



## MEMORANDUM

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TO: Nathan Pence  
FROM: Ed Oborny (BIO-WEST)  
DATE: **October 10, 2014**  
SUBJECT: EA HCP Biological Monitoring – **Week 26**

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### **BIOLOGICAL MONITORING UPDATES**

#### **COMAL SYSTEM:**

At the time of this memorandum, the total system discharge at Comal Springs was 84 cfs (Figure 1). This week marks six consecutive months below 150 cfs, and therefore, the required weekly habitat evaluation was conducted on October 8<sup>th</sup>. 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 continue to be dictated by the <120 cfs trigger. Fall Comprehensive sampling will be initiated on October 27<sup>th</sup>.

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

#### **CRITICAL PERIOD MONITORING**

- October 5-12
  - Flow partitioning transects in the Upper Spring Run area and Landa Lake on October 8<sup>th</sup>.
  - Weekly photo documentation and habitat evaluation on October 8<sup>th</sup>.
  - Comal Springs salamander sampling was conducted on October 9<sup>th</sup>.
  - Comal Springs discharge measurements were taken on October 9<sup>th</sup>.
- October 12-19
  - Weekly photo documentation and habitat evaluation.
  - Comal springs riffle beetle counts and cotton lure reset.

#### **SAN MARCOS SYSTEM:**

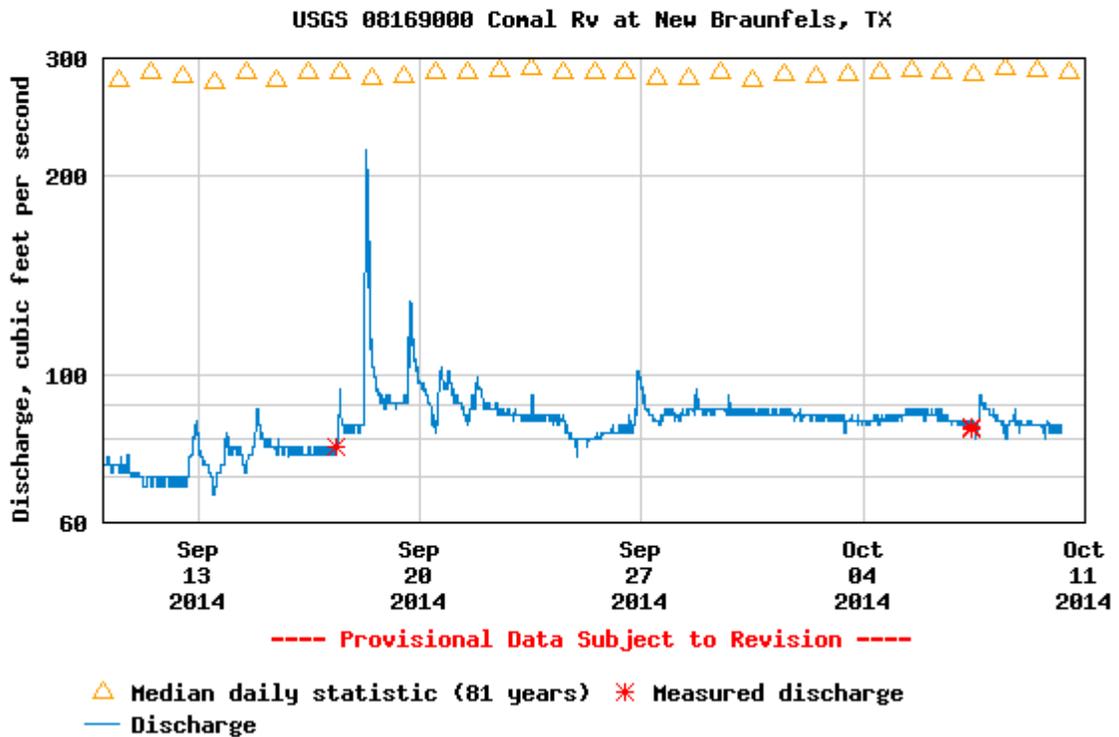
The total system discharge for San Marcos Springs/River is approximately 108 cfs this morning following a USGS adjustment earlier in the week. A Critical Period full sampling event is not triggered until total system discharge declines below 100 cfs. Fall Comprehensive sampling will be initiated on Monday, October 13<sup>th</sup>. Sampling activities on the San Marcos River next week will include aquatic vegetation mapping of intensive study reaches, macroinvertebrate sampling, and fountain darter dip netting (timed and presence/absence) surveys.

**COMAL SPRINGS/RIVER - WEEK 26 CONDITIONS:**

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Wednesday, October 8<sup>th</sup>.

