

The City of New Braunfels
2014 Work Plans
(For Implementing Committee action on July 18, 2013)

5.2.1 Flow split management

Flow-split management is intended to complement the ecological restoration of native aquatic vegetation in the Old Channel, by reducing long-duration high flows, meeting flow split management targets specified in the HCP –Table 5.3, and by allowing for more seasonal variability in the flow regime that mimics a more natural flow pattern. Presently, the culverts governing flow from Landa Lake into the Old Channel are inoperable, but currently under redesign and repair. As a result, a constant level of springflow can proceed through the culverts and into the Old Channel. The main objective for this Work Plan is to provide managed flows in the Old Channel.

Flow Control Structures

Long-term Objective: maintain appropriate flow control structures to manage discharges entering the Old Channel to optimize conditions for fountain darter habitat.

Assumptions: Prior to 2014, the City of New Braunfels observed the smaller culverts (there are two) that connect Landa Lake with the old river channel under tee box two of the golf course were in serious disrepair. The areas around the outside of the pipes eroded away and needed to be reestablished to prevent lowering of Landa Lake levels as a result of dam/culvert failure.

The City of New Braunfels will have restored the original crest elevation of Landa Dam and removed accumulated sedimentation from the Landa Lake emergency spillway. This will restore functionality of the structure as originally constructed, while reducing the potential for stress and damage to the gates, culverts, and associated infrastructure during high water events. The Landa Lake emergency spillway connects the lake to the Old Channel of the Comal River approximately 100 feet downstream of the gates and culverts. Design and permitting are complete and a construction contract was authorized in March 2013. Construction is anticipated to be complete by the end of 2013 at cost of approximately \$300,000 supported entirely by the City of New Braunfels.

EAHCP Science Committee – After initial design for flow control structure repair/restoration work was completed and prior to actual construction, the Science Committee was consulted on April 3rd, 2013 to ensure proposed concepts maximize the benefit to the species and allow for flexibility as flow regimes may change through the Adaptive Management process.

As part of the 2013 work plan, the City of New Braunfels' consultant is in the process of undertaking an assessment of the existing four flow control structures (two small culverts, one large culvert, and the Springfed Pool inlet gate) used to divert water into the Old Channel. The

assessment is determining if any or all of these flow control structures should be replaced, decommissioned, and/or repaired in order to meet flow split objectives outlined in Table 5-3 of the HCP. One goal is the prevention of sustained high flows in the Old Channel that may result in scouring of restored native aquatic vegetation or channel substrates. The assessment is also incorporating design of trash racks necessary for protection of the structures and ensuring continued aeration of the water entering the Old Channel. As supported by the Science Committee, initial investigation indicates the two small culverts are not necessary, and the recommendation is to plug and secure these structures. On May 9th, 2013, the Science Committee will review and comment on the 2014 Work Plan. Their comments and recommendations will be considered.

Target 2014/Performance Measure: Finish all repairs, exercising gates and perform routine maintenance for the flow control structures and gates. Based on final design, cost and permitting, it is possible that gate functionality may not be fully restored in 2013 and unfinished work will need to be completed in 2014

Methods: An engineering evaluation of the existing control structures is currently being completed per the 2013 work plan to determine the most cost-effective measure(s) for repair, replacement, or decommissioning of the flow control structures. This includes an evaluation of hydraulic capacity under different Comal Springs flow rates to ensure the design can meet target flow splits specified in the HCP by Table 5.3. The assessment also considers maintaining proper aeration for flows in the Old Channel. The work plan includes preparation of necessary engineering designs; identifies methods to minimize environmental impacts within the Old Channel; and necessary supporting documentation to obtain required permits. Repair and/or replacement of control structures will be initiated upon completion of assessment, design and receipt of required permits. It is anticipated that construction will begin in 2013 and will possibly continue into 2014.

Monitoring: See Flow Split Management below.

Flow Split Management

Long-term Objective: Manipulate flows entering the Old Channel as specified in the HCP per Table 5-3, to optimize conditions for fountain darter habitat as controlled by operational flow control structures and real time gauge data. Provide maintenance on new flow control structures for long term functionality.

