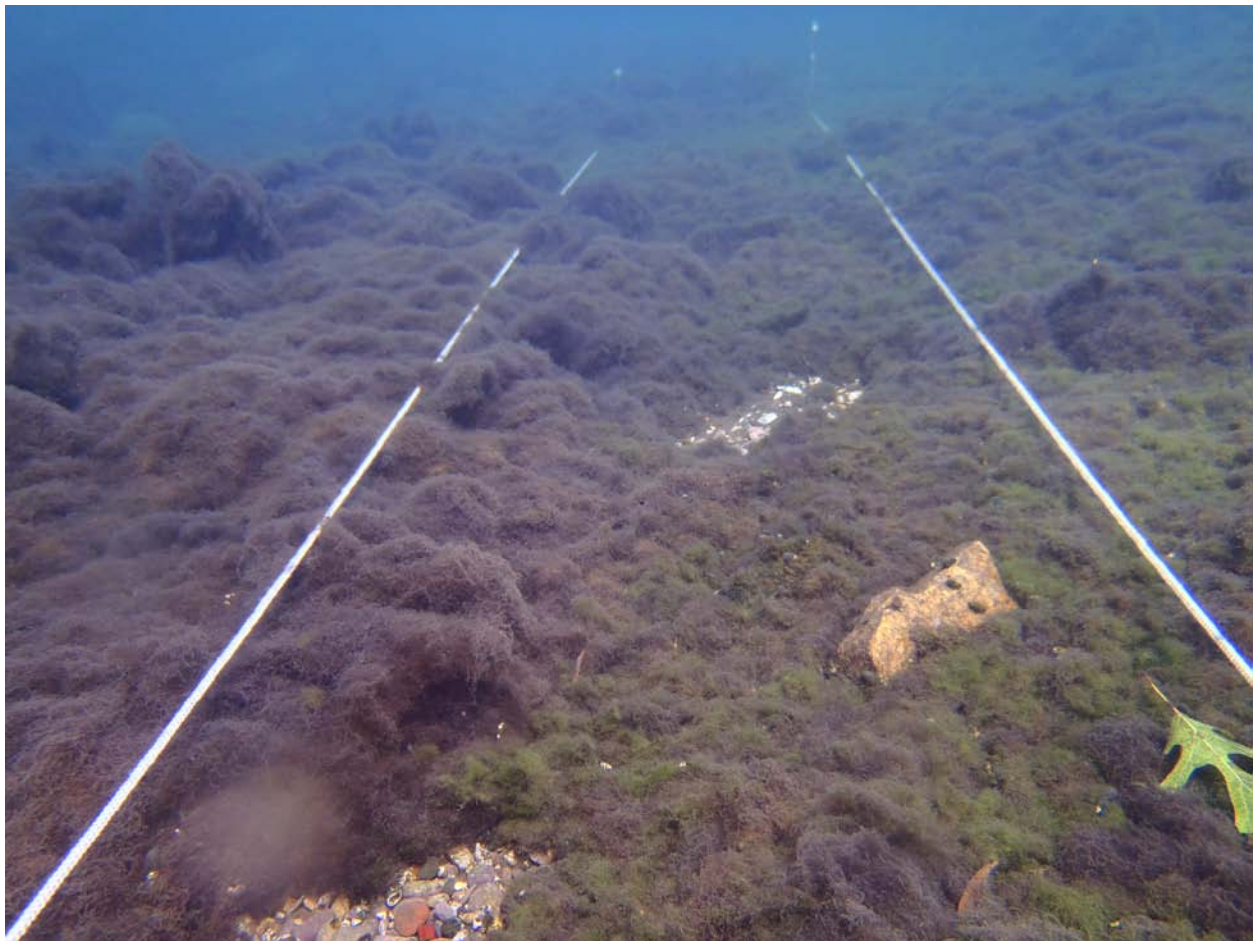


**Figure 5:** Comal Springs riffle beetle survey near Spring Island.



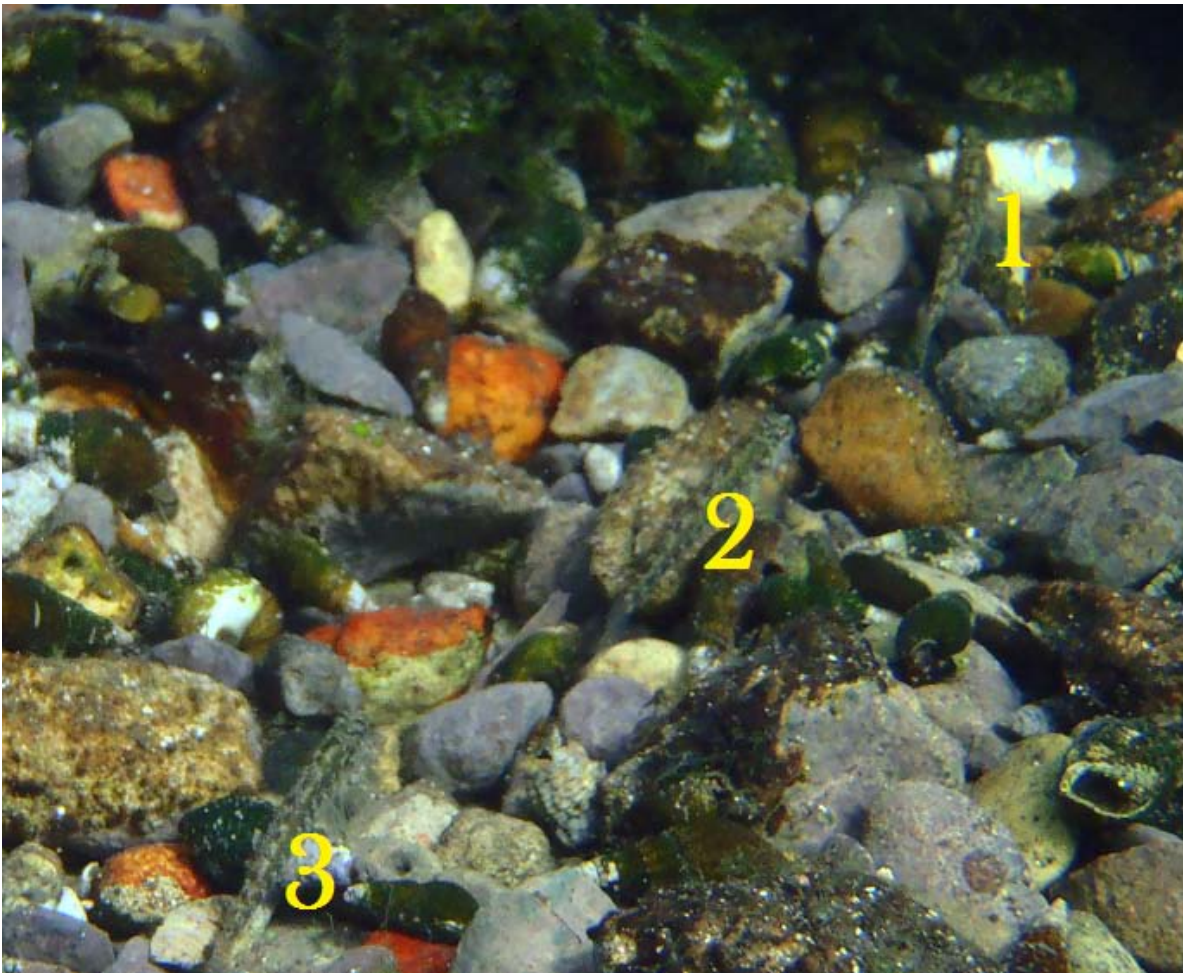
**Figure 6:** Comal Springs riffle beetle survey near Spring Island.

Although habitat conditions in the upper system have improved some the past two weeks, 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 and was very evident in the deeper portions of Landa Lake during the fountain darter visual surveys conducted this week (Figure 7). Figure 8 is a group of fountain darters apparently playing follow the leader that afternoon, while Figure 9 is a Comal Spring salamander that stopped and posed long enough for me to get a nice photo. Although the rains of last week did little to alleviate the condition of floating aquatic vegetation mats in the central portion of the lake, the on-going efforts being conducted by the City of New Braunfels are starting to make a real difference (Figure 10). The floating aquatic vegetation mat condition in Landa Lake at present is as good as it has been since late spring. As in all previous memos, the Old Channel continues to support high quality fountain darter habitat with restored native aquatic vegetation excelling (Figure 11). The New Channel fountain darter habitat did not experience any negative effects from the small flush last week and was still abundant this week (Figure 12).



