

TCEQ Interoffice Memorandum

104758

TO: Office of the Chief Clerk
Texas Commission on Environmental Quality

THRU:  Iliana Delgado
Team Leader

FROM: Sarah Henderson, Project Manager
Water Rights Permitting Team

DATE: October 17, 2016

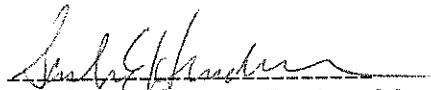
SUBJECT: City of Austin
WRPERM 13237
CN600135198, RN109251058
Application No. 13237 for a Water Use Permit
Texas Water Code § 11.121, Requiring Published and Mailed Notice
Little Bear Creek, Colorado River Basin
Hays County

CHIEF CLERKS OFFICE
2016 OCT 17 AM 10:13
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

The application was received on November 4, 2015. Additional information and fees were received on February 26, April 18, and August 4, 2016. The application was declared administratively complete and accepted for filing with the Office of the Chief Clerk on October 17, 2016. Full basin mailed and published notice to the water right holders of record in the Colorado River Basin is required pursuant to Title 30 Texas Administrative Code § 295.151.

The City of Austin seeks a water use permit to authorize diversion and use of not to exceed 486 acre-feet of water from a point on Little Bear Creek, Colorado River Basin for subsequent storage in a 385 acre-foot off-channel reservoir (Stoneledge Quarry) for aquifer recharge purposes in Hays County.

All fees have been paid and the application is sufficient for filing.



Sarah Henderson, Project Manager
Water Rights Permitting Team
Water Rights Permitting and Availability Section

OCC Mailed Notice Required

YES NO

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 17, 2016

Mr. Ross Crow
City of Austin
P.O. Box 1088
Austin, Texas 78767

RE: City of Austin
WRPERM 13237
CN600135198, RN109251058
Application No. 13237 for a Water Use Permit
Texas Water Code § 11.121, Requiring Published and Mailed Notice
Little Bear Creek, Colorado River Basin
Hays County

Dear Mr. Crow:

This acknowledges the receipt, on August 4, 2016, of additional information and fees in the amount of \$365.10 (Receipt No. M633232, copy enclosed).

The application was declared administratively complete and filed with the Office of the Chief Clerk on October 17, 2016. Staff will continue processing the application for consideration by the Executive Director.

Please be advised that additional information may be requested during the technical review phase of the application process.

If you have any questions concerning this matter please contact me via email at sarah.henderson@tceq.texas.gov or by telephone at (512) 239-2535.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sarah Henderson".

Sarah Henderson, Project Manager
Water Rights Permitting Team
Water Rights Permitting and Availability Section

Enclosure



05-AUG-16 10:23 AM

TCEQ - A/R RECEIPT REPORT BY ACCOUNT NUMBER

<u>Fee Description</u>	<u>Fee Code</u>	<u>Account#</u>	<u>Account Name</u>	<u>Ref#1</u>	<u>Ref#2</u>	<u>Card Auth.</u>	<u>CC Type</u>	<u>Tran Code</u>	<u>Slip Key</u>	<u>Document#</u>	<u>Tran Date</u>	<u>Tran Amount</u>
WTR USE PERMITS	WUP			M633232	4269191		N		BS00051229		05-AUG-16	-\$365.10
	WUP			13237	080416		N		D6806619			
WATER USE PERMITS				AUSTIN, CITY OF	SPREDEAV		CK					
	WUP			M633233	2567				BS00051229		05-AUG-16	-\$101.25
	WUP			ADJ124345	080416		N		D6806619			
WATER USE PERMITS				ENOCH KEVER PLLC	SPREDEAV		CK					
Total (Fee Code):												-\$466.35



City of Austin

Austin Water, P.O. Box 1088 Austin, Texas 78767, Phone: (512) 972-0101 Fax: (512) 972-0111

RECEIVED

August 4, 2016

2016 AUG -4 P 1:21

WATER AVAILABILITY DIV.

Sarah Henderson, Project Manager
Water Rights Permitting Section
Water Availability Division
Texas Commission on Environmental Quality
P.O. Box 13087/MC-160
Austin, TX 78711-3087

Re: City of Austin
WRPERM 13237
CN600135198
Application No. 13237 for a Water Use Permit

Dear Sarah,

This letter is in response to your letter to Mr. Ross Crow, Assistant City Attorney, City of Austin requesting additional information and fees, dated July 18, 2016.

1. As mentioned in my email on July 28th the evidence that Joseph G. Pantallion has authorization to sign the application for the City of Austin (COA) which are City Organization Charts showing Mr. Pantallion to be the Director of the Watershed Protection Department and the page from Article V of the Austin City Charter which states in Section 4 the authorization of Department Directors is the only information that the City has pertaining to Departmental Directors authority and has been used in the past for our applications. I will be out of the office starting tomorrow and will return on August 15th, and hopefully we can sort through this in time to meet your deadline of August 19th.
2. Additional fees in the form of a check in the amount of \$365.10 will be hand delivered to TCEQ today.

Thank you for your help already and assistance with this matter.

Sincerely,

Jeff Fox, Project Manager
Austin Water
City of Austin
625 East 10th Street
Austin, Texas 78701
Office 512-972-0170 Cell 512-549-9287

2016 AUG -4 P 1:18

RECEIVED
WATER SUPPLY DIVISION
Austin

Please Return to

Sarah Henderson

Application No.	WR Perm # 13237
Date Check Rcvd	8-4-16
Check No.	00 00 0000 4269191
Check Amount	\$ 365.10 - 20
Payor's Name and Address	City of Austin JP morgan chase Bank, N.A. Dallas, TX
Payor's Phone No.	

Application Fees

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 18, 2016

Mr. Ross Crow
City of Austin
P.O. Box 1088
Austin, Texas 78767

CERTIFIED MAIL

91 7199 9991 7033 3052 6805

RE: City of Austin
WRPERM 13237
CN600135198, RN109251058
Application No. 13237 for a Water Use Permit
Texas Water Code § 11.121, Requiring Published and Mailed Notice
Little Bear Creek, Colorado River Basin
Hays County

Dear Mr. Crow:

This acknowledges receipt, on April 18, 2016, of additional information and fees in the amount of \$1,533.97 (Receipt No. M626060A/B, copies enclosed).

Additional information and fees are required before the application can be declared administratively complete.

1. Provide written evidence that Joseph G. Pantalione has authorization to sign the application for the City of Austin pursuant to Title 30 Texas Administrative Code (TAC) §295.14(5), which states:

If the applicant is a corporation, public district, county, municipality or other corporate entity, the application shall be signed by a duly authorized official. Written evidence in the form of by-laws, charters, or resolutions which specify the authority of the official to take such action shall be submitted. A corporation may file a corporate affidavit as evidence of the official's authority to sign.

Staff acknowledges receipt of the City and Watershed Protection Department Organization Charts and the authorization of Department Directors; however, these documents do not evidence authorization for Mr. Pantalione to sign for the City of Austin regarding water use permit or similar type applications.

2. Remit fees in the amount of **\$365.10** as described below. Please make checks payable to the TCEQ or Texas Commission on Environmental Quality.

Filing Fee (100-5,000 ac/ft)	\$ 250.00
Recording Fee (7 pages x \$1.25)	\$ 8.75
Use Fee (486 ac/ft x \$1.00)	\$ 486.00
<u>Notice Fee (Colorado River Basin)</u>	<u>\$ 1,154.32</u>
Total Fees	\$ 1,899.07
<u>Fees Received</u>	<u>\$ 1,533.97</u>
Fees Due	\$ 365.10

Please submit the requested information and fees by **August 19, 2016** or the application may be returned pursuant to Title 30 TAC § 281.18.

If you have any questions concerning this matter please contact me via email at sarah.henderson@tceq.texas.gov or by telephone at (512) 239-2535.

Sincerely,



Sarah Henderson, Project Manager
Water Rights Permitting Team
Water Rights Permitting and Availability Section

Enclosures



20-APR-16 10:31 AM

TCEQ - A/R RECEIPT REPORT BY ACCOUNT NUMBER

Fee Description	Fee Code	Account#	Ref#1	Ref#2	Check Number	CC Type	Slip Key	Tran Date	Tran Amount
			Paid In By	User Data	Rec Code	Document#			
WTR USE PERMITS	WUP		M626058	17189	N	BS00049470	20-APR-16	-\$4,087.23	
	WUP		124052/1240	041916/PER	N	D6804972			
	WUP		47/124037	ILLIANA	CK				
	WUP		DIAMOND S	DELGADO					
	WUP		CATTLE	SPREDEAU					
	WUP		COMPANY						
	WUP		M626059	3462	N	BS00049470	20-APR-16	-\$101.25	
	WUP		ADJ232674	041916	N	D6804972			
	WUP		BRADLEY,	SPREDEAU	CK				
	WUP		JIMMY						
	WUP		F/NIENA						
	WUP		M626060A	4249521	N	BS00049470	20-APR-16	-\$379.65	
	WUP		13237	041916	N	D6804972			
	WUP		AUSTIN,	SPREDEAU	CK				
	WUP		CITY OF						

Total (Fee Code) : -\$4,568.13

Grand Total : -\$17,287.45

NO LIABILITY IN WATER DIVISION
APR 22 11:22 AM '16

RECEIVED



20-APR-16 10:31 AM

ICEQ - A/R RECEIPT REPORT BY ACCOUNT NUMBER

<u>Fee Description</u>	<u>Fee Code</u>	<u>Account#</u>	<u>Account Name</u>	<u>Ref#1</u>	<u>Ref#2</u>	<u>Paid In By</u>	<u>Check Number</u>	<u>CC Type</u>	<u>Card Auth.</u>	<u>User Data</u>	<u>Tran Code</u>	<u>Rec Code</u>	<u>Slip Key</u>	<u>Document#</u>	<u>Tran Date</u>	<u>Tran Amount</u>
NOTICE FEES-WUP-	PTGU			M626060B			4249521				N		B500049470		20-APR-16	-\$1,154.32
WATER USE PERM	PTGU			13237			041916						D6804972			
			NOTICE FEES WUP WATER USE PERMITS	AUSTIN, CITY OF			SPREDEAV				CK					
Total (Fee Code):																-\$1,154.32

UTILITY WATER SYSTEM

12:11 V 22 APR 1002

RECEIVED



20-APR-16 10:31 AM

TCEQ - A/R RECEIPT REPORT BY ACCOUNT NUMBER

<u>Fee Description</u>	<u>Fee Code</u>	<u>Account#</u>	<u>Account Name</u>	<u>Ref#1</u>	<u>Ref#2</u>	<u>Ref#3</u>	<u>Check Number</u>	<u>CC Type</u>	<u>Card Auth.</u>	<u>User Data</u>	<u>Rec Code</u>	<u>Slip Key</u>	<u>Document#</u>	<u>Tran Date</u>	<u>Tran Amount</u>
NOTICE FEES-WUP- WATER USE PERM	PTGU	PTGU	NOTICE FEES WUP WATER USE PERMITS	M626060B	13237		4249521	N	041916	SPREDEAV	CK	BS00049470	D6804972	20-APR-16	-\$1,154.32
Total (Fee Code) :															
-\$1,154.32															

WATER UTILITY DIV.

APR 22 11:12 AM '16

RECEIVED



City of Austin

Austin Water, P.O. Box 1088 Austin, Texas 78767, Phone: (512) 972-0101 Fax: (512) 972-0111

April 18, 2016

Sarah Henderson, Project Manager
Water Rights Permitting Section
Water Availability Division
Texas Commission on Environmental Quality
P.O. Box 13087/MC-160
Austin, TX 78711-3087
Re: City of Austin
WRPERM 13237
CN600135198
Application No. 13237 for a Water Use Permit

RECEIVED
2016 APR 18 P 2:45
WATER AVAILABILITY DIV.

Dear Sarah,

This letter is in response to your letter to Mr. Ross Crow, Assistant City Attorney, City of Austin requesting additional information and fees, dated March 16, 2016. Responses below are numerically consistent with those in your letter addressing items required prior to being declared administratively complete.

1. As requested, I have included evidence that Joseph G. Pantallion has authorization to sign the application for the City of Austin (COA). The attached City Organization Chart shows Mr. Pantallion to be the Director of the Watershed Protection Department; additionally I have attached the Watershed Protection Department organizational chart and also attached is the page from Article V of the Austin City Charter which states in Section 4 the authorization of Department Directors.
2. Our Watershed Protection Department has performed a re-calculation of the drainage area on Little Bear Creek which could be contributory at the point of diversion. The re-calculated value is 6741.1 acres. This calculation does not include the small drainage area to the quarry itself. With the addition of the small quarry drainage area of 216.7 acres the total combined amount comes to 6957.8 acres. The approach used 2012 LIDAR data to create a bare Earth digital elevation model (DEM). The bare Earth DEM was conditioned by burning in COA creeks and building walls with COA watershed boundaries. Then a flow direction raster was created. The flow direction raster was used to delineate watershed boundaries. A revised drawing "Stoneledge Recharge Enhancement Project", showing the re-calculated acreages is attached.
3. Title 30 of the Texas Administrative Code chapter 297.1(59) defines a Watercourse as; "Watercourse--A definite channel of a stream in which water flows within a defined bed and banks, originating from a definite source or sources. (The water may flow continuously or intermittently, and if the latter with some degree of regularity, depending on the characteristics of the sources.)"