Assumptions: Flow-split management is contingent on fully operational flow control structures and access to real time gauge data.

Target 2014 /Performance Measure: Maintain target flow splits as controlled by proper operation and maintenance of repaired gates. Control gates are currently scheduled for repair in the 2013 work plan. The City of New Braunfels staff will operate the gates and monitor effectiveness and

keep flows within the ranges defined by the HCP desired flow-split regime. Gates will be kept free of debris and exercised under a preventive maintenance program.

Methods: The City of New Braunfels staff will monitor real time flow readings from the gauges in the Comal River system and adjust flow control structures to meet the required flow split targets. The City of New Braunfels staff will observe flow control structures for the Old Channel and New Channel of the Comal River monthly, and more often if appropriate, and adjust flows based on measurements from the real-time flow gauges to maintain beneficial hydrologic conditions for habitat in the Old Channel. When total Comal Springs flow drops to 150 cfs and below, flow split structures will be operated as defined in the HCP to protect habitat within the Old Channel year-round, while continuing to allow flow in the New Channel at all times (*see* Table 5-3). Additionally, when total Comal Springs flow drops below 100 cfs, the City of New Braunfels staff will monitor and adjust if necessary the flow control structures more frequently to ensure the flow split ratio defined in Table 5-3.

**TABLE 5-3
FLOW-SPLIT MANAGEMENT FOR OLD AND NEW CHANNELS**

Total Comal Springflow (cfs)	Old Channel (cfs)		New Channel (cfs)	
	Fall, Winter	Spring, Summer	Fall, Winter	Spring, Summer
350+	80	60	270+	290+
300	80	60	220	240
250	80	60	170	190
200	70	60	130	140
150		60		90
100		60		40
80		50		30
70		50		20
60		40		20
50		40		10
40		30		10
30		20		10

Monitoring: Monitoring of daily flow split volumes will be based on information provided by the real time flow gauges in the Comal River. Proper adjustments of the control structures will be accomplished as outlined in the HCP and after major runoff events. Repairs will be immediately undertaken when necessary, but will be dependent upon safe working conditions in the field and availability of any damaged parts to the system. Trash racks at the flow control structures will be monitored on a quarterly basis and cleaned as necessary to prevent operational problems. When required, trash racks will also be cleaned after major runoff events.

Allocated funds for 2014 : \$ 0.00

Estimated Budget: \$ \$3,000

\$1,000 Routine cleaning of trash racks and Inspections
\$2,000 – Repair and Maintenance (as needed)

5.2.3 Management of Public Recreation

Public recreational use of the Comal River ecosystems include, but are not limited to swimming, wading, tubing, boating, canoeing, kayaking, golfing, scuba diving, snorkeling and fishing. To minimize the impacts of incidental take resulting from recreation, the City of New Braunfels will continue to expand their existing recreation control measures as specified in Section 5.2.3.(1) of the HCP. The City of New Braunfels will enforce these measures (as covered in various sections of the HCP) to ensure their success.

Long-term Objective: To maintain and continue to expand the voluntary Certificate of Inclusion Program (COI) for all outfitters utilizing the Comal River; while utilizing opportunities to educate the public about the Endangered Species and importance of their protection.

Assumptions: This measure was not specifically funded for FY 2014. The COI is voluntary and is established per the 2013 Work Plan. The 2014 goal is to obtain participation by a majority of the outfitters utilizing the Comal River.

Target 2014/Performance Measure: Continue to inform Outfitters of the benefits to their businesses from participating in the COI program and initiation of the program. Continue to recruit any Outfitters that have not signed up in 2013.

Methods: The City will utilize its existing public input process to develop the COI application, criteria and program administration. The COI will include the minimum requirements as specified in Section 5.2.3 (2) a-h.

Monitoring: The City of New Braunfels staff will collaborate with all COI participants and report on the program annually.

Allocated funds for 2014: \$ 0

Estimated Budget: \$1000
\$1000 – Advertise COI program

5.2.4 Decaying Vegetation Removal and Dissolved Oxygen Management

To minimize and mitigate the impact of incidental take from low-flow events, based on real time monitoring of dissolved oxygen (DO) levels in Landa Lake indicating a water quality concern created by decaying vegetation, the City of New Braunfels will continue to manage the DO management program. The program will be focused on ensuring adequate DO levels for the ecosystem regardless of the initiating circumstances.

