MEMORANDUM

TO:	Nathan Pence
FROM:	Ed Oborny (BIO-WEST)
DATE:	**June 27, 2014**
SUBJECT:	EA HCP Biological Monitoring – **Week 11**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

At the time of this memorandum, the total system discharge at Comal Springs was 136 cfs. This makes the eleventh consecutive week below 150 cfs, and therefore, the required weekly habitat evaluation was conducted on June 26th. Weekly habitat evaluations and memorandums will continue to occur until total system discharge at Comal Springs/River increases and consistently stays above 150 cfs. As per HCP triggered low-flow sampling requirements, aquatic vegetation mapping in study reaches was completed this week. The next Critical Period full sampling event is not triggered until the total system discharge declines below 100 cfs. The next scheduled routine monitoring is fountain darter dip netting in July.

SAN MARCOS SYSTEM:

The total system discharge for San Marcos Springs/River is approximately 154 cfs. This is slightly higher than the past few weeks. At the present total discharge conditions, the San Marcos River should not trigger any critical period biological monitoring for some time. The next scheduled routine monitoring is full-system Texas wild-rice mapping and fountain darter dip netting in late July.

COMAL SPRINGS/RIVER - WEEK 11 CONDITIONS:

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Thursday, June 26th.

OBSERVATIONS AND ACTIVITIES:

This week, the J17 water level reached a low of approximately 635' but had rebounded to over 639' following rain over the watershed mid-week. At the time of this memo, J17 reads just slightly higher than it did last Friday. As a result, habitat conditions throughout the system this week are very similar to last weeks.