A picture is attached of this small contributing area and it does not appear to have a defined bed and banks. The picture shows what could be described as a broad swale and does not appear to have a defined thalweg. The small quarry drainage area does not have runoff with any significant degree of regularity and any contributing runoff goes directly into the quarry impoundment and typically enters groundwater features and eventually comes back out at Barton Springs. Note that the blue line within the "quarry pit subwatershed" is a computer generated line based on a threshold of accumulated contributing area and is not indicative of an intermittent creek. A completed Supplemental Dam/Reservoir Information sheet is attached.

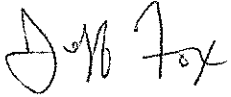
4. Attached are several diagrams of the conceptual design of the weir and berm which, if approved, would potentially be constructed across Little Bear Creek. It can be seen that the berm and weir would not restrict initial flows along the creek as the flowline of the creek is the same as the flowline of the weir which has sort of a shallow trough shape. Note the scale of the detail drawing "Weir Wall Detail" on sheet no. 6, which is a 1:10 Vertical:Horizontal relationship, and the width of the weir at the base is 8 feet. The structure would temporarily impede flows not impound them, merely slowing the rate of flow. Flows above 50 cfs would be attenuated to allow for the diversion of approximately 50% of those flows greater than 50 cfs to the quarry.
5. The original project modeling from April 2009 indicated that up to 155.5 acre-feet/year on an annual average basis may be diverted, with up to 672 acre-feet on a one year maximum basis. The modeling was revised using the latest WAM Run 3 for the Colorado River Basin, which includes WAM hydrologic revision and extension, the 2015 WMP, and additional streamflow measurements taken at the location of the proposed diversion since 2009. The revised modeling shows an annual average diversion of 120.9 ac-ft/year and a maximum annual diversion amount of 486 acre-feet. This amount is within the amounts contemplated in LCRA's contractual commitment as reflected in the Interlocal Agreement Between the City of Austin, Lower Colorado River Authority and Barton Springs/Edwards Aquifer Conservation District (provided in original application). That agreement includes and incorporates by reference as Exhibit B, the memorandum detailing the original project modeling from 2009 which included diversion of annual amounts up to 672 acre-feet, not simply the maximum 10-year average impact on LCRA supplies of 40.2 acre-feet per year. Specifically, Section 4.01 indicates that the LCRA's reservation is "for use by the Project, as presented in surface water modeling technical memorandum attached as Exhibit B." Presented in Figure 3, "Diversion from Little Bear Creek" in Exhibit B of the Interlocal Agreement are the simulated annual Diversions from Little Bear Creek which would result from the proposed berm/weir. Figure 3 reflects a simulated maximum one year diversion of 672 acre-feet/year in 1985. The more recent hydrologic analysis with a simulated one year maximum diversion of 486 acre-feet is within the annual diversion amounts previously agreed to by the parties.
6. Fee remittance in the form of a check in the amount of \$1,533.97 is attached to this letter.



April 18, 2016
Page 3 of 3

Thank you for your help already and assistance with this matter and please let me know of any additional information you may need.

Sincerely,

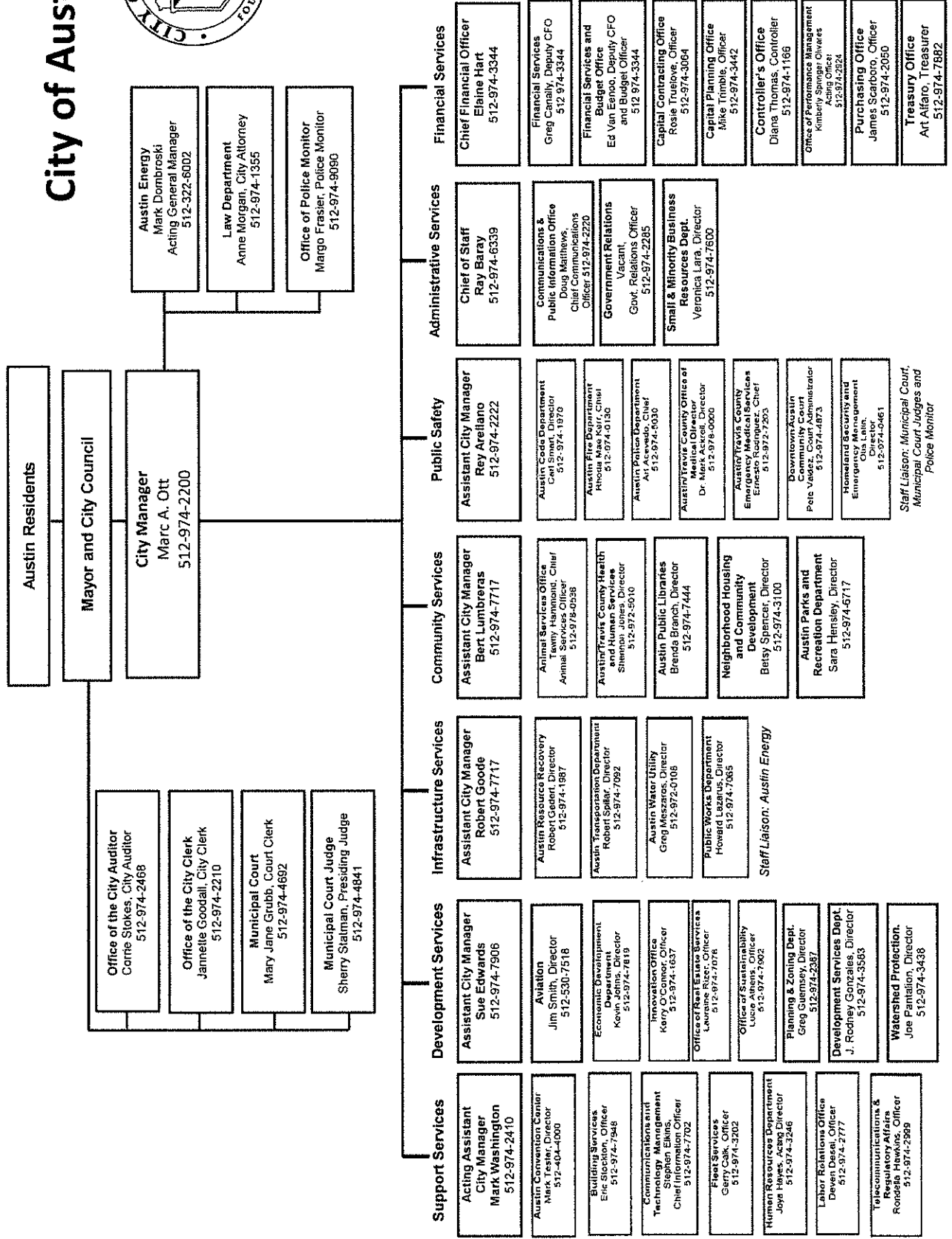
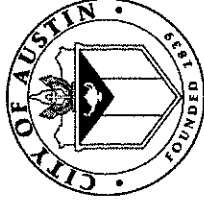


Jeff Fox
Project Manager
Austin Water
City of Austin
625 East 10th Street
Austin, Texas 78701
Office 512-972-0170
Cell 512-549-9287



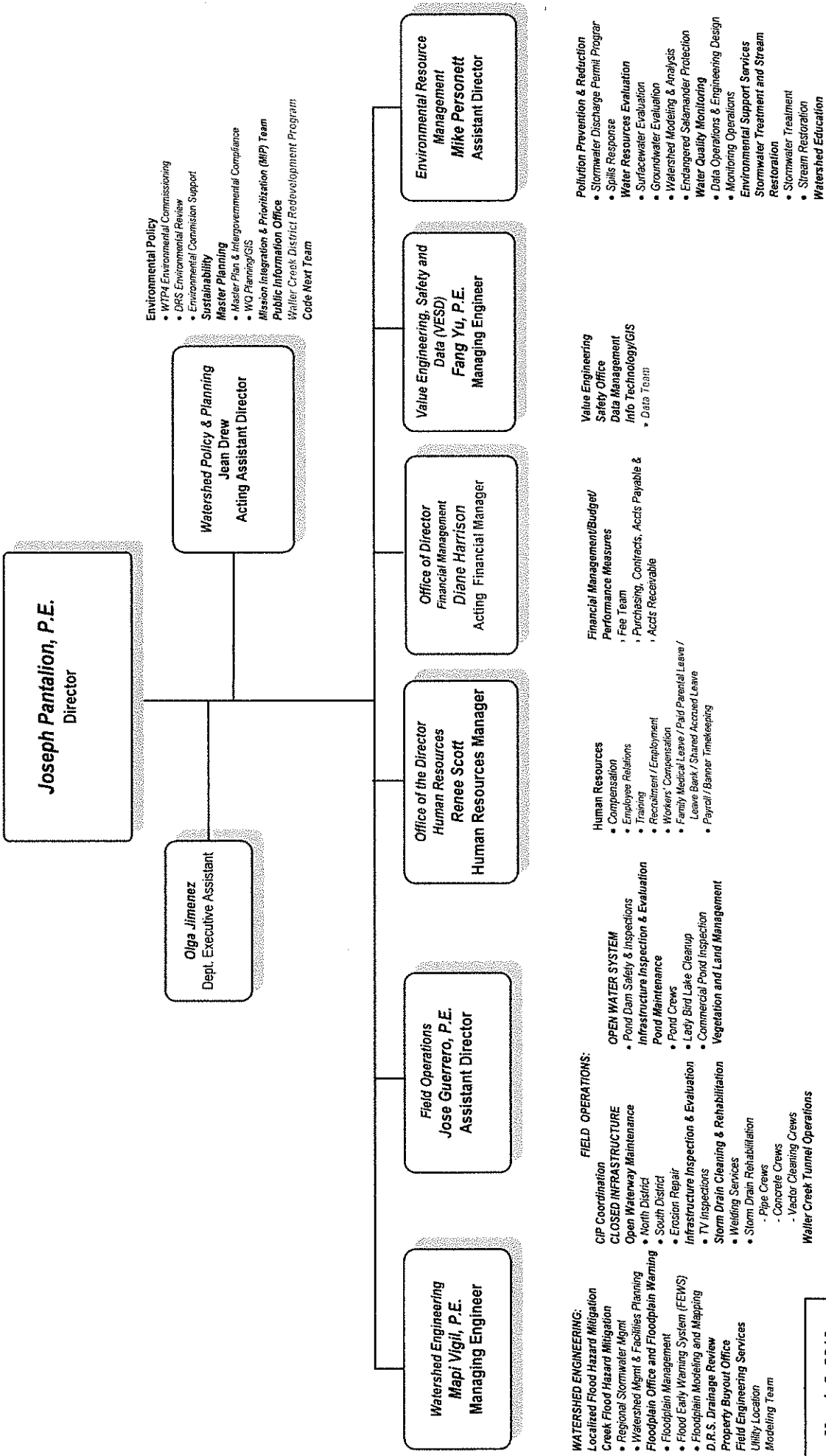
*The City of Austin is committed to compliance with the Americans with Disabilities Act.
Reasonable modifications and equal access to communications will be provided upon request.*

City of Austin, Texas





WATERSHED PROTECTION DEPARTMENT



- Environmental Policy**
- WTP4 Environmental Commissioning
 - DRS Environmental Review
 - Environmental Commission Support
- Sustainability**
- Master Planning**
- Master Plan & Intergovernmental Compliance
 - WQ Planning/GIS
- Mission Integration & Prioritization (MIP) Team**
- Public Information Office**
- Waller Creek District Redevelopment Program
Code Next Team

- Pollution Prevention & Reduction**
- Stormwater Discharge Permit Program
 - Spills Response
 - Water Resources Evaluation
 - Surfacewater Evaluation
 - Groundwater Evaluation
 - Watershed Modeling & Analysis
 - Endangered Salamander Protection
 - Water Quality Monitoring
 - Data Operations & Engineering Design
 - Monitoring Operations
 - Environmental Support Services
 - Stormwater Treatment and Stream Restoration
 - Stormwater Treatment
 - Stream Restoration
 - Watershed Education

- Value Engineering**
- Safety Office**
- Data Management**
- Info Technology/GIS**
- Data Team

- Financial Management/Budget/Performance Measures**
- Fee Team
 - Purchasing, Contracts, Accts Payable & Accts Receivable

- Human Resources**
- Compensation
 - Employee Relations
 - Training
 - Recruitment / Employment
 - Workers' Compensation
 - Family Medical Leave / Paid Parental Leave / Leave Bank / Shared Accrued Leave
 - Payroll / Banner Timekeeping

- FIELD OPERATIONS:**
- CIP Coordination**
- CLOSED INFRASTRUCTURE**
- Open Waterway Maintenance**
- North District
 - South District
 - Erosion Repair
 - Infrastructure Inspection & Evaluation
 - TV Inspections
 - Storm Drain Cleaning & Rehabilitation
 - Welding Services
 - Storm Drain Rehabilitation
 - Pipe Crews
 - Concrete Crews
 - Vector Cleaning Crews
- Waller Creek Tunnel Operations**

- OPEN WATER SYSTEM**
- Pond Dam Safety & Inspections
 - Infrastructure Inspection & Evaluation
 - Pond Maintenance
 - Pond Crews
 - Lady Bird Lake Cleanup
 - Commercial Pond Inspection
 - Vegetation and Land Management

- WATERSHED ENGINEERING:**
- Localized Flood Hazard Mitigation
 - Creek Flood Hazard Mitigation
 - Regional Stormwater Mgmt
 - Watershed Mgmt & Facilities Planning
 - Floodplain Office and Floodplain Warning
 - Floodplain Management
 - Flood Early Warning System (FEWS)
 - Floodplain Modeling and Mapping
 - D.R.S. Drainage Review
 - Property Buyout Office
 - Field Engineering Services
 - Utility Location
 - Modeling Team

March 2, 2016

Austin City Charter Article V

- **ARTICLE V. - ADMINISTRATIVE ORGANIZATION.**

- **§ 1. - THE CITY MANAGER.**

The council shall appoint a city manager who shall be the chief administrative and executive officer of the city. He or she shall be chosen by the council solely on the basis of his or her executive and administrative training, experience, and ability, and need not, when appointed, be a resident of the City of Austin; however, during the tenure of his or her office, he or she shall reside within the city.