Long-term Objective: Maintain acceptable levels of DO within Landa Lake and the Old Channel and minimize the impacts associated with decaying vegetation (or other factors).

Assumptions: Section 5.2.4 of the HCP implied the initiation of these actions when total Comal River discharges fall below 80 cfs. However, it is assumed that whenever low DO is evident regardless of the Comal River flows, remedial actions identified below are to be undertaken. Two portable Aerators have been installed in Landa Lake and are utilized when low DO levels are identified.

Target 2014/Performance Measure: Continue to monitor real time water quality monitoring devices in Landa Lake and maintain equipment to assist in DO management.

Methods: In 2013, real time water quality monitoring systems have been installed in Landa Lake and measures dissolved oxygen, temperature, pH, conductivity and turbidity. Since a real time water quality monitoring station has been established in the main body of Landa Lake in the vicinity of the Old Channel flow control structure; real time telemetry data will be connected to a computer system at the City of New Braunfels for monitoring water quality conditions. This is accomplished using wireless technology. The Comal River website will display data being collected in real time within the Comal River.

In 2013, two solar powered aeration systems were installed in Landa Lake and are currently being tested for effectiveness, including whether an additional unit(s) may be required. The solar powered aerators are based on a target area of approximately 10 acres (i.e., ~ 70 percent of Landa Lake). Initial testing will involve an initial measurement of the diel oxygen profiles for several days during the summer to establish a baseline and then running the units for several days and monitoring the effective changes in the oxygen profiles. Based on these tests, a determination of whether additional units or location changes may be necessary. The units will then be stored for deployment in the event conditions warrant it.

If predicted or observed dissolved oxygen diel patterns are trending toward less than 4 mg/l (or other trigger/criteria as established through the Adaptive Management Process) the solar powered aeration units will be deployed. Vegetation conditions will then be evaluated via visual observations for signs of stress or decay on a weekly basis. If vegetation decay is evident and the aeration system is not able to keep oxygen levels above target thresholds, then mechanical removal of decaying vegetation will be initiated or other comparable management strategies will

be developed based on specific conditions. In the event of mechanical vegetation removal, vegetation will systematically be examined for covered species and the species salvaged and returned to the system. Removed vegetation will be disposed offsite at a compost facility.

Monthly Monitoring: Real time dissolved oxygen and temperature will be monitored to evaluate projected trends indicative of problematic temperature or oxygen levels. Vegetation in Landa Lake will be monitored on a monthly basis during the May through September period to assess overall conditions and apparent stress levels (i.e., leaf coloration and condition). In the event projected trends of problematic oxygen levels are observed, then vegetation conditions will be evaluated via visual observations for signs of stress or decay on a weekly basis.

Allocated funds for 2014:\$ 15,000

Estimated Budget: \$ 15,000

\$ 12,750 Monitoring/Maintenance

\$ 2,250 15% Contingency

5.2.7 Prohibition of Hazardous Materials Transport Across the Comal & Tributaries

The City of New Braunfels will continue coordination with the Texas Department of Transportation (TXDOT) to promote prohibited transportation of hazardous materials on routes that cross the Comal River and its tributaries. This effort may include refinement of City of New Braunfels ordinances, additional signage, and TXDOT approval.

Long-term Objective: Continue to identify and eliminate hazardous materials transport across the Comal River and its tributaries.

Assumptions: This effort will involve continual stakeholder engagement, public meetings, and coordination with TXDOT. This work plan element is contingent on TXDOT continuous participation and support.

Target 2014 Performance Measure: Expanding the existing process of identification of smaller roadways and alternate routes that cross the Comal River and its tributaries. These routes pose an eventual threat to the endangered species and the need for refinement to the existing Hazardous Material prohibition transport plan, will provide safer transport across the Comal River and its tributaries.

