



MEMORANDUM

TO: Nathan Pence
FROM: Ed Oborny (BIO-WEST)
DATE: **May 16, 2014**
SUBJECT: EA HCP Biological Monitoring – **Week 5**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

At the time of this memorandum, the total system discharge at Comal Springs was 131 cfs. As Comal Springs remained below 150 cfs for a fifth consecutive week, the required weekly habitat evaluation was conducted on May 14th. Weekly habitat evaluations and memorandums will continue to occur until total system discharge at Comal Springs/River increases above 150 cfs. As per HCP triggered low-flow sampling requirements, should total system discharge continue to stay below 150 cfs, aquatic vegetation mapping in study reaches and fountain darter presence/absence dip net sampling will take place again in June. Although total system discharge briefly declined below 120 cfs last week, rainfall since that decline has increased total system discharge above that trigger at present. As such, the Comal Springs riffle beetle, Comal Springs salamander, and Comal discharge measurements/sampling that were initially triggered are currently postponed until flows consistently decline below 120 cfs. As described in previous weeks, the next Critical Period full sampling event is not triggered until the total system discharge declines below 100 cfs.

SAN MARCOS SYSTEM:

The total system discharge for San Marcos Springs is approximately 110 cfs. The Spring 2014 Comprehensive sampling initiated on April 17th was completed this week with the remainder of the fish community sampling. As part of critical period monitoring, Texas wild-rice physical measurements are to be conducted every 5 cfs decline (below 120 cfs), not to exceed one event per week. The next Texas wild-rice physical measurement sampling event will happen when total system discharge declines below 105 cfs. The first Critical Period full sampling event for San Marcos is not triggered until the total system discharge declines below 100 cfs.

COMAL SPRINGS/RIVER - WEEK 5 CONDITIONS:

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Wednesday, May 14th. All pictures in this memorandum were taken on that date.

OBSERVATIONS AND ACTIVITIES:

The total system discharge at Comal Springs is up approximately 15 cfs since last week's memorandum with rains that occurred last weekend and again earlier this week. Total system

discharge spiked slightly over 300 cfs early on May 13th (Figure 1) resulting from surface water input into the system from area rainfall. The initial pulse of flow rapidly moved through the system and total system discharge has settled at approximately 131 cfs as of this memorandum (Figure 1).