The city manager shall not be appointed for a definite term, but may be removed at the will and pleasure of the council by a majority vote of the entire membership of the council. If removed after serving six (6) months he or she may demand written charges and the right to be heard thereon at a public meeting of the council prior to the date on which his or her final removal shall take place. Pending such hearing, the council may suspend him or her from office. The action of the council in suspending or removing the city manager shall be final, it being the intention of this Charter to vest all authority and fix all responsibility for such suspension or removal in the council. The city manager shall receive such compensation as may be fixed by the council.

No member of the council shall, during the time for which he or she is elected or for two (2) years thereafter, be chosen as city manager.

- **§ 2. - POWERS AND DUTIES OF THE CITY MANAGER.**

The city manager shall be responsible to the council for the proper administration of all affairs of the city and to that end he or she shall have power and shall be required to:

(1)

Appoint and remove any officer or employee of the city except those officers appointed by the council and except as otherwise provided by this Charter.

(2)

Prepare the budget annually, submit it to the council, and be responsible for its administration after adoption.

(3)

Prepare and submit to the council as of the end of the fiscal year a complete report on the finances and administrative activities of the city for the preceding year.

(4)

Keep the council advised of the financial condition and future needs of the city and make such recommendations as may seem desirable.

(5)

Appoint, by letter filed with the city clerk, a qualified administrative officer of the city to perform his or her duties during his or her temporary absence or disability.

(6)

Perform such other duties as may be prescribed by this Charter or required of him or her by the council, not inconsistent with the provisions of this Charter.

- **§ 3. - ADMINISTRATIVE DEPARTMENTS.**

There shall be such administrative departments as are established by this Charter and as may be established by ordinance, all of which shall be under the control and direction of the city manager. The council may abolish any department or combine one or more departments created by it, but no administrative department shall be created, abolished or combined with another department until the council has obtained and considered the recommendations of the city manager with regard thereto.

- **§ 4. - DIRECTORS OF DEPARTMENTS.**

At the head of each department there shall be a director who shall be appointed, and who may be removed, by the city manager. Such directors shall have supervision and control over their respective departments, and may serve as chiefs of divisions within their respective departments. Two (2) or more departments may be headed by the same individual, and the city manager may head one or more departments.

- **§ 5. - DEPARTMENTAL ORGANIZATION.**

The work of each department shall be distributed among such divisions as may be established by ordinance. Provided, however, that no departmental division shall be made until the city manager shall have been heard and have made his or her recommendations with respect thereto. Pending passage of ordinances establishing departmental divisions, the manager may establish temporary divisions in any department.

- **§ 6. - CITY ATTORNEY.**

There shall be a department of law, the head of which shall be the city attorney, who shall be appointed by the city manager. The city attorney shall be a competent attorney who shall have practiced law in the State of Texas for at least five (5) years immediately preceding his or her appointment. The city attorney shall be the legal advisor of, and attorney for, all of the officers and departments of the city, and he or she shall represent the city in all litigation and legal proceedings. He or she shall draft, approve, or file his or her written legal objections to, every ordinance before it is acted upon by the council, and he or she shall pass upon all documents, contracts and legal instruments in which the city may have an interest.

There shall be such assistant city attorneys as may be authorized by the council, who shall be authorized to act for and on behalf of the city attorney.

Amendment note: Section 6 appears as amended at the election of November 6, 2012.

Stoneledge Recharge Enhancement Project

Quarry pit subwatershed - 216.7 Ac.
Water Quality Protection Lands - 171.6 Ac.

41.7% of Quarry subwatersheds
occupied by Water Quality Protection Land

Quarry property subwatershed - 6741.1 Ac.
Water Quality Protection Lands - 2726.5 Ac.

Little
Bear Creek

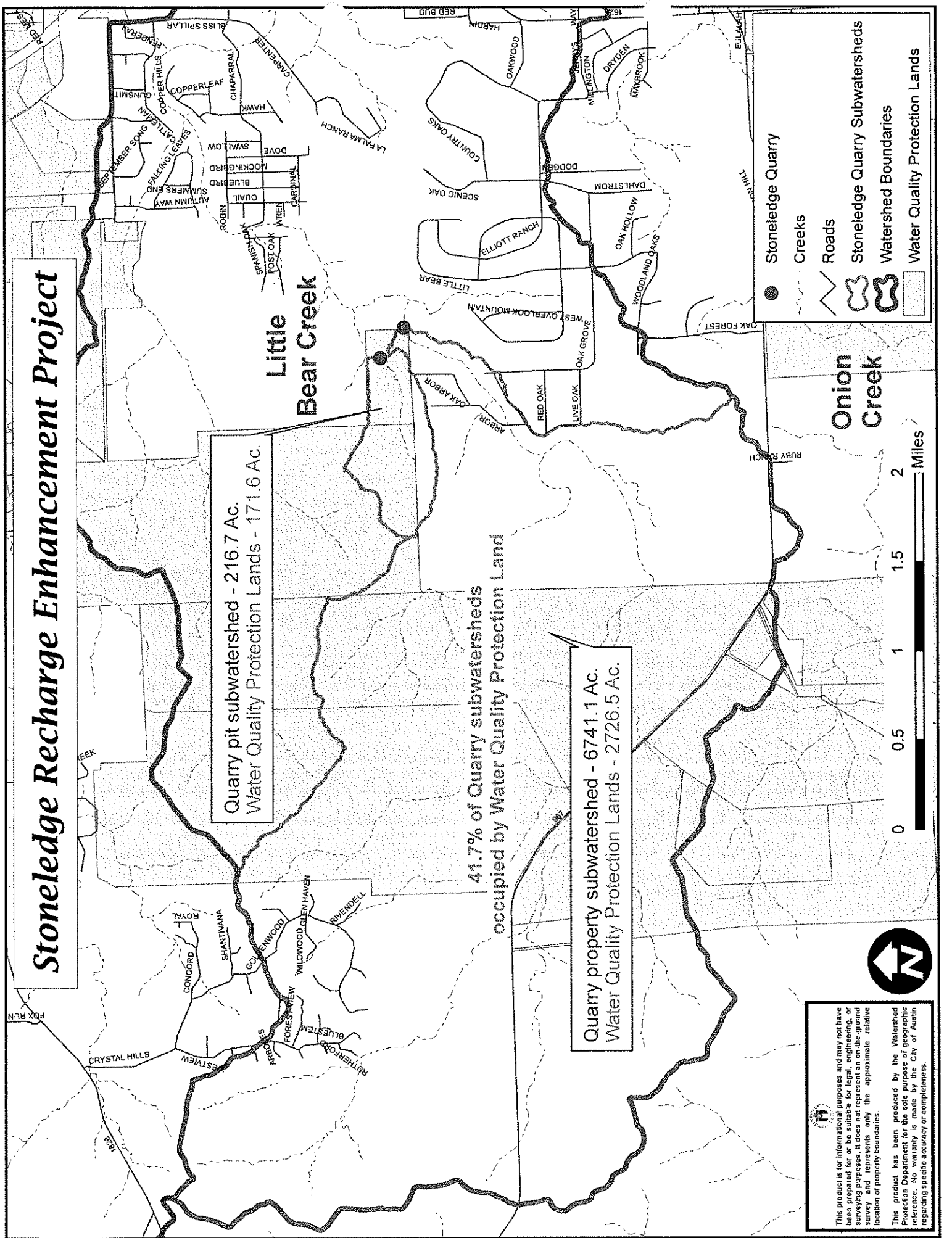
Onion
Creek

- Stoneledge Quarry
- - - Creeks
- Roads
- Stoneledge Quarry Subwatersheds
- Watershed Boundaries
- Water Quality Protection Lands



This product is for informational purposes and may not be reproduced for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

This product has been produced by the Watershed Protection Department for the sole purpose of geographic reference. No warranty is made by the City of Austin regarding specific accuracy or completeness.





Supplemental Dam/Reservoir Information Sheet

Dam (structure), Reservoir and Watercourse Data

A. Type of Storage Reservoir (indicate by checking (√) all applicable)

on-channel off-channel existing structure proposed structure* exempt structure**

* Applicant shall provide a copy of the notice that was mailed to each member of the governing body of each county and municipality in which the reservoir, or any part of the reservoir, will be located as well as copies of the certified mailing cards.

** TWC Section 11.143 for uses of water for other than domestic, livestock, or fish and wildlife from an existing, exempt reservoir with a capacity of 200 acre-feet or less. Please complete Paragraph 6 below if proceeding under TWC 11.143.

Date of Construction abandoned limestone quarry excavated in the 1970's

B. Location of Structure No. _____.

1) Watercourse: Little Bear Creek

2) Location from County Seat: 17 miles in a North direction from Hays, County, Texas.

Location from nearby town (if other than County Seat): 15 miles in a Southwest direction from the City of Austin, in Travis County, a nearby town shown on county highway map.

3) Zip Code: 78652

4) The dam diversion weir structure will be/is located in the James Wells Original Survey No. 84, Abstract No. 496 in Hays County, Texas.

5) Station _____ on the centerline of the dam is N 67 ° 56' W (bearing), 175 feet (distance) from the Southeast corner of James Wells Original Survey No. 84, Abstract No. 496, in Hays County, Texas, also being at Latitude 30.124706 °N, Longitude 97.904243 °W.

Provide Latitude and Longitude coordinates in decimal degrees to at least six decimal places and indicate the method used to calculate the diversion point location

C. Reservoir: Impoundment

1) Acre-feet of water impounded by structure at normal maximum operating level: 385 acre-feet

2) Surface area in acres of reservoir impoundment at normal maximum operating level: 18 acres

D. The drainage area above the dam is 6741.1 acres or 10.53 square miles.

E. Other:

1) If this is a U.S. Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service (SCS)) floodwater-retarding structure, provide the Site No. _____ and watershed project name N/A

2) Do you request authorization to close the "ports" or "windows" in the service spillway? N/A

Yes No

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 16, 2016

Mr. Ross Crow
City of Austin
P.O. Box 1088
Austin, Texas 78767

CERTIFIED MAIL

91 7199 9991 7033 2866 2058

RE: City of Austin
WRPERM 13237
CN600135198
Application No. 13237 for a Water Use Permit
Texas Water Code § 11.121, Requiring Published and Mailed Notice
Little Bear Creek, Colorado River Basin
Hays County

Dear Mr. Crow:

This acknowledges receipt, on November 4, 2015, of the referenced application.

Additional information and fees are required before the application can be declared administratively complete.

1. Provide written evidence that Joseph G. Pantalione has authorization to sign the application for the City of Austin pursuant to Title 30 Texas Administrative Code (TAC) §295.14(5), which states:

If the applicant is a corporation, public district, county, municipality or other corporate entity, the application shall be signed by a duly authorized official. Written evidence in the form of by-laws, charters, or resolutions which specify the authority of the official to take such action shall be submitted. A corporation may file a corporate affidavit as evidence of the official's authority to sign.

2. Confirm the drainage area above the diversion point on Little Bear Creek. Staff calculated this area to be 11.30 square miles or 7,232 acres. The application states 10.9 square miles or 6,984 acres.
3. Confirm the impoundment at the quarry is not located on a watercourse as defined in Title 30 TAC §297.1(59).

4. Provide a completed *Supplemental Dam/Reservoir Information Sheet* (copy enclosed) for any impoundment created by a weir across Little Bear Creek. If a weir is constructed across Little Bear Creek as stated on page 2 of the Preliminary Design Study of the Stoneledge Quarry Diversion document, it will be considered an impoundment.
5. Provide the maximum amount of water to be diverted in any one year. Staff acknowledges an annual average diversion amount of 120.9 acre-feet/year was provided on page 2 of the application.
6. Remit fees in the amount of **\$1,533.97** as described below. Please make checks payable to the TCEQ or Texas Commission on Environmental Quality.

Filing Fee (100-5,000 ac/ft)	\$ 250.00
Recording Fee (7 pages x \$1.25)	\$ 8.75
Use Fee (120.9 ac/ft x \$1.00)*	\$ 120.90
<u>Notice Fee (Colorado River Basin)</u>	<u>\$ 1,154.32</u>
Total Fees	\$ 1,533.97
<u>Fees Received</u>	<u>\$ 0.00</u>
Fees Due	\$ 1,533.97

*Additional fees may be required based upon the Applicants response to item no. 5.

Please submit the requested information and fees by **April 18, 2016** or the application may be returned pursuant to Title 30 TAC §281.18.

Additional information will be required prior to completion of technical review.