Methods: Continue to expand and identify alternate transport routes that cross the Comal River and its primary tributaries that require protection and therefore prohibition. This information will be used to initiate public meetings, drafting and approval of City ordinances, and continuing coordination with TXDOT.

Monitoring: Annual monitoring of all installed signage will be undertaken and repair or replacement as necessary.

Allocated funds for 2014 0.00

Estimated Budget:\$ 10,000

\$ 5,000 Signage

\$ 5,000 Facilitation of Public Process

5.2.10 Litter and Floating Vegetation Control

The City of New Braunfels will perform activities to manage floating vegetation and litter removal to enhance habitats for Covered Species. Management activities will include dislodging of vegetation mats, to allow continued movement downstream, that form on top of the water surface, particularly during low flows, and removal of litter for the littoral zone and stream bottom. The City of New Braunfels will manage aquatic vegetation in Landa Lake by removing floating vegetation that is entrained on the flow control structures, fishing piers, Spring Island, Landa Park Drive Bridge and other areas where mats collect. Litter removal in Landa Lake and the Comal River will continue under the existing City of New Braunfels program.

Long-term Objective: Minimize impacts of floating vegetation and litter on the overall aquatic community within the Comal River.

Assumptions: Litter and floating vegetation mat removal will follow the existing protocol and schedules currently employed by the City of New Braunfels as described below.

Methods: Currently the City of New Braunfels contracts with a private contractor for removal of litter and dislodging of floating weedmats from Landa Lake, the Comal River and the Guadalupe River. Those contracts are renewed annually and in 2012 were set at a cost not to exceed \$160,000 and include numerous mechanisms to reduce cost and scope mid season. SCUBA collections on the Comal River were added in 2007 as a pilot program and in 2008 as part of the contracts. SCUBA was added to protect the underwater habitat in the Comal River. Also in 2008, litter collection in Landa Lake was added to specifically protect species habitat. The City of New Braunfels cooperated with the USFWS to implement litter collections in Landa Lake. These additional expenditures have been voluntary on the part of the City of New Braunfels in past years, but now are mandatory based on requirements in the HCP Section 5.2.10. It is possible that without funding from the HCP, this mitigation action would be continued to be unfunded in 2014. Funds previously committed for litter collection by the City of New Braunfels will be allocated for flow control work in 2014.

All litter removal and weedmat dislodging in Landa Lake is associated with protection of resource (species habitat), as there is no tubing recreation in Landa Lake. Underwater collection (SCUBA) in the Comal River is associated with resource protection (species habitat), however above water collection on the Comal River is a direct result of tubing activities. Collections on the Guadalupe River have no relevance to the HCP or species protection. Therefore only costs associated with Landa Lake and underwater Comal River collections will be included in HCP activities and budgets.

Target 2014/Performance Measure: Continued implementation of the established protocols.

Methods: *Landa Lake* - (May 1st to September 30th). Vegetation maintenance and liter pickup during the non-recreation season is on an as needed basis. Floating vegetation mats will be dislodged from flow control structures and other locations.

Comal River – (May 1st to September 30th). Vegetation maintenance and liter pickup during the non-recreation season is on an as needed basis. Floating vegetation will be pushed downstream and inorganic litter will be picked up from the substrate, surface and littoral zone of the Comal River in the Old Channel and from the New Channel downstream to below the last tuber takeout point during the recreational season.

Monitoring: City of New Braunfels staff will monitor the contractor for compliance and initiate additional action when deemed necessary.

Allocated funds for 2014: \$ 0

Estimated Budget:\$40,000

\$37,500 Underwater Litter Collection (22 weeks, Comal River and Landa Lake)

\$2,500 Weed Mat Clearing (34 weeks)

5.2.11 Golf Course Management and Planning

The City of New Braunfels will implement their existing Integrated Pest Management Plan (IPMP) for Landa Park Golf Course. This process will incorporate public input and the Golf Course Advisory Board. The golf course IPMP will incorporate environmentally sensitive techniques to minimize chemical application, continue to improve water quality, and reduce negative effects to the ecosystem. Expanded water quality sampling targeted at Golf Course operations will be conducted as described in Section of 5.7.2 of the HCP.