Discharge, cubic feet per second

Most recent instantaneous value: 131 05-16-2014 07:45 CDT

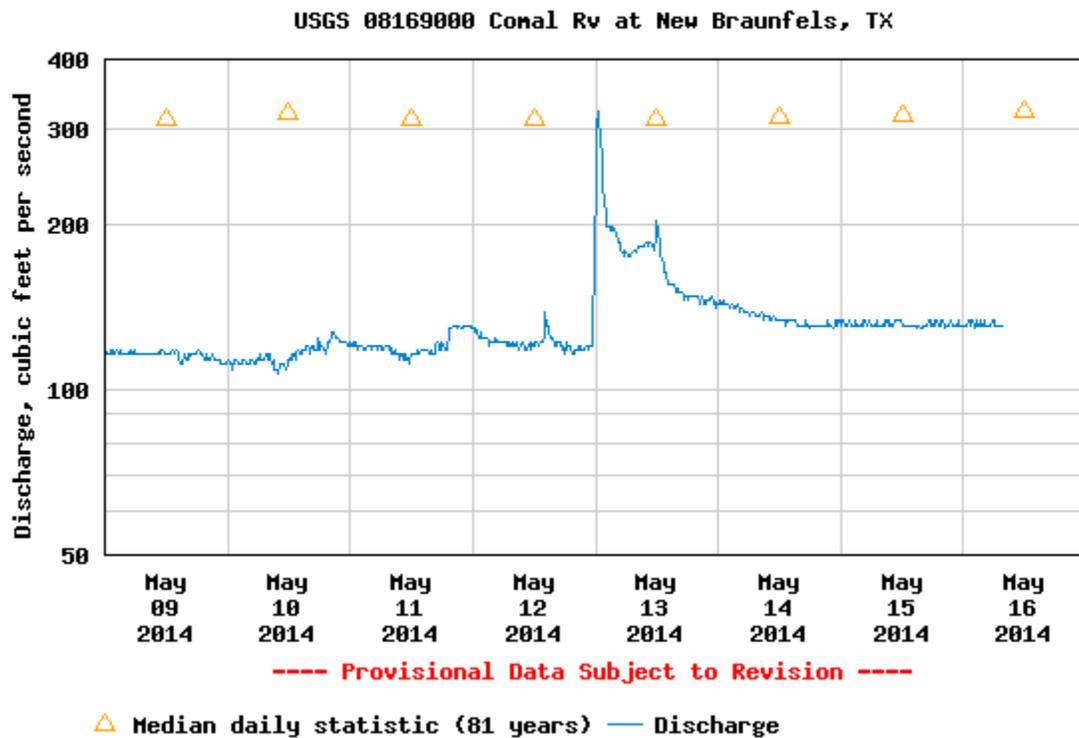


Figure 1: Screen shot of USGS webpage for the *COMAL* gage (08169000) showing total system discharge over the past week.

The recent rainfall and subsequent increase in total system discharge resulted in slightly improved conditions throughout the Comal System. The two major orifices at Spring Run 1 that had ceased surface flow last week supported a slight amount of surface discharge on May 14th (Figure 2). Additionally, the Spring Run 1 channel immediately downstream of the headwaters that was dry last week was supporting a very constricted but flowing channel (Figure 3) this week. However, without additional rainfall, the cessation of flow in the main orifices and drying of the upper portions of the channel will likely return in the very near future. The reestablishment of surface flow in Spring Run 1 translates into a slight increase in surface habitat for the Comal Springs invertebrates over the past week. Similar to last week, Spring Run 2 continues to maintain surface flow for the main portion of the channel while Spring Run 3 continues to maintain connectivity throughout the run. Algae continues to be interspersed with bryophytes in most of the Upper Spring run reach (Figure 4) with the previously noted stagnant conditions in Spring Run 5 being slightly alleviated this past week with the rainfall that occurred. As evident in Figure 4, the rainfall and pulse flows did not affect any of the bryophytes or aquatic macrophytes in the Upper Spring Run reach.



Figure 2: Spring Run 1 main orifice exhibiting surface discharge (May 14th)