1. Provide a copy of a water supply contract or letter of agreement with the Lower Colorado River Authority (LCRA) which indicates that the LCRA will make available for purchase an amount adequate to fully compensate for the maximum amount of water the City will divert in any one year. If the water supply contract or agreement is still under negotiation, provide a copy of the draft contract or agreement for review. A signed document will be needed in order for a permit to be issued. Staff notes that the supplemental information document states that the LCRA will make available 40.2 acre-feet/year of stored water releases from Lake Buchanan and Lake Travis.

If you have any questions concerning this matter please contact me via email at sarah.henderson@tceq.texas.gov or by telephone at (512) 239-2535.

Sincerely,



Sarah Henderson, Project Manager
Water Rights Permitting Team
Water Rights Permitting and Availability Section

Enclosure

Supplemental Dam/Reservoir Information Sheet

Dam (structure), Reservoir and Watercourse Data

A. Type of Storage Reservoir (indicate by checking (✓) all applicable)

on-channel off-channel existing structure proposed structure* exempt structure**

*Applicant shall provide a copy of the notice that was mailed to each member of the governing body of each county and municipality in which the reservoir, or any part of the reservoir, will be located as well as copies of the certified mailing cards.

**TWC Section 11.143 for uses of water for other than domestic, livestock, or fish and wildlife from an existing, exempt reservoir with a capacity of 200 acre-feet or less. Please complete Paragraph 6 below if proceeding under TWC 11.143.

Date of Construction _____

B. Location of Structure No. _____.

1) Watercourse: _____

2) Location from County Seat: _____ miles in a _____ direction from _____, _____ County, Texas.

Location from nearby town (if other than County Seat): _____ miles in a _____ direction from _____, a nearby town shown on county highway map.

3) Zip Code: _____

4) The dam will be/is located in the _____ Original Survey No. _____, Abstract No. _____ in _____ County, Texas.

5) Station _____ on the centerline of the dam is _____° _____ (bearing), _____ feet (distance) from the _____ corner of _____ Original Survey No. _____, Abstract No. _____, in _____ County, Texas, also being at Latitude _____°N, Longitude _____°W.

Provide Latitude and Longitude coordinates in decimal degrees to at least six decimal places and indicate the method used to calculate the diversion point location

C. Reservoir:

1) Acre-feet of water impounded by structure at normal maximum operating level: _____

2) Surface area in acres of reservoir at normal maximum operating level: _____

D. The drainage area above the dam is _____ acres or _____ square miles.

E. Other:

1) If this is a U.S. Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service (SCS)) floodwater-retarding structure, provide the Site No. _____ and watershed project name _____

2) Do you request authorization to close the "ports" or "windows" in the service spillway?

Yes No

Sarah Henderson

From: Fox, Jeff [REDACTED]
Sent: Friday, February 26, 2016 1:17 PM
To: Kathy Alexander; Sarah Henderson
Subject: Stoneledge Quarry permit application
Attachments: EflowsMemo-Stoneledge-Feb 23 2016.pdf

Hi Kathy,

Please see the attached memorandum from Richard Hoffpauir concerning the environmental flow standards applied to the Stoneledge permit application.

I copied Sarah in this email.

Thank you and I hope you both have a great weekend, the weather is wonderful!

Jeff

Jeff Fox | Project Manager - Water Resources Management | Austin Water
625 E. 10th Street | Austin, TX 78701 | Office: (512) 972-0170 | Cell: (512) 549-9287

TECHNICAL MEMORANDUM

To: Kathy Alexander, Ph.D.
Technical Specialist
Water Availability Division
Texas Commission on Environmental Quality

Date: February 23, 2016

CC: Jeff Fox
Project Manager
Water Resources Management
Austin Water

Sarah Henderson
Project Manager, Water Rights Permitting
Water Availability Division
Texas Commission on Environmental Quality

From: Richard Hoffpauir, Ph.D., P.E.
Hoffpauir Consulting, PLLC

Subject: Translating Environmental Flow Standards from Bastrop to Little Bear Creek

1. Background

Environmental flow (eflows) standards are described in TAC §298.330 for the Colorado River at Bastrop, United States Geological Survey (USGS) gage 08159200. The standards include subsistence, base, and pulse flow requirements across months, seasons, and hydrological conditions. These standards are used by the Texas Commission on Environmental Quality (TCEQ) in evaluation of a permit for a new appropriation of water or to an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted.¹ TCEQ will also utilize the standards for formulating special conditions in permits to protect environmental flows.

In June 2015, TCEQ issued a draft set of guidelines that describe how TCEQ will implement the standards in permit special conditions and technical analyses of permit applications.² A stakeholder meeting was held at TCEQ for staff to provide an overview of the guidelines and receive oral comments. Written comments regarding the guidelines were accepted through the end of July 2015. A response to comments or a revised guidance document have not been published as of yet.

¹ TAC §298.10

² http://www.tceq.state.tx.us/assets/public/permitting/watersupply/water_rights/eflows/draft_sb3_implementation_guidelines.pdf

The TCEQ eflows guidelines contain proposed methodologies for translating the standards from existing measuring points to new locations. Factors for selecting a new location include consideration of proximity to existing measuring points, rainfall patterns, number of measuring points in the basin, existing senior water rights, and hydrologic factors such as intervening tributary flows.²

The City of Austin Watershed Protection Department maintains a stream flow monitoring station (gage) on Little Bear Creek (LBC) in conjunction with an aquifer recharge pilot project at Stoneledge Quarry. There are 10.9 square miles of upstream drainage area at the City's LBC stream gage. The Colorado River at Bastrop USGS stream gage is first downstream eflows measuring point.

2. Objective

The environmental flow standards at the Bastrop measuring point are translated to the Little Bear Creek stream gage due to substantial intervening tributary flows between the two points. Subsistence, base, and pulse flow requirements are translated using the methodologies described in the TCEQ eflow guidelines.

3. Data

Drainage area and naturalized flows are needed to complete most of the eflow standard translation using the TCEQ guidelines. Translation of the pulse flow duration requires a duration exponent that is derived from the relationship of pulse volume to trigger flow rates. These data are described and provided below.

Drainage Area

The Colorado River at Bastrop eflow measuring point is represented in the TCEQ WAM at control point J30000. Upstream drainage area for this control point is listed in the DIS input file as 28,580.21 square miles.

The new location at the stream gage on Little Bear Creek is listed as having 6,984 acres, or 10.91 square miles, of upstream drainage area. The location of the stream gage on Little Bear Creek is not contained in the TCEQ WAM.

Naturalized Flow

The TCEQ WAM for the Colorado River contains a naturalized flow period of record from January 1940 through December 2013. The naturalized flows for control point J30000 are taken from the WAM simulation output in order to correctly capture the combination of data from the FLO and FAD hydrology input files. Naturalized flows for control point J30000 are provided in Table 1. The average flow per month and year is shown for the entire WAM period of record as well as the period that coincides with stream flow measurements on Little Bear Creek. The actual monthly naturalized flow values are only shown for years 2003 through 2013.

The City of Austin Watershed Protection has been recording stream flow data at the Little Bear Creek stream gage since November 2003. The common period of record with the WAM naturalized flows is therefore November 2003 through December 2013. Stream flows on Little Bear Creek are considered naturalized as no known water rights are located upstream of this location. The stream flow data are provided in Table 2. Additional data are available beyond June 2014, however, that data has not been collected from Watershed Protection at the time of this memo.

Table 1
WAM Naturalized Flow at Control Point J30000, Colorado River at Bastrop³
acre-feet

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Average, 1/1940 - 12/2013	111,609	140,004	146,351	171,972	290,496	254,495	134,260	107,530	146,968	183,973	118,480	117,484	1,923,623
Average, 11/2003 - 12/2013	91,818	111,140	166,161	117,232	155,746	202,224	128,083	111,680	82,866	92,091	156,289	60,440	1,472,893
2003	127,619	258,009	188,420	84,146	50,091	258,913	53,632	42,524	101,047	151,126	32,973	30,189	1,378,688
2004	52,421	73,808	117,127	275,744	105,500	487,646	140,077	222,126	61,770	124,267	1,179,502	257,484	3,097,472
2005	126,767	262,378	435,951	165,543	149,566	110,003	49,372	249,150	34,438	35,268	32,544	33,629	1,684,608
2006	42,285	33,208	59,371	61,663	142,845	42,050	20,654	25,951	31,294	39,591	20,677	40,957	560,546
2007	172,338	40,668	427,798	187,281	683,090	1,135,791	767,410	453,102	184,275	76,235	59,960	66,953	4,254,902
2008	62,137	55,315	77,540	56,396	59,882	36,672	27,570	29,910	45,899	23,702	22,385	24,071	521,479
2009	23,876	29,040	50,306	88,923	50,999	37,522	35,815	37,163	65,651	274,716	140,085	94,934	929,029
2010	240,896	407,289	211,564	202,300	129,957	74,543	92,057	31,210	204,647	33,096	26,872	30,583	1,685,013
2011	36,632	33,580	21,148	28,626	41,696	28,583	22,268	29,043	13,547	39,042	14,425	20,651	329,240
2012	122,358	156,096	237,995	46,131	108,524	29,515	49,607	22,111	139,324	55,796	14,900	13,135	995,490
2013	38,467	20,022	22,813	59,715	85,397	39,915	76,000	17,032	47,811	219,193	174,853	52,258	853,477

Table 2
Flow at the stream gage on Little Bear Creek acre-feet

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Average, 11/2003 - 6/2014	102	29	49	0	66	65	56	0	117	427	315	0	1,208
Average, 11/2003 - 12/2013	113	32	54	0	48	72	56	0	117	427	315	0	1,243
2003	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	0
2004	0	0	0	0	0	715	45	0	0	232	3,457	0	4,450
2005	0	0	82	0	0	0	0	0	0	0	0	0	82
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	659	0	134	0	74	0	368	0	0	0	0	0	1,235
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	473	108	0	0	581
2010	180	209	0	0	0	0	0	0	695	0	0	0	1,084
2011	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	289	109	320	0	404	0	145	0	0	0	0	0	1,268
2013	0	0	0	0	0	0	0	0	0	3,933	4	0	3,938
2014	0	0	0	0	243	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	243

³ Naturalized flows are extracted with Tables using a columnar time series with two decimal places from an unformatted binary OUT file. Columnar time series rearranged to annual rows in Excel, and then the annual totals and means are calculated.

Zero Flows and 7Q2

LBC is characterized as ephemeral, that is, flow is only present for brief periods during and immediately after local rainfall events. The stream bed is above the water table throughout the year. There are 3,895 days of record from November 2013 through June 2014. There are 3,816 days of zero stream flow recorded in that period. The 7-day minimum stream flow with a 2 year recurrence interval (7Q2) is calculated to be 0.0 cfs.

Intermittent streams typically have recurring or seasonal periods of zero flows but may also have brief periods of sustained flows when the local water table intersects the stream bed. Intermittent streams therefore experience more stream flow than ephemeral streams. Intermittent streams are defined in the Texas Surface Water Quality Standards as having a period of zero flow for at least one week during most years, and where records are available, have a 7Q2 of less than 0.1 cfs.⁴ The LBC stream gage qualifies as an intermittent stream according to the characteristics of the Texas Surface Water Quality Standards, though the actual flow regime would be characterized as ephemeral according to conventional stream classifications based on flows.

Duration Exponent

The TCEQ guidelines state on page 5 regarding pulse flow durations, “durations at the measurement point will be scaled using a duration exponent obtained from a power law relationship between pulse volumes (acre-feet) and trigger flow rates (cfs) in a given basin.” The TCEQ guidelines provide a reference to the 2013 thesis by Allison P. Wood⁵ for the details of calculating the duration exponent. Thesis Figure 12 shows a power law equation fit to a plot of pulse volume, V , versus pulse trigger flow rate, Q , for all sixty pulse standards in the Trinity, San Jacinto, Sabine, and Neches Basins. The power law equation is shown as equation 4 in the thesis and is written as:

$$V = c(Q)^d \quad \text{(Thesis Eq. 4)}$$

$$e = d - 1 \quad \text{(Thesis Eq. 10)}$$

Coefficient c and exponent d are calculated by Microsoft Excel using the method of least squares regression. The duration exponent, e , is calculated from the exponent of the power law equation. In the case of the four basins studied in the thesis, d was found to be 1.1054. Therefore, the duration exponent e was calculated as 0.1054.

The duration exponent derived in the thesis was a result of plotting pulse volume versus pulse trigger flow rate for the standards in four east Texas basins. In order to apply a duration exponent for the translation of the Bastrop pulse duration in the

⁴ TAC §307.3(33)

⁵ <http://www.crrw.utexas.edu/reports/2013/rpt13-2.shtml>

Colorado Basin, the same power law equation was fit to the pulse requirements in the Colorado and Lavaca (Colorado), Brazos, and Guadalupe, San Antonio, Mission, and Aransas (GSA) Basins. The Brazos and GSA basins border the Colorado to the east and west and were examined for sensitivity of the duration exponent according to basin location.

The method to calculate the duration exponent requires data points for the pulse volume and pulse trigger flow rate. However, the Colorado eflow standards below Lake Travis along the main stem river do not contain pulse flow volume requirements. Only pulse trigger flow rates and durations are given at the main stem locations of Bastrop, Columbus, and Wharton. In order to plot the full range of pulse flow volumes for the Colorado Basin, the results from the HEFR⁶ analyses conducted by the Colorado and Lavaca Rivers and Matagorda and Lavaca Bays Basin and Bay Expert Science Team⁷ (BBEST) were used to provide pulse flow volume versus pulse trigger flow rates. The power law relationship is fit to the pulse flow data for the Colorado Basin both with and without the HEFR results.