Long-term Objective: Management of the golf course and grounds to minimize and reduce negative effects to aquatic ecosystem in Landa Lake and the Comal River.

Assumptions: The Landa Park Golf Course will implement their existing IPMP

Target 2014/Performance Measure: Implement the existing IPMP using continual Public Input process.

Methods: The golf course and grounds will be maintained in an aesthetically pleasing, yet environmentally sensitive manner. It is the responsibility of the Golf Course Manager to maintain the course and grounds in accordance with the new IPMP. The IPMP will describe the activities and materials to be used to control pests (i.e. insects, weeds, and other living organisms requiring control) on the golf course in a way that minimally impacts the environment.

Monitoring: Each year the City of New Braunfels Watershed Manger in cooperation with the Golf Course Manager will report to the HCP detailed information on all pertinent activities during the year.

Allocated funds for 2014: \$ 0

Estimated Budget: \$0

5.7.5 Management of Household Hazardous Wastes

The City of New Braunfels will continue the hazardous household waste (HHW) program that includes accepting prescription drugs and Freon, through the TCEQ and/or the waste disposal division of the City of New Braunfels. The City of New Braunfels will establish a four-times-a-year program that could be recognized in the City's MS4 compliance and storm water permit as a contributing activity.

Long-term Objective: Reduction in the improper disposal of hazardous wastes and incorporation of prescription drug and Freon drop off.

Assumptions: This effort will employ the existing program in place by the City of New Braunfels but include an expansion of public outreach, frequency and add additional scheduled efforts.

Target 2014/Performance Measure: Implementation of increased public outreach and education and addition of additional drop off event or events.

Methods: Public outreach and education will be increased in association with the increased scheduled drop off effort.

Monitoring: The amount and number of pickups will be noted and compared against historical efforts.

Allocated funds for 2014: \$ 30,000

Estimated Budget: \$ 30,000

\$2,000 Outreach

\$25,000 Additional Collection Events

\$3,000 10% Contingency

5.7.6 Impervious Cover/Water Quality Protection/LID

The City of New Braunfels will expand criteria related to desired impervious cover, provide incentives to reduce existing impervious cover on public and private property in New Braunfels, and implement BMP's associated with stormwater runoff in the area of Landa Lake and the Springruns. The City of New Braunfels will implement program based upon the low impact development (LID)/Water Quality Work Group Final Report (Appendix Q) recommendations for Implementation Strategies and best management practices (BMPs). This Work Plan element includes development of the program and an incentive program for implementation.

Long-term Objective: Reduction and control of non-point source runoff in the Comal River system.

Assumptions: The primary focus of the is implementation of criteria, identification of specific BMPs, program guidance, and implementation strategy based on the LID/WQ Work Group Report from 2013. The efforts will focus on the identification of implementing the incentive program and identification of target program elements such as public education and outreach, rainwater harvesting, reduction of impervious areas, and other BMPs that would qualify for incentives. This effort will involve a stakeholder process followed by public outreach and education that outlines the incentive program and mechanisms for its implementation. It should be noted that the existing HCP budgets assume no BMP dollars in Year One. Given the public driven process, actual BMP implementation will not begin until Year Two.

Target 2014/Performance Measure: Implementation of the program and strategy in conjunction with current MS4 process underway in the City of New Braunfels to incorporate a funded LID and impervious rebate/incentive program. BMP's developed as part of this program will include practices that directly benefit the lake and springs systems and are above and beyond the features of the City's standard MS4 program.

Methods: The LID/WQ Work Group Report will continue to serve indeveloping of the existing program and implementation strategy. A public process will be continuous to provide for stakeholder input, and finalization of the program elements and implementation strategy. Implement the program. As a public entity, the City of New Braunfels will utilize its own program to receive rebates for implementing BMP's associated with stormwater runoff in the area of Landa Lake and the Springruns.

Monitoring: It is assumed that the WQ monitoring program of the HCP covered under other work elements will provide data for assessing the effectiveness of this measure.

Allocated funds for 2014: \$ 100,000

Estimated Budget: \$ 100,000

\$ 5,000 Program Development

\$ 90,000 Implement Program

\$ 5,000 5% Contingency