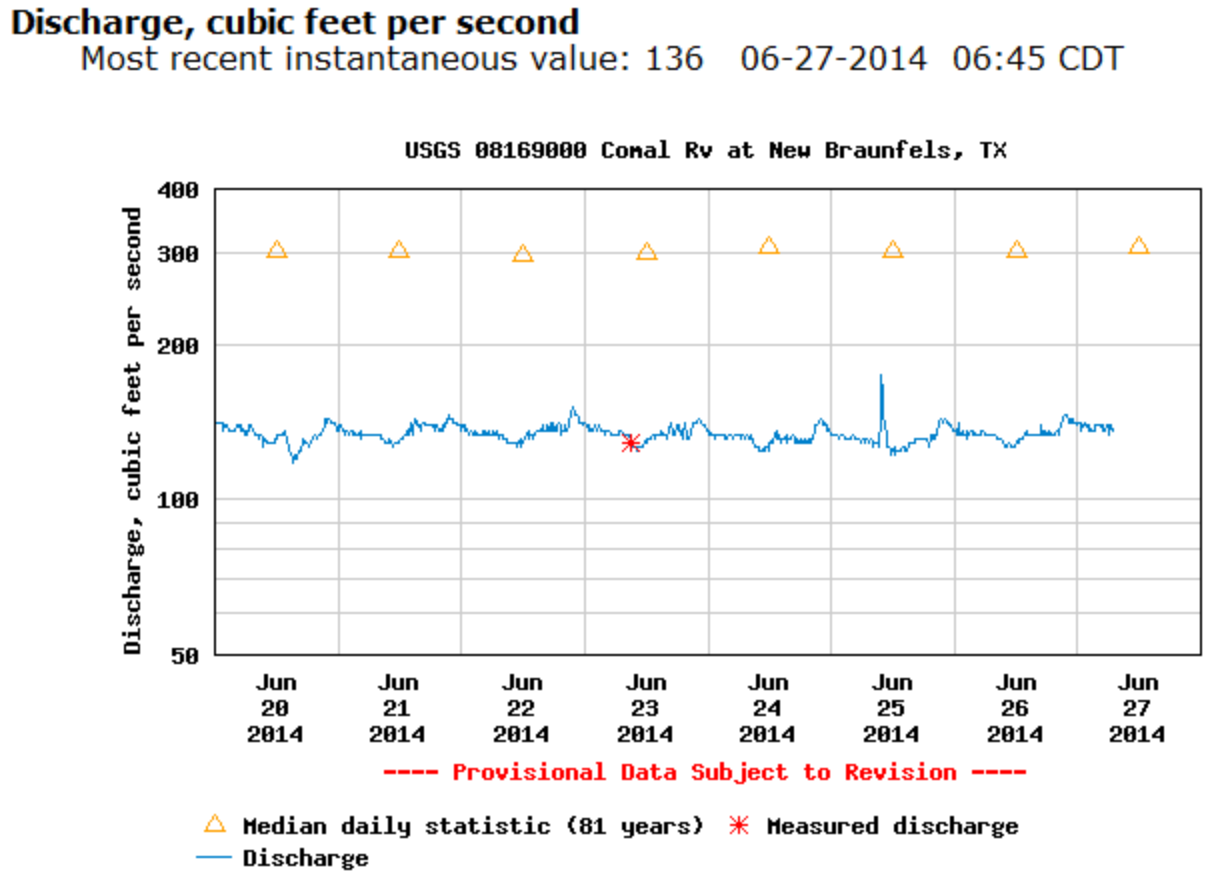

Figure 1: Screen shot of USGS webpage for the ***COMAL*** gage (08169000) showing total system discharge over the past week.

As noted last week, the two major orifices at Spring Run 1 both are maintaining surface discharge (Figure 2) with the Spring Run 1 channel also maintaining complete surface flow connectivity (Figure 3). Spring Run 2 continues to maintain surface flow for the main portion of the channel and Spring Run 3 continues to maintain connectivity throughout the run. At present, algae is thick and getting thicker in the Upper Spring Run reach making it difficult for native bryophytes to compete (Figure 4). Unless there is a significant change in flow conditions, this will likely only get worse in coming weeks, as previous experience has shown that algae coverage is worst during the hottest part of the summer. However, fountain darter movement study observations conducted this week confirmed that darters are still relatively common in this reach. The surface water level in the Spring Island area was similar to last week with continued exposed surface habitat in the area along the eastern side of the island (Figure 5). Additionally, the northern spring run on Spring Island is essentially dry with only a few small surface puddles left and no observable surface flow, while the southern spring run maintains surface flow but is becoming increasingly stagnant (Figure 6).

Although increased algae continues to be observed in Landa Lake, the bryophytes in the upper portion of the lake and restored *Ludwigia* areas are doing well, and in general fountain darter habitat conditions look good. As expected with continued low-flow conditions, floating vegetation mats in Landa Lake continue to accumulate and will require attention to prevent impacts to underlying habitat (Figure 7). The large bladders being used in the walls construction project are quite evident in figures 7 and 8, with the latter photo showing where the Landa Circle gazebo used to be.

Figure 2: Spring Run 1 main orifices.

Figure 3: Spring Run 1 main channel looking downstream.