Figures 1 through 4 are plots of the pulse flow volume versus pulse trigger flow rate for the Colorado, Brazos, and GSA basins. Figure 2 contains the Colorado Basin results with inclusion of the HEFR pulses for the main stem Colorado River below Lake Travis. The exponent of the power law equation fit in Figures 2, 3, and 4 are slightly greater than 1.0 which is similar to the exponent in the thesis. Section 4 of this memorandum addresses methodology and explains why the duration exponent is calculated using the regression exponent of the power law equation shown in Figure 2. The duration exponent for the Colorado Basin is calculated as $e = 1.0166 - 1 = 0.0166$.

⁶ http://www.tceq.state.tx.us/assets/public/permitting/watersupply/water_rights/eflows/hydrologicmethods06172011.pdf

⁷ http://www.tceq.state.tx.us/assets/public/permitting/watersupply/water_rights/eflows/20110301clbbest_enviroflowreport.pdf

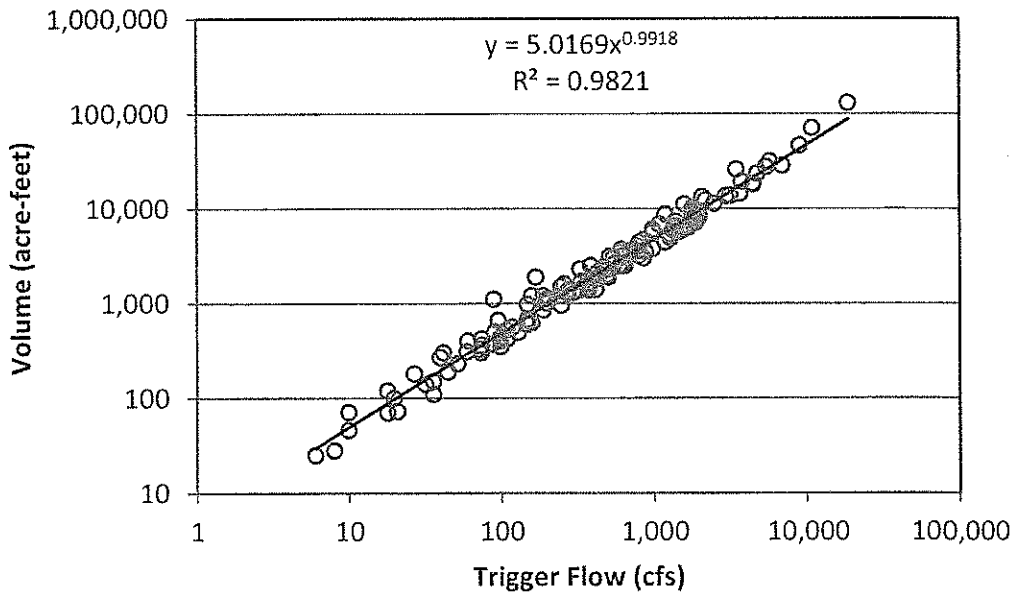


Figure 1. Pulse Volume vs. Pulse Trigger Flow Rate for the Colorado and Lavaca River Measurement Points without Bastrop, Columbus, and Wharton Pulses

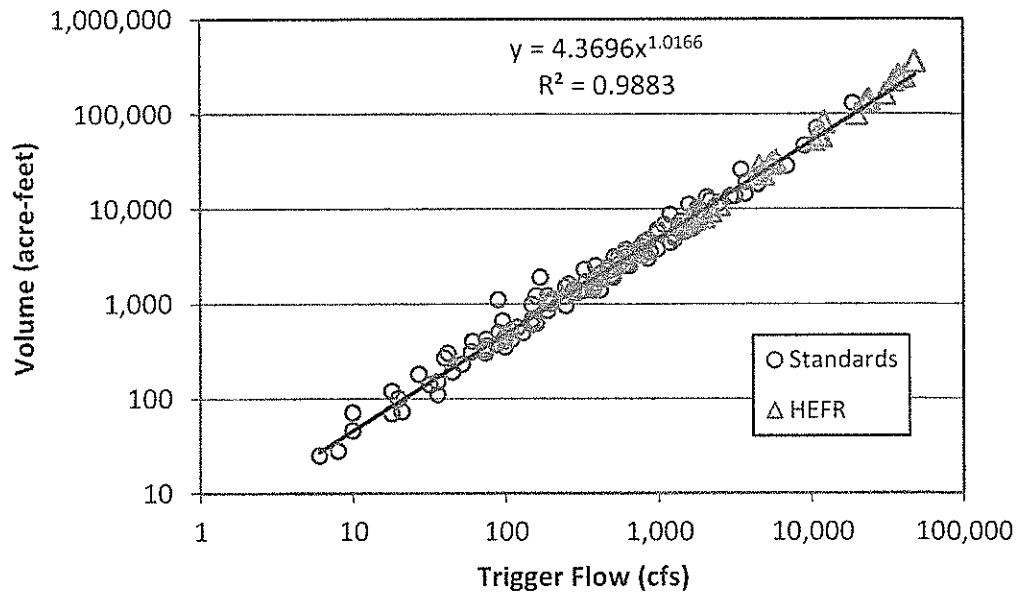


Figure 2. Pulse Volume vs. Pulse Trigger Flow Rate for the Colorado and Lavaca River Measurement Points with Bastrop, Columbus, and Wharton Pulses Using BBEST HEFR Results

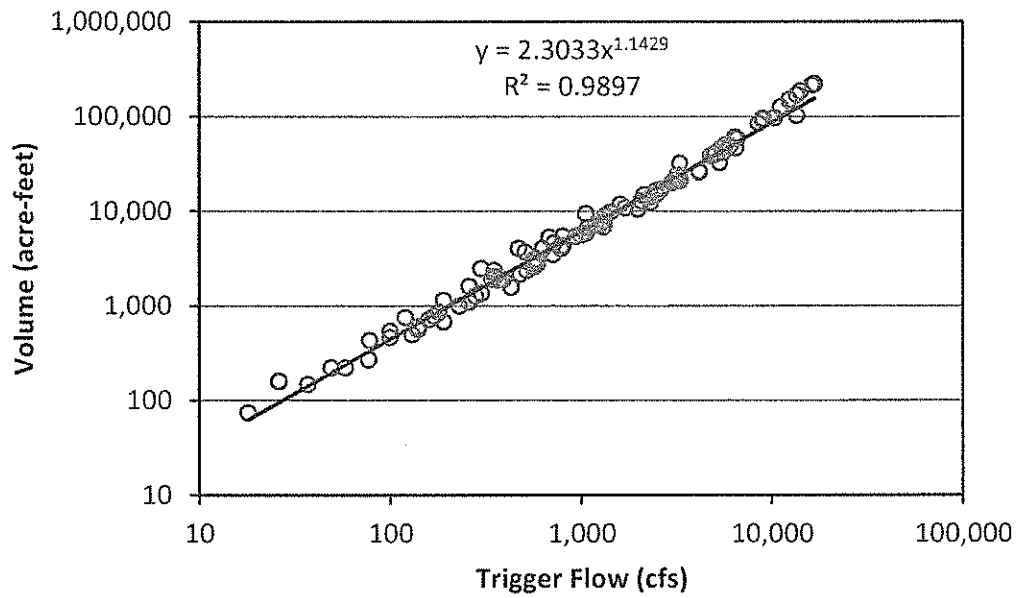


Figure 3. Pulse Volume vs. Pulse Trigger Flow Rate for the Brazos River Measurement Points

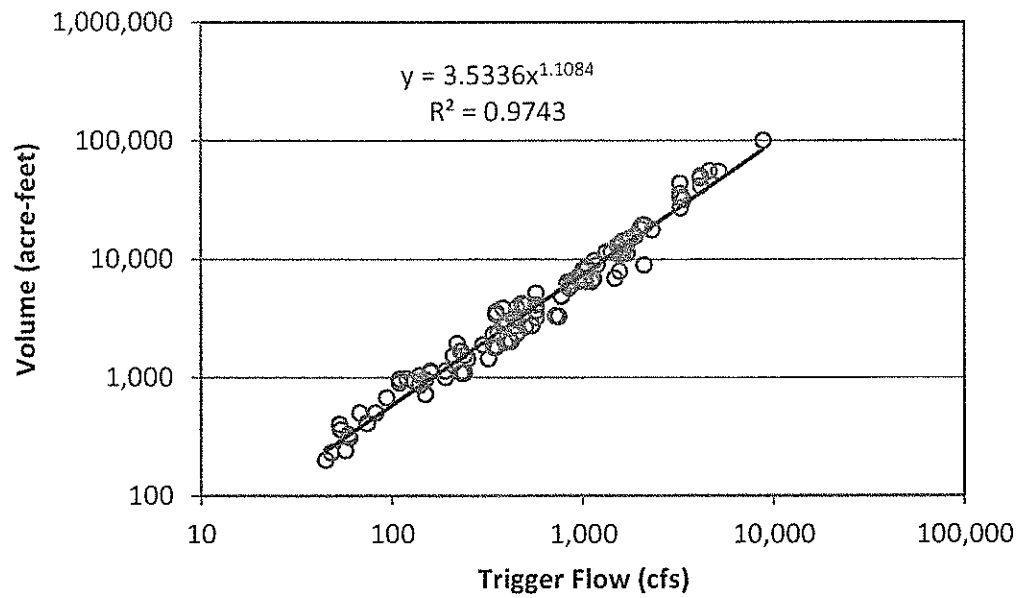


Figure 4. Pulse Volume vs. Pulse Trigger Flow Rate for the GSA River Measurement Points

4. Translation Methodology

The following methodologies are taken from the TCEQ eflow implementation guidelines document.

Subsistence and Base Flows

Two methods for translating subsistence and base flow standards are provided in the guidelines. The first, or “generally” applied, method is to use the ratio of drainage areas at the established measuring point and the new location. The second method listed in the guidelines uses the ratio of seasonal naturalized flows at the two locations. However, the second method is not accompanied by a list of circumstances in the guidelines that warrant its use.

The drainage area ratio (DAR) between the two locations is equal to:

$$DAR = \frac{10.91}{28,580.21} = 0.000382 \quad (\text{TCEQ Guidelines})$$

The seasonal flow factor (SFF) between the two locations is calculated using the monthly stream flow data presented in Tables 1 and 2 for the concurrent period of November 2003 through December 2013. Unlike the example in the guidelines document, the proposed location on Little Bear Creek has known stream flows and is located directly upstream of an existing standards measuring point. Therefore, incremental flows, as required in the guidelines, are not needed for calculating the seasonal flow factor.

Table 3
Average Seasonal Flows and Seasonal Flow Factors

Season	Number of Months of Data	Little Bear Creek, ac-ft per month	Colorado River at Bastrop, ac-ft per month	Seasonal Flow Factor, LBC/Bastrop
Spring Mar.-Jun.	40	43.3	160,341	0.000270
Summer Jul.-Aug.	20	27.9	119,881	0.000233
Fall Sept.-Nov.	31	287.2	111,895	0.002567
Winter Dec.-Feb.	31	46.6	86,917	0.000536

It is recommended that the DAR method be used for translating the eflow standards between Bastrop and LBC. The SFF could be re-evaluated when more months of

concurrent data are available for each season at the two locations, or if revisions to the translations guidelines prescribe its use.

The lowest subsistence standard at Bastrop occurs in August and September and is equal to 123 cfs. Using the drainage area ratio of 0.000382, the translated requirement at LBC is equal to $0.000382 \times 123 = 0.047$ cfs.

The highest base flow standard at Bastrop occurs in May under Average hydrologic conditions and is equal to 824 cfs. The translated requirement at LBC is equal to 0.315 cfs.

Rounding and Low Flow Requirements

The translated subsistence and base flow standards at the LBC stream gage are all less than 1 cfs. The final set of translated requirements will be rounded to nearest tenth decimal place. However, the August, September, and October subsistence standards translate to values of less than 0.05 cfs which do not round up to 0.1 cfs. These values are rounded up to 0.1 cfs to comply with minimum critical low flows for maintenance of water quality standards on an intermittent stream.⁸

Pulse Trigger Flows

Trigger flows are scaled from the measurement point to the new location using the ratio of the mean annualized naturalized flows from the WAM or the corresponding stream reaches on the NHDPlus Version 2 dataset. In the case of LBC, the actual stream flow measurements that can be used in lieu of synthesized flows from the NHDPlus v2 dataset. The ratio of mean annualized naturalized flows, R , at LBC to Bastrop is calculated from the values in Tables 1 and 2.

$$R = \frac{1,243}{1,472,893} = 0.000844 \quad \text{(Thesis Eq. 1)}$$

The pulse trigger flow rates at Bastrop are 3,000 cfs and 8,000 cfs. Multiplying by the ratio of mean annualized naturalized flows, the corresponding pulse volume requirements at LBC are equal to 2.5 and 6.8 cfs, respectively. The translated trigger flow rates are rounded to the nearest tenth decimal place.

Pulse Durations

Pulse flow duration is scaled using a duration exponent. As discussed in the previous section, the exponent for the Colorado standards was calculated with and without pulse requirements represented at Bastrop, Columbus, and Wharton. This is due to the lack of volume requirements in the standards for these locations. However, seasonal and annual pulse volumes and trigger flow rates were plotted for these

⁸ TAC §307.8(7)

locations using the same HEFR results that are the basis for pulse requirements at all other locations in the Colorado basin.