**Figure 7:** High quality habitat in deeper portions of Landa Lake during SCUBA survey.





**Figure 8:** Trio of fountain darters in deepest portion of Landa Lake.



**Figure 9:** Comal Springs salamander in deepest portion of Landa Lake.





**Figure 10:** Floating aquatic vegetation mat condition in Landa Lake.



**Figure 11:** Restored native aquatic vegetation in Old Channel.





**Figure 12:** Abundant fountain darter habitat in the New Channel of the Comal River.

In summary, total system discharge and water level conditions stabilized from last week's rains and remained consistent over the past week. Endangered invertebrate habitat continues to be impacted for surface dwelling invertebrates but it was encouraging to see increased counts of Comal Springs riffle beetles for a second straight month. Fountain darters continue to persist in the Upper Spring Run reach with slight improvements to habitat conditions noted again this week. The deeper portions of Landa Lake are supporting high quality fountain darter habitat and the floating aquatic mat condition is in the best shape it has been in nearly six months. Restored native aquatic vegetation areas in Landa Lake and the Old Channel continue to provide excellent fountain darter habitat. Aquatic vegetation remains abundant in the New Channel as it was not scoured during last week's small pulse event. Although the resiliency of the system continues to amaze and habitat conditions throughout the Comal system are slightly improved from this summer and early fall, conditions have not returned to those observed pre-drought.

Cheers!

Ed