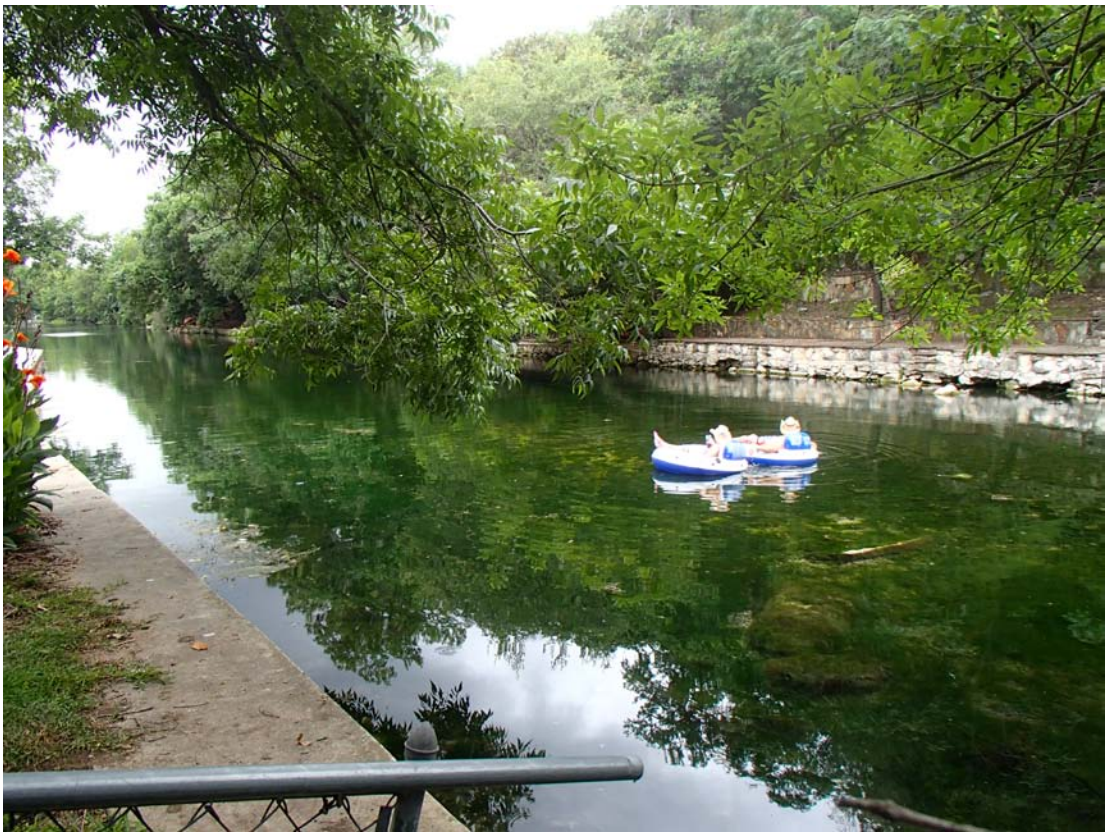

Figure 4: Algae continuing to proliferate in the Upper Spring Run Reach.

Figure 5: Continued exposed surface habitat adjacent to Spring Island.

Figure 6: Stagnant conditions within the southern spring run on Spring Island.

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Figure 7: Floating vegetation mats in Landa Lake behind the large bladder for the walls project.

Figure 8: Gazebo area at the confluence of Spring Run 3 and Landa Lake.

In addition to the lake, fountain darter habitat continues to thrive throughout the Old Channel with recent aquatic vegetation restoration work (Figure 9) improving darter habitat conditions in this reach. Despite continued heavy, summer recreational traffic, the New Channel above Clemens Dam continues to maintain extensive patches of *Cabomba* which provide high quality fountain darter habitat (Figure 10).

Relative to last week's memo, endangered species habitat conditions in the Comal Springs/River have remained fairly consistent. Overall, the system continues to support quality fountain darter habitat conditions throughout most of its entirety. Although slight reductions in fountain darter habitat conditions continue to occur because of increases in algae each week in the Upper Spring Run reach, fountain darters continue to persist in this reach. Floating vegetation mats in Landa Lake will continue to need attention all summer and beyond should lower than average total system discharge conditions persist. The maintenance of inundated areas and wetted area in individual spring runs this week translated into maintained surface habitat conditions for the endangered Comal invertebrates. Slight reductions in habitat conditions were caused by stagnant water and algae build-up appearing in select shallow areas such as the southern spring run on Spring Island.

Finally, I have included a couple of photos from the Flow Split Management project showing the completed new culvert (Figure 11 – Hooray) and the soon to be sealed off old culverts (Figure 12).

As always, if you have any questions, please give me a shout. Have a great weekend! Ed

Figure 9: Restored vegetation growth occurring in the Old Channel.

Figure 10: Thick *Cabomba* in the New Channel interspersed with open areas along far bank.

Figure 11: New Culvert completed for Flow Split Management Project.

Figure 12: Small culverts area awaiting repair on the Flow Split Project.