The pulse duration, D , scaling equation is given in the thesis as equation 9. Thesis equation 10 was previously given in this memo and relates the duration exponent, e , to the regression exponent of equation 4. The duration scaling equation is shown below with subscript notation for LBC (L) and Bastrop (B). Other equations from the thesis will be written in this memo using the L and B subscript notation in lieu of the generic “ a ” and “ b ” location subscripts found in the thesis.

$$D_L = D_B(R)^e \quad \text{(Thesis Eq. 9)}$$

From Figure 1 without the Bastrop, Columbus, and Wharton pulses, the duration exponent e is calculated to be $0.9918 - 1 = -0.0082$. When a negative exponent is used, durations will increase at LBC relative to Bastrop. For example, with duration of 4 days at Bastrop, a mean annual flow ratio of 0.000844, and a duration exponent of -0.0082, the pulse duration at LBC is equal to 4.2 days.

From Figure 2 with the Bastrop, Columbus, and Wharton pulses from the BBEST HEFR results, the duration exponent e is calculated to be $1.0166 - 1 = 0.0166$. Applying the positive duration exponent, pulse durations will scale downward at the LBC. Following the example above, with duration of 4 days at Bastrop, a mean annual flow ratio of 0.000844, and a duration exponent of 0.0166, the pulse duration at LBC is equal to 3.6 days.

The final pulse duration recommendation is rounded to the nearest integer number of days according to the methodology in the thesis. In either case shown above, the final pulse duration at LBC would be scaled to 4 days. However, the duration exponent e should logically be a positive value to scale down durations when moving from a main stem location to a small tributary. Therefore, the duration exponent e equal to 0.0166 from Figure 2 is adopted. A regional or statewide duration exponent might be found by averaging the basin specific duration exponents. That alternative was not explored in this memo.

Pulse Volumes

The Colorado River pulse standards at Bastrop, Columbus, and Wharton do not contain volume requirements. All other pulse requirements in the Colorado River Basin, including the pulses for the Onion Creek near Driftwood, have volume requirements. Volume requirements, V , can be calculated for the LBC location using the equation 13 from the thesis. The pulse volume scaling equation is written as:

$$V_L = V_B R \frac{D_L}{D_B} \quad \text{(Thesis Eq. 13)}$$

Volume at Bastrop can be derived from the power law equation shown in Figure 2. Substituting the form of the power law equation for the value of $V_{Bastrop}$, the volume scaling equation is re-written as:

$$V_L = c(Q_B)^d R \frac{D_L}{D_B} \quad (\text{Substitute Thesis Eq. 4})$$

where Q_B is the trigger flow rate, and $c = 4.3696$ and $d = 1.0166$ from Figure 2.

D_{LBC} can be substituted using equation 9 from the thesis, and the volume scaling equation is re-written and simplified as:

$$V_L = c(Q_B)^d R \frac{D_B(R)^{d-1}}{D_B} \quad (\text{Substitute Thesis Eq. 9})$$

$$V_L = c(Q_B)^d R(R)^{d-1} \quad (\text{Simplify})$$

$$V_L = c(Q_B)^d (R)^d \quad (\text{Simplify})$$

Using the pulse volume equation above and a pulse trigger flow rate at Bastrop of 3,000 cfs or 8,000 cfs, the corresponding pulse volume requirements at LBC would be equal to 11.2 and 30.5 acre-feet, respectively.

5. Season and Hydrologic Condition

The definition of seasons for LBC are unchanged from TAC §298.305. The environmental flow standards at the Bastrop measuring point utilize combined storage in Lakes Buchanan and Travis to set the hydrologic conditions per TAC §298.320(c) for engaging subsistence and base flow requirements. Since the translated subsistence and base flow requirements at LBC are derived from the Bastrop measuring point, it is recommended that the hydrologic condition at LBC be calculated in the same manner.

6. Translated EFlow Standards

A complete set of translated environmental flow standards for LBC are provided in Table 4. The source standards for the Bastrop measuring point are provided in Table 5 for reference. Subsistence, base flow, and pulse flow requirements are translated in accordance with the methodology described in the TCEQ guidelines published in June 2015. The naturalized flow period of record in the Colorado WAM currently extends through December 2013. As the naturalized flow period of record is extended, more data at Bastrop become available for comparison to flow measurements at LBC. The pulse flow requirements at LBC may be revisited and updated as necessary to account for changes in the ratio of mean annual naturalized flows.

Table 4
 Environmental Flow Standards Translated to the Stream Gage on Little Bear Creek
 (30.12486°N Latitude, 97.90428°W Longitude) from the Colorado River at Bastrop

Season	Month	Hydrologic Condition	Subsistence, cfs	Base, cfs	Seasonal Pulse, 2 per season	Pulse, 1 per 18 months
Winter	December	Severe	0.1	0.1	Magnitude: 2.5 cfs Duration: 4 days Volume: 11.2 ac-ft	
	December	Dry	#N/A	0.1		
	December	Average	#N/A	0.2		
	January	Severe	0.1	0.1		
	January	Dry	#N/A	0.1		
	January	Average	#N/A	0.2		
	February	Severe	0.1	0.1		
	February	Dry	#N/A	0.1		
	February	Average	#N/A	0.2		
Spring	March	Severe	0.1	0.1	Magnitude: 2.5 cfs Duration: 4 days Volume: 11.2 ac-ft	Magnitude: 6.8 cfs Duration: 2 days Volume: 30.5 ac-ft
	March	Dry	#N/A	0.1		
	March	Average	#N/A	0.2		
	April	Severe	0.1	0.1		
	April	Dry	#N/A	0.1		
	April	Average	#N/A	0.2		
	May	Severe	0.1	0.2		
	May	Dry	#N/A	0.2		
	May	Average	#N/A	0.3		
	June	Severe	0.1	0.2		
	June	Dry	#N/A	0.2		
	June	Average	#N/A	0.3		
Summer	July	Severe	0.1	0.1	Magnitude: 2.5 cfs Duration: 4 days Volume: 11.2 ac-ft	
	July	Dry	#N/A	0.1		
	July	Average	#N/A	0.2		
	August	Severe	0.1	0.1		
	August	Dry	#N/A	0.1		
	August	Average	#N/A	0.1		
Fall	September	Severe	0.1	0.1	Magnitude: 2.5 cfs Duration: 4 days Volume: 11.2 ac-ft	
	September	Dry	#N/A	0.1		
	September	Average	#N/A	0.2		
	October	Severe	0.1	0.1		
	October	Dry	#N/A	0.1		
	October	Average	#N/A	0.2		
	November	Severe	0.1	0.1		
	November	Dry	#N/A	0.1		
November	Average	#N/A	0.2			

Table 5
Environmental Flow Standards for Colorado River at Bastrop Measuring Point

Season	Month	Hydrologic Condition	Subsistence, cfs	Base, cfs	Seasonal Pulse, 2 per season	Pulse, 1 per 18 months
Winter	December	Severe	186	311	Magnitude: 3,000 cfs Duration: 4 days Volume: <i>na</i>	
	December	Dry	#N/A	311		
	December	Average	#N/A	450		
	January	Severe	208	313		
	January	Dry	#N/A	313		
	January	Average	#N/A	433		
	February	Severe	274	317		
	February	Dry	#N/A	317		
Spring	February	Average	#N/A	497	Magnitude: 3,000 cfs Duration: 4 days Volume: <i>na</i>	Magnitude: 8,000 cfs Duration: 2 days Volume: <i>na</i>
	March	Severe	274	274		
	March	Dry	#N/A	274		
	March	Average	#N/A	497		
	April	Severe	184	287		
	April	Dry	#N/A	287		
	April	Average	#N/A	635		
	May	Severe	275	579		
	May	Dry	#N/A	579		
	May	Average	#N/A	824		
	June	Severe	202	418		
Summer	June	Dry	#N/A	418	Magnitude: 3,000 cfs Duration: 4 days Volume: <i>na</i>	
	June	Average	#N/A	733		
	July	Severe	137	347		
	July	Dry	#N/A	347		
	July	Average	#N/A	610		
	August	Severe	123	194		
Fall	August	Dry	#N/A	194	Magnitude: 3,000 cfs Duration: 4 days Volume: <i>na</i>	
	August	Average	#N/A	381		
	September	Severe	123	236		
	September	Dry	#N/A	236		
	September	Average	#N/A	423		
	October	Severe	127	245		
	October	Dry	#N/A	245		
	October	Average	#N/A	433		
November	Severe	180	283			
November	Dry	#N/A	283			
November	Average	#N/A	424			

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
APPLICATION FOR PERMIT TO APPROPRIATE STATE WATER
(SECTION 11.121, 11.042, 11.085 OR 11.143, TEXAS WATER CODE)
TAC CHAPTERS 30, 50, 281, 287, 288, 295, 297 AND 299
Water Supply Division, Water Rights Permitting MC-160**

P.O. Box 13087

Austin, Texas 78711-3087

Telephone (512) 239-4691, FAX (512) 239-4770

(if including a check, mail directly to P.O. Box 13088, Austin, TX 78711-3088)

Notice: This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol.

1. Applicant Information.

A. Applicant Name(s): City of Austin

Mailing Address: P.O. Box 1088, 301 West 2nd Street, Austin, Texas 78767-1088 (Attn: Ross Crow)

Telephone Number: 512-974-2159

Fax Number: 512-974-2894

Email Address: [REDACTED]

B. Customer Reference Number (if issued): CN 6001355198

Note: If you do not have a Customer Reference Number, complete Section II of the Core Data Form (TCEQ-10400) and submit it with this application.

C. Fees and Penalties

Applicant owes fees or penalties?

Yes No

If yes, provide the amount and the nature of the fee or penalty as well as any identifying number:

D. Lienholder Information

Provide this information on the holder of any liens on any land to which the water right would be appurtenant):

None

2. Dam (structure), Reservoir and Watercourse Data.

A. Type of Storage Reservoir Impoundment (indicate by checking (√) all applicable) No Dam, existing impoundment

on-channel off-channel existing structure proposed structure* exempt structure**

* Applicant shall provide a copy of the notice that was mailed to each member of the governing body of each county and municipality in which the reservoir, or any part of the reservoir, will be located as well as copies of the certified mailing cards.

** TWC Section 11.143 for uses of water for other than domestic, livestock, or fish and wildlife from an existing, exempt reservoir with a capacity of 200 acre-feet or less. Please complete Paragraph 6 below if proceeding under TWC 11.143.

Date of Construction: Impoundment is an abandoned limestone rock quarry excavated in the 1970's

NOV 3 10 4 00N 5102

WATER SUPPLY DIV.

TCEQ

RECEIVED

B. Location of Structure No. 1 (Not yet constructed)

- 1) Watercourse: Little Bear Creek
- 2) Location from County Seat: 17 miles in a North direction _____,
Hays County, Texas.
 Location from nearby town (if other than County Seat): 15 miles in a Southwest direction
 from the City of Austin, in Travis County, a nearby town
 shown on county highway map.
- 3) Zip Code: 78652
- 4) The diversion weir structure will be located in the James Wells Original Survey No. 84,
 Abstract No. 496 in Hays County, Texas.
- 5) Station _____ on the centerline of the ~~dam~~ proposed weir is N 67 ° 56' W (bearing),
175.0 feet
 (distance) from the Southeast corner of _____ James Wells Original Survey
 No. 84, Abstract No. 496, in _____ Hays County,
 Texas, also being at Latitude 30.124706 °N, Longitude 97.904243 °W. The Center
of the existing quarry is Latitude 30.126233 °N, 97.906766 °W.
 Provide the Latitude and Longitude coordinates in decimal degrees, to at least six decimal places, and indicate
 the method used to calculate the diversion point location.
 CONVERTED GEO REFERENCED CAD FILE COORDINATES USING CORPSCON V6.0.1,
 U.S. ARMY CORPS OF ENGINEERS COORDINATE SOFTWARE.

C. Reservoir: Impoundment

- 1) Acre-feet of water impounded by structure at normal maximum operating level: 385 acre-feet
- 2) Surface area in acres of reservoir impoundment at normal maximum operating level: 18
acres

D. Drainage Area

The drainage area above the dam is 6984 acres or 10.9 square miles.

E. Other

- 1) If this is a U.S. Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service (SCS)) floodwater-retarding structure, provide the Site No. n/a
 and watershed project name _____.
- 2) Do you request authorization to close the "ports" or "windows" in the service spillway? n/a
 Yes No

3. Appropriation/Diversion Request (total amount of water needed, including maximum projected uses and accounting for evaporative losses for off-channel storage, if applicable).

A. Appropriated water will be used as follows:

	Purpose*	Place of Use	Acre-feet per year
1)	Aquifer recharge	Barton Springs segment of the Edwards Aquifer	120.9 acre-feet/year on an annual average
2)			
3)			

*If agricultural use, list crops(s) to be irrigated: n/a

B. Lands to be irrigated (if applicable): n/a

- 1) Applicant proposes to irrigate a total of _____ acres in any one year. This acreage is all of or part of a larger tract(s) which is described in a supplement attached to this application and contains a total of _____ acres in _____ County, Texas. A copy of the deed(s) describing the overall tract(s) with the recording information from the county records is attached.
- 2) Location of land to be irrigated: In the _____
Original Survey No. _____, Abstract No. _____.