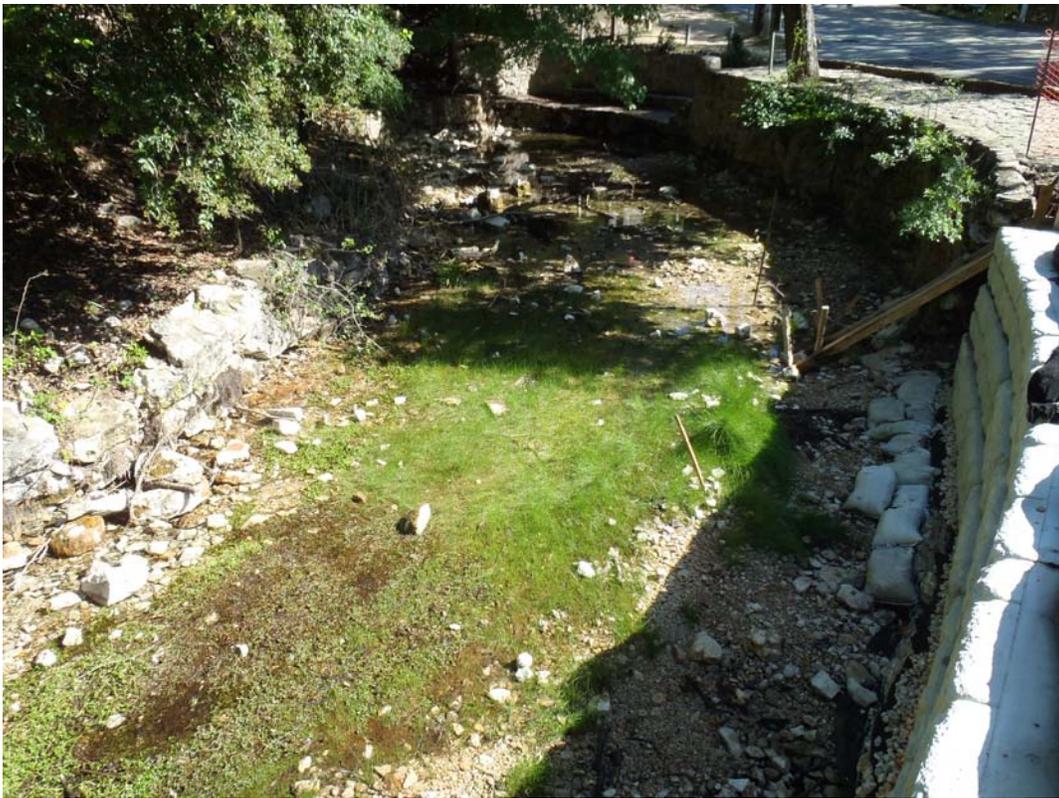


Figure 3: Spring Run 1 constricted but flowing channel (looking upstream toward headwaters).



Figure 4: Upper Spring Run reach mix of bryophytes, macrophytes and algae.

Fountain darters remain in this upper reach as well as in Blieders creek at this time. The surface water level in the Spring Island area improved slightly this past week reducing exposed surface habitat (Figure 5). In fact, surface water flow in both the northern and southern (Figure 6) spring runs associated with Spring Run 6 on Spring Island were restored. As noted for Spring Run 1, unless additional rainfall occurs, this restoration of surface flow will likely be short-lived.

Fountain darter habitat conditions in Landa Lake continue to look good with large areas of bryophytes (Figure 7) and restored *Ludwigia* (Figure 8) present. Figure 9 is a completely full MUPPT nursery in great condition in Landa Lake. The rainfall and small pulse event pushed some of the floating vegetation mats downstream which alleviated some of the concern in the main portion of the lake (Figure 10), but built up in other areas as shown just above the fishing pier (Figure 11). Floating vegetation mats will likely continue to be a concern all summer with the potential for shading underlying habitats. In addition to the lake, fountain darter habitat continues to thrive in the Old Channel (Figure 12). The recent rainfall caused turbid conditions in the New Channel (Figure 13) so no assessment of habitat was possible. However, based on the limited size and duration of the event, it is not anticipated that any notable reductions in aquatic vegetation took place.



Figure 5: Slightly less exposed surface habitat adjacent to Spring Island area



Figure 6: Minimal surface flow in southern channel of Spring Run 6 on Spring Island



Figure 7: Underwater shot of extensive bryophytes in Landa Lake.



Figure 8: Restored *Ludwigia* interspersed with bryophytes in the center of Landa Lake.



Figure 9: MUPPT nursery in Landa Lake.



Figure 10: Slightly improved floating vegetation mat condition in Landa Lake.



Figure 11: Floating vegetation mat build up just upstream of Landa Lake fishing pier.



Figure 12: Restored native aquatic vegetation (habitat) in the Old Channel.



Figure 13: Turbid conditions from recent pulse flow in the New Channel.

Relative to last week's report, endangered species habitat conditions in the Comal Springs/River were slightly improved, at least temporarily. The system continues to support quality fountain darter habitat conditions in all but the Upper Spring Run reach. Although reduced habitat conditions are present in the Upper Spring Run reach, fountain darters persist. Floating vegetation mats in Landa Lake remain a concern and will need attention all summer long should total system discharge remain low.

Surface habitat for the endangered Comal invertebrates was slightly improved with the increased water levels from the experienced rainfall. However, as noted throughout this memorandum, these slightly improved conditions will likely be short-lived without additional rainfall and recharge to the aquifer. We will continue to track conditions on the Comal System on a weekly basis.

Based on the recently completed HCP Spring Comprehensive biological monitoring event, the San Marcos system is presently supporting quality endangered species habitat conditions throughout. As previously mentioned, the first Critical Period full event trigger for San Marcos is not until 100 cfs

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