**Discharge, cubic feet per second**

Most recent instantaneous value: 84 10-10-2014 05:45 CDT



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

**OBSERVATIONS AND ACTIVITIES:**

Discharge has been fairly stable throughout the system for the past several weeks with increases across all sites relative to late August / early September (Table 1). As such, surface habitat for the major spring runs, Upper Spring run and Spring Island areas has remained fairly constant this week relative to water level and discharge. The main orifices at Spring 1 run continue to be dry on the surface (Figure 2) but increased surface discharge in Spring Run 1 is evident at the terminus of the newly constructed wall on river left (Figure 3). Figure 4 shows a newly installed subsurface sampler in Spring Run 1 located just downstream of the surface discharge shown in the previous figure. Figure 5 shows the increased surface area currently present in Spring Run 3. Although slightly improved relative to the late August / early September, surface habitat conditions in the major spring runs remains poor. Algae continues to be prevalent in the Upper Spring run reach and exposed substrate is still present in the eastern outfall of Spring Island (Figure 6).

**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	Oct 9
Spring Run 1	3.1	0.7	1.1	0.2	0.06	0*	0*	0*	0.4	0.3
Spring Run 2	2.5	1.4	1.8	0.1	0	0	0	0.3	0.9	0.4
Spring Run 3	16.9	10.0	12.2	5.8	2.1	2.1	3.2	5.5	9.2	6.3
Old Channel	52.2	52.7	53.9	54.4	47.9	48.7	50.9	46.0	45.9	47.2
Upper Spring Run	2.3	0.6	2.1	0*	0*	0*	0*	0.6	2.0	1.3
Total USGS Gage	143.0	113.0	109.0	85.0	66.0	66.0	70.0	84.0	90.0	84.0

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



**Figure 2:** Spring Run 1 main orifices.



**Figure 3:** Spring Run 1 discharge at terminus of newly constructed walls.



**Figure 4:** Newly installed subsurface sampler in Spring Run 1 just downstream of Figure 3.



**Figure 5:** Increased surface habitat in Spring Run 3 relative to early September.



**Figure 6:** Red-shouldered hawk hanging out on exposed surface habitat near Spring Island.

Per the < 120 cfs HCP species specific trigger, Comal Springs salamander surveys were conducted this week. Table 2 shows the long-term average as well as recent counts of Comal Springs salamanders in each of the sample locations. No salamanders were found in the dried up spring runs on Spring Island. However, unlike the last two surveys, four salamanders were counted this week in Spring Run 1. This is a preliminary, yet encouraging result with salamanders returning (likely from the subsurface) following the re-wetting of surface habitat. The ability of Comal Springs salamanders to occupy and persist in sub-surface habitats is unknown; therefore, continued monitoring under these rare conditions will help fill important data gaps for this species. The number of salamanders observed this week at Spring Run 3 and the eastern outfall of Spring Island doubled and tripled from last count, respectively. Although the Comal Springs salamander is listed in the HCP and Incidental Take Permit (ITP), the conditions in the ITP are not presently active for this species as it is not listed as threatened or endangered with this directly acknowledged (Item H: 7-9) in the ITP.

**Table 2:** Comal Springs salamander timed counts

Survey Date	Salamander Counts			
	Spring Run 1	Spring Run 3	Spring Island (runs)	Spring Island – Eastern outfall
Long-term average (2002-2014)	22	13	3	9
April 18, 2013	17	15	0	4
August 16, 2013	8	12	0	8
September 12, 2013	6	13	1	11
October 29, 2013	7	9	2	6
April 25, 2014	12	23	3	7
July 17, 2014	16	24	0	8
July 31, 2014	27	27	0	11
August 14, 2014	1	6	0	7
August 28, 2014	0	8	0	11
September 4, 2014	1	13	0	10
September 11, 2014	0	3	0	7
September 25, 2014	0	5	0	4
October 8, 2014	4	10	0	12

Fountain darter habitat continues to be in poor condition in the Upper Spring Run reach. The condition of floating aquatic vegetation mats in Landa Lake this week was improved in the upper portion of the lake (Figure 7) but still needs attention in center of the lake (Figure 8). These mats continue to shade large areas of *Vallisneria* which otherwise would look like the stands shown in Figure 9. Quality fountain darter habitat persists in Landa Lake and the New Channel (Figure 10) but not without impacted areas. The Old Channel continues to support high quality fountain darter habitat with thriving restored native aquatic vegetation (Figure 10).



**Figure 7:** Floating vegetation mats very limited in the upper part of Landa Lake.



**Figure 8:** Floating vegetation mats in the center of Landa Lake.



**Figure 9:** *Vallisneria* (eelgrass) in Landa Lake with no floating mats shading plants.



**Figure 10:** Large areas of aquatic vegetation still present in the New Channel.



**Figure 11:** Restored native aquatic vegetation in Old Channel (former Sediment Island area).

In summary, total system discharge, water level and habitat conditions have been relatively stable for the past three weeks. Endangered invertebrate habitat continues to be impacted for surface dwelling invertebrates but it was encouraging to see increased counts of Comal Springs salamanders this week. Fountain darter habitat conditions throughout the Comal system have remained consistent the past several weeks, with the restored native aquatic vegetation areas in the Old Channel continuing to thrive. As mentioned at the start of this memorandum, Fall Comprehensive sampling will be initiated in a few weeks. That should be fun and informative after six months of conditions below 150 cfs total system discharge.

Cheers!

Ed