C. Diversion Point No. 1 (weir structure identified in 2.B. as Structure number 1, not yet constructed)

- 1) Watercourse: Little Bear Creek, tributary to Onion Creek
- 2) Location of point of diversion at Latitude 30.124706 °N, Longitude 97.904243 °W, Provide Latitude and Longitude coordinates in decimal degrees, to at least six decimal places, and indicate the method used to calculate the diversion point location..

CONVERTED GEO REFERENCED CAD FILE COORDINATES USING CORPSCON V6.0.1, U.S. ARMY CORPS OF ENGINEERS COORDINATE SOFTWARE.

also bearing N 67° 56' 11" W, 175.0 feet (distance) from the Southeast corner of the James Wells Original Survey No. 84, Abstract No. 496, in Hays, County, Texas.

- 3) Location from County Seat: 16.8 miles in a N 7.38 ° E direction from San Marcos, Hays County, Texas.
Location from nearby town (if other than County Seat): 15 miles in a Southwest direction from the City of Austin, a nearby town shown on county highway map.
- 4) Zip Code: 78652
- 5) The diversion will be (check (√) all appropriate boxes and if applicable, indicate whether existing or proposed):

	Directly from stream	Existing	Proposed
	From an on-channel reservoir		
X	From stream to an off-channel reservoir impoundment	Existing rock quarry	
	From a stream to an on-channel reservoir		
	From an off-channel reservoir		
	Other method (explain fully, use additional sheets if necessary)		

6) Rate of Diversion (Check (√) applicable provision):

1. Diversion Facility:

A. _____ Maximum gpm (gallons per minute)

- B. _____ Number of pumps
- C. _____ Type of pump
- D. _____ gpm, Pump capacity of each pump
- E. Portable pump _____ Yes or _____ No.

X 2. If by gravity:

- A. _____ Headgate X Diversion Dam _____ Maximum gpm
- B. _____ Other method (explain fully - use additional sheets if necessary)

In stream diversion structure weir which will only divert during flow events greater than 50 cfs and then only 50% of flows greater than 50cfs. The September 2005 report titled "Preliminary Design Study of the Stoneledge Quarry Diversion in Hays County, Texas" (attached) contains tables of diversion versus discharge in Exhibit 8 of the document. Based on this preliminary design information, the maximum instantaneous diversion rate is 3,209 cfs for a creek discharge rate of 7,598 cfs.

7) The drainage area above the diversion point is 6984 acres or 10.9 square miles.

D. Return Water or Return Flow (location and quantity information, provide Latitude and Longitude coordinates in decimal degrees to at least six decimal places and indicate the method used to calculate the diversion point location):

Water which is diverted but not consumed as a result of the above stated use, will be returned to

_____, tributary of _____
 _____, tributary of _____,
 _____ Basin, at a point which is at Latitude _____
 _____° _____'N, Longitude _____° _____'W, also, bearing
 _____° _____' (direction), _____ feet (distance) from the
 _____ corner of the _____ Original Survey
 No. _____, Abstract No. _____, in _____ County, Texas.

Zip Code: _____

Estimated **annual** amount of return flow to said stream will be _____ acre-feet.

E. Surplus Water (provide Latitude and Longitude coordinates in decimal degrees to at least six decimal places and indicate the method used to calculate the diversion point location):

Water which is diverted but not used beneficially will be returned to Little Bear Creek,
 tributary of Bear Creek, tributary of Onion Creek, which discharges to the Colorado River _____,
 _____ in the Lower Colorado River _____ Basin at a point
 which is at Latitude _____°N, Longitude _____°W, also
 bearing _____° _____' (direction), _____ feet
 (distance) from the _____ corner of the _____ Original Survey
 No. _____, Abstract No. _____, in _____ County, Texas.

Zip Code: _____

4. Discharge Point Information (if applicable, provide Latitude and Longitude coordinates in decimal degrees to at least six decimal places and indicate the method used to calculate the diversion point location).

Discharge Point No. or Name: _____

A. Select the appropriate box for the source of water being discharged:

- Treated effluent
- Groundwater
- Other _____

B. Location of discharge point will be/is at Latitude _____ ° N, Longitude _____ °W, also bearing _____ ° _____, _____ feet from the _____ corner of the _____ Original Survey No. _____, Abstract No. _____, in _____ County, Texas.

What method was used to determine the Latitude and Longitude for the discharge point? (i.e., GPS Unit, USGS 7.5 Topographic Map, etc.)

C. Location from County Seat: _____ miles in a _____ direction from _____, _____ County, Texas.

Location from nearby town (if other than County Seat): _____ miles in a _____ direction from _____, a nearby town shown on county highway map.

D. Zip Code: _____

E. Water will be discharged into _____ stream/reservoir, (tributaries) _____ Basin.

F. Water will be discharged at a maximum rate of _____ cfs (_____ gpm).

G. The amount of water that will be discharged is _____ acre-feet per year.

H. The purpose of use for the water being discharged will be _____.

I. Additional information required:

For groundwater

- 1) Provide water quality analysis and 24 hour pump test for the well if one has been conducted.
- 2) Locate and label the groundwater well(s) on a USGS 7.5 Minute Topographic Map
- 3) Provide a copy of the groundwater well permit if it is located in a Groundwater Conservation District.
- 4) What aquifer the water is being pumped from?

For treated effluent

- 1) What is the TPDES Permit Number? Provide a copy of the permit.
- 2) Provide the monthly discharge data for the past 5 years.
- 3) What % of treated water was groundwater, surface water?
- 4) If any original water is surface water, provide the base water right number.

5. General information.

A. The proposed diversion weir and existing quarry/recharge feature works will be (are) located on the land of the City of Austin, whose mailing address is P.O. Box 1088, Austin, Texas 78767

B. If an application for the appropriation is granted, either in whole or in part, construction works will begin within two (2) years after such permit is issued. The proposed work will be completed within four (4) years from the date the permit is issued.

C. A Water Conservation Plan is attached? Yes No.

D. Interbasin transfer is not requested.

 Applicant requests authorization to transfer acre-feet of water per year from the Basin to the Basin of which acre-feet of water will be used for purposes and acre-feet of water will be used for purposes.

E. n/a Bed and Banks request to transfer acre-feet of water per year within the bed and banks of , tributary of , Basin.

F. Is this project located within 200 river miles of the coast? Yes No Unknown

5. Maps, plats, plans, and drawings accompany this application as required by applicable TAC Sections.

Yes No. Attach additional sheets.

6. The dam(s) and reservoir(s) shown on the attached application was (were) constructed for domestic and livestock purposes and I/we elect to seek a permit under Section 11.143 of the Texas Water Code.

7. Provide information describing how this application addresses a water supply need in a manner that is consistent with the state water plan or the applicable approved regional water plan for any area in which the proposed appropriation is located or, in the alternative, describe conditions that warrant a waiver of this requirement.

The City of Austin proposes to use the inactive Stoneledge Quarry to enhance recharge to the Barton Springs Edwards Aquifer (BSEA) and enhance the discharge at Barton Springs. The project will also serve as a pilot study to evaluate the benefits of developing recharge enhancement projects and specifically those using abandoned quarries. If approved, a portion of the storm water flows from Little Bear Creek would be diverted into a conveyance channel that connected with the quarry. Once impounded, the water would slowly recharge the BSEA through the quarry and the underlying karst features. The storage capacity of the quarry is 385 acre-feet. Though not identified as supplying a specific need as a strategy, this type of project will foster a better understanding of groundwater and surface water connectivity in the BSEA system and may be useful in the development of future linked groundwater and surface water models as identified in Chapter 8 of the 2011 Region K Regional Water Plan. The Lower Colorado Regional Water Planning Group's (LCRWPG) currently approved Regional Water Plan (2011 Region K Plan) contemplates the use of groundwater recharge projects. This project is consistent with the Policy statements of Region K on linking groundwater and surface water models particularly in areas with stream based recharge (2011 Region K Plan Section 8.2.1.2.2) and in the policy statement addressing conjunctive use of groundwater and surface water in the 2011 Region K Water Plan (Section 8.2.1.2.3). Additional policy statements address sustainability (Section 8.2.4.2.5) and support sustainably balancing groundwater recharge with withdrawal.

Applicant Name (Sign)

[Handwritten Signature]

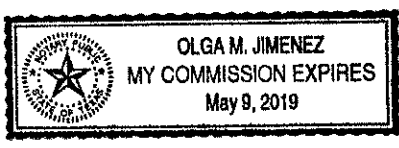
Applicant Name (Sign)

Applicant Name (Printed)

Joseph G. Pantalion

Applicant Name (Printed)

SWORN TO AND SUBSCRIBED before me this 29 day of October, 2015.



Olga M. Jimenez

Notary Public for the State of Texas

SUPPLEMENTAL INFORMATION
CITY OF AUSTIN APPLICATION

I. BACKGROUND

In May 2011, The **CITY OF AUSTIN** (the “City”), the **LOWER COLORADO RIVER AUTHORITY** (“LCRA”) and the **BARTON SPRINGS/EDWARDS AQUIFER CONSERVATION DISTRICT** (the “District”) (hereafter referred to as the “Parties”) entered into an Interlocal Agreement pursuant to Texas Government Code Chapter 791 (“Interlocal Cooperation Act”) to work together and commit various resources to develop the Stoneledge Quarry Edwards Aquifer Recharge Enhancement Project. The Interlocal Agreement entered into by the Parties is attached hereto under Tab 2. The Interlocal Agreement outlines specific commitments that each of the parties have made in relation to this project.

The City of Austin proposes to use the inactive Stoneledge Quarry to enhance the discharge at Barton Springs. The project will also serve as a pilot study to evaluate the benefits of developing recharge enhancement projects. If approved, a portion of the storm water flows from Little Bear Creek would be diverted into a conveyance channel that connects with the quarry. Once impounded, the water would slowly recharge the Barton Springs segment of the Edwards Aquifer (BSEA) through the quarry and the underlying karst features. The temporary holding capacity of the quarry is 385 acre-feet.

II. DESCRIPTION OF THE PROJECT:

The Quarry is no longer active and is located on property owned by the City of Austin and located in the north-central portion of Hays County approximately 2 miles southwest of the Travis County line. The City of Austin has an established program of acquiring land and conservation easements in the Barton Springs recharge and contributing zones of the Edwards Aquifer to benefit water quality and quantity. The quarry which encompasses approximately one third of the 85 acres on which it is located, adjoins an additional tract of 1,325 acres west of the quarry which was also purchased by the City to provide open space and water quality protection within the Barton Springs Recharge Zone. The quarry excavation varies from about 40 to 60 feet below existing ground level. Ground surface elevations range from approximately 790 feet to 810 feet above mean sea level over the expanse of the quarry. Little Bear Creek is an ephemeral creek, typically dry and flows across the 85 acre tract in a generally northeast direction, across the southeast corner of the tract.

The inactive Stoneledge Quarry is located off-channel near Little Bear Creek within the Onion Creek watershed of the Colorado River. Approximately 0.34 square miles (215 acres) of drainage area have been impounded by the quarry since excavation began in the 1970’s. The water table of the BSEA intersects the quarry and is exposed at the lowest points within the quarry. Supplementing the runoff from the 0.34 square mile drainage area of the quarry with flows from Little Bear Creek would increase the recharge over time to the BSEA.

A bypass weir will be used to restrict diversions from Little Bear Creek to events of 50 cfs or greater. Approximately 50% of the flows on Little Bear Creek in excess of 50 cfs can be diverted by gravity into the connecting conveyance channel as long as holding capacity is available. The location of the proposed diversion is below almost all of the known natural stream recharge

features on Little Bear Creek, based on stream flow measurements. There are approximately 10.9 square miles (6,984 acres) of rural upstream contributing drainage area within the Little Bear Creek watershed at the location of the bypass weir.

Available manual flow data from Little Bear Creek indicates that most of the creek recharge appears to occur between FM 967 and Stoneledge Quarry, although minor recharge (a few cfs) to the aquifer is likely downstream of the quarry. By restricting diversion at the bypass weir to 50% of the flows in excess of 50 cfs, the project provides for considerable flow to remain in-channel for downstream locations over the recharge zone and for water right and riparian benefits.

This project is a pilot project which will collect data and information to help demonstrate whether other similar projects will provide the anticipated enhanced spring flow benefits.

Consistent with this Interlocal Agreement, this application seeks the legal right to divert and temporarily hold water from Little Bear Creek in the off-channel pit of Stoneledge Quarry. According to modeling using the TCEQ Water Availability Model (WAM), up to 121 acre-feet/year on an annual average basis could be diverted from Little Bear Creek. During a repeat of the drought hydrology of May 1947 through June 1957, modeling indicates that only 57 acre-feet/year would be diverted. Actual diversion will vary according to stream flow conditions experienced when the project is operational.

The City of Austin seeks authorization to use the diverted water to enhance the recharge into the Barton Springs segment of the Edwards Aquifer and increase the discharge at Barton Springs. Water diverted from Little Bear Creek and temporarily held during recharge will not be used as a water supply source from the quarry or for other purposes such as recreation on the water body in the quarry. If approved, the project will take approximately three to four years to complete. The initial two years include design and bid phases. The remaining year(s) will be needed for the actual construction of the weir and conveyance structure. (Need to verify the estimated timing in this paragraph.)

III. LEGAL THEORIES SUPPORTING APPLICATION

The City of Austin seeks authorization under Title 30, Chapters 295 and 297 of the Texas Administrative Code or any applicable section of the Texas Water Code or any other theory recognized in Texas law.

IV. PROPOSED DIVERSIONS, IMPOUNDMENT AND SOURCES OF WATER

Little Bear Creek is a tributary to the Onion Creek watershed which connects to the Colorado River east of Austin. As such, a certain amount of intermittent flows from Little Bear Creek to Onion Creek and ultimately to the Colorado River will not be available. To make up for the diversions from Little Bear Creek, stored water may at times have to be released by LCRA from Lakes Buchanan and Travis into the Colorado River for environmental flows or downstream senior water rights. However, it is anticipated that much of the recharge of the aquifer will ultimately be discharged back into the Colorado River at Barton Springs and mitigate this need. For this reason, as indicated in the attached interlocal agreement, LCRA has reserved 40.2 AFY

of storage from Lake Buchanan and Lake Travis for this project (as described below). The quarry site where the diverted water will be reside during recharge has a holding capacity of 385 acre-feet.

For informational purposes, the Colorado River is Austin's main source of water. Austin diverts water from the Colorado River under its independent water rights and pursuant to water supply agreements with LCRA wherein LCRA may supply Austin with water from Lakes Buchanan and Travis or any other source of firm supply available to LCRA. Austin holds Certificates of Adjudication Nos. 14-5471 and 14-5489, as amended. These rights authorize Austin to use water for municipal, irrigation, recreational, hydroelectric power, and industrial purposes. LCRA holds the following Certificates of Adjudication Nos. and any associated amendments that are the subject of this application: 14-5478 (Lake Buchanan), 14-5479 (Inks Lake), 14-5480 (Lake LBJ), 14-5481 (Lake Marble Falls), 14-5482 (Lake Travis), 14-5434C (Garwood), 14-5473 (Lake Bastrop), 14-5474 (Cedar Creek and Baylor Creek Reservoirs), 14-5475 (Lakeside), 14-5476 (Gulf Coast), 14-5477A (Pierce Ranch), Permit No. 14-5838 (*insert name*), and Permit 14-5731 (Unappropriated Flows). LCRA also holds rights under Certificate of Adjudication No. 14-5437 for the South Texas Project (STP), with certain rights held by STP Nuclear Operating Company, and two exempt interbasin transfer permits to supply water to the Lometa Water System and the City of Leander. These rights authorize LCRA to use water for various and multiple beneficial purposes, depending on the water right.

V. PROPOSED BENEFICIAL USE

As described in the Background section above, water authorized by this permit will be used to enhance recharge into the Barton Springs Segment of the Edwards Aquifer. The quarry is located in the Barton Springs recharge zone, where water diverted from Little Bear Creek would then be allowed to infiltrate into the aquifer. Dye tracing has demonstrated that water entering the aquifer in this area arrives and discharges at Barton Springs.

A map showing the relationship of the quarry to the Barton Springs Recharge Zone is shown in Tab 4. Additionally a map showing the Stoneledge Recharge Enhancement Project relationship to the Little Bear Creek Watershed is also attached hereto under Tab 4. If approved final coordinates will be made available for the diversion point.

VI. LOSSES

To account for reduced availability resulting from the diversions from Little Bear Creek, stored water will be released from lakes Buchanan and Travis to the confluence of Onion Creek with the Colorado River. The estimated amount of water that will be lost to transpiration, evaporation, seepage, channel or other associated carriage losses associated with those releases between Mansfield Dam and the confluence of Onion Creek with the Colorado River is estimated to be approximately 4%.

VII. NO ADVERSE IMPACTS

The proposed use of water diverted pursuant to this application will have the potential to impact senior downstream water rights and LCRA's obligation to meet certain downstream

environmental flow requirements below the confluence of Onion Creek and the Colorado River. The LCRA will reserve for release 40.2 acre-feet of firm water per year to offset any reduction in run-of-river availability to LCRA downstream water rights, downstream environmental flows, and to account for delivery losses. This reservation will continue for a period of 50 years upon issuance of the applicable state water rights permit for this project as outlined in the aforementioned Interlocal Agreement.

With specific regards to the impacts to LCRA's and Austin's own existing water rights, the Settlement Agreement between the LCRA and the City of Austin ensures no adverse impact.

A. Impacts to Other Water Rights or Instream Flows and Freshwater Inflows

To account for reductions in run-of-river availability to water rights on the main stem Colorado River downstream of the confluence of Onion Creek, Colorado River instream flows downstream of the confluence of Onion Creek, or freshwater inflows to Matagorda Bay, LCRA will make available 40.2 AFY of stored water releases from lakes Buchanan and Travis. Results of modeling with the TCEQ WAM indicate that the bypass weir allows adequate water to pass downstream of the project to meet all downstream water right demands in the Onion Creek watershed.

B. Rate of Diversion

The maximum diversion rate is a function of the water surface elevation in the creek at the location of the weir. Discharge in the creek is a function of water surface elevation. The maximum discharge of 7,598 cfs at the Little Bear Creek gaging station was observed during the flooding event of October 31, 2013. The September 2005 report titled "Preliminary Design Study of the Stoneledge Quarry Diversion in Hays County, Texas" (attached) contains tables of diversion versus discharge in Exhibit 8 of the document. Based on this preliminary design information, the maximum diversion rate is 3,209 cfs for the maximum instantaneous creek discharge rate of 7,598 cfs recorded during the October 31, 2013 flood event.

VIII. CONSIDERATION OF MARSHALL FACTORS

To the extent the Commission determines that this application is subject to Texas Water Code § 11.122, the Parties provide the following information necessary for the Commission's consideration under that section and any other relevant statutory requirements.

a. Compliance with Administrative Requirements

The City confirms to the best of its knowledge and belief, this permit application meets the administrative requirements for a water use permit pursuant to Texas Water Code Chapter 11 and Texas Administrative Code, Title 30, Chapters 281, 295 and 297. A sworn application, map and a check for fees are included.

b. Beneficial Use

The proposed water use permit is for a beneficial use under Texas Water Code Chapters 11.002(4) and 11.023.

c. Public Welfare

This application is beneficial to the overall public welfare of water users and the environment of the lower Colorado River basin. This permit application proposes to use flows in excess of 50 cfs from Little Bear Creek to enhance recharge of the Barton Springs Edwards Aquifer in a manner that is consistent with Texas Water Code Chapters 11.023. The water will be used for clearly recognized beneficial uses and will serve as a pilot project to study the potential beneficial effects of groundwater recharge into the aquifer.

d. Groundwater Effects

A proposed authorization to use state water must consider the effects of the proposed permit will have a positive effect on groundwater or groundwater recharge, as described above.

e. Consistency with Regional & State Water Plan

The Lower Colorado Regional Water Planning Group's (LCRWPG) currently approved Regional Water Plan (2011 Region K Plan) contemplates the use of groundwater recharge projects. This project is consistent with the Policy statements of Region K on linking groundwater and surface water models particularly in areas with stream based recharge (2011 Region K Plan Section 8.2.1.2.2) and in the policy statement addressing conjunctive use of groundwater and surface water in the 2011 Region K Water Plan (Section 8.2.1.2.3). Additional policy statements address sustainability (Section 8.2.4.2.5) and support sustainably balancing groundwater recharge with withdrawal.

f. Water Conservation & Drought Contingency

The City of Austin has already adopted and is implementing a water conservation plan and a drought contingency plan that meets or exceeds state requirements. Austin's plans are attached hereto under Tabs 8 and 9.

IX. OTHER FACTORS

a. Flow Monitoring

There is currently a concrete weir gauging station located on the east side of the property which began measuring Little Bear Creek streamflow in November 2003 and is still operational. Prior to the diversion of creek flows authorized by the permit, the City will, in conjunction with the District and LCRA, develop and implement a flow monitoring program. The City will maintain daily records of observed flows and amounts diverted at the weir structure in a daily accounting plan.

b. Delegation of Authority

In accordance with 30 Tex. Admin. Code § 295.14(5), attached hereto are copies of the City of Austin's Organization chart and the City's delegation authority.

c. Application Fees

In accordance with 30 Tex. Admin. Code § 295.151 et seq. and Texas Water Code 5.701, enclosed please find a check in the amount of \$ 744.75 to cover the following filing and recording fees.

Filing Fee:	\$ 250.00
Recording Fee:	\$ 8.75 (7) pages x \$ 1.25 per page)
Other Use Fee	\$ 486.00 (Max Annual Diversion 486.1 AFY)
Mailing Fee:	\$ unknown (Upon notification, the City will promptly provide the amount necessary, as determined by TCEQ)

Questions regarding this application should be directed to Ross Crow attorney for the City of Austin, at (512) 974-2159.

Attachments:

- Tab 1 Supplemental Information
- Tab 2 Interlocal Agreement
- Tab 3 Memorandum April 21, 2009
- Tab 4 Map of diversion point
- Tab 5 Photo of existing meter panel for Little Bear Creek adjacent to Quarry site
- Tab 6 Photos (2) of Quarry
- Tab 7 Preliminary Design Study of the Stoneledge Quarry Diversion in Hays County, Texas
- Tab 8 City of Austin Utility Profile and Water Conservation Plan, April 17, 2014
- Tab 9 City of Austin Drought Contingency Plan, August 16, 2012

**INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUSTIN, LOWER
COLORADO RIVER AUTHORITY AND BARTON SPRINGS/EDWARDS
AQUIFER CONSERVATION DISTRICT REGARDING
THE STONELEDGE QUARRY RECHARGE ENHANCEMENT PROJECT**

The **CITY OF AUSTIN** (the "City"), the **LOWER COLORADO RIVER AUTHORITY** ("LCRA") and the **BARTON SPRINGS/EDWARDS AQUIFER CONSERVATION DISTRICT** (the "District") (hereafter referred to as the "Parties") enter into this Interlocal Agreement ("Agreement") pursuant to Texas Government Code Chapter 791 ("Interlocal Cooperation Act") to work together and commit various resources to develop the Stoneledge Quarry Edwards Aquifer Recharge Enhancement Project.

**I.
RECITALS**

WHEREAS, the Barton Springs Segment of the Edwards Aquifer (the "Aquifer") is a unique underground system of water bearing formations in Central Texas, wherein water enters the Aquifer through the ground as surface stream inflow and rainfall infiltration, which is rapidly transported in the subsurface by solution conduits and the intrinsic permeability of the rock, and leaves the Aquifer through well withdrawals and spring flows;

WHEREAS, the complex springs known as Barton Springs is located inside the municipal boundaries of the City and is the primary, direct natural outlet for water flowing through the Aquifer and the only known habitat for the endangered Barton Springs Salamander *Eurycea sosorum*, and the Austin Blind Salamander, *Eurycea waterlooensis*, which is a candidate for endangered species listing under the federal Endangered Species Act;

WHEREAS, Barton Springs is an important recreational, cultural, historical, and water resource for Austin and Central Texas;

WHEREAS, the Aquifer is a federally-designated sole-source of drinking water, which serves as a primary source of drinking water for tens of thousands of people and is a vital resource to the general economy and welfare of the City of Austin and the State of Texas;

WHEREAS, increasing the amount of clean water entering the Aquifer will benefit the Aquifer, the springs, the Colorado River, and aquatic and terrestrial species dependent on this water;

WHEREAS, the City has purchased an 85 acre tract in northern Hays County that includes an 18 acre quarry ("Stoneledge Quarry");

WHEREAS, the City proposes to construct, operate and maintain an Aquifer recharge project at Stoneledge Quarry that will divert flood flows above 50 cubic feet per second from Little Bear Creek into Stoneledge Quarry, which is expected to seep into the Aquifer over a period of time thereby increasing Aquifer storage and enhancing flows at Barton Springs;

WHEREAS, the City through land purchases and conservation easements now protects over 23,000 acres of land to benefit water quality and quantity that contributes to Barton Springs, including over 40 percent of the watershed upstream of Stoneledge Quarry;

WHEREAS, the City has substantial investment in preserving water quality and quantity in the Barton Springs Zone;

WHEREAS, the Project is a cooperative effort by the City, LCRA, and the District;

WHEREAS, the Hill Country Conservancy has assisted in purchase and plan development of the project;

WHEREAS, the Barton Springs/Edwards Aquifer Conservation District is a Groundwater Conservation District created by an act of the 70th Legislature for the purpose of providing for conservation, preservation, protection, recharging, and prevention of waste of groundwater and of groundwater reservoirs in the Barton Springs segment of the Edwards Aquifer;

WHEREAS, the District has analyzed the estimated downgradient area of the Aquifer that will be provided enhanced flow by the Project and has determined that downgradient areas are predominately built out, are away from major pumping centers, and expect no significant new well permits for this area;

WHEREAS, the Lower Colorado River Authority (LCRA) is a conservation and reclamation district and political subdivision for the state created under Article XVI, Section 59 of the Texas Constitution;

WHEREAS, LCRA holds downstream senior water rights in the lower Colorado River and has obligations to maintain certain instream flows in the lower Colorado River;

WHEREAS, LCRA has pending before the Texas Commission on Environmental Quality ("TCEQ") an application for all remaining unappropriated flows in the lower Colorado River (Application No. 5731);

WHEREAS, flow from Barton Springs enters Lady Bird Lake and typically flows downstream through Longhorn Dam, thereby contributing to the instream flow needs of the lower Colorado river at the Austin gage immediately downstream of Longhorn Dam and the needs of downstream senior water rights;

WHEREAS, the LCRA and the District entered into a Memorandum of Understanding, dated March 7, 1988, with the stated purpose of “establish[ing] a cooperative framework within which they both may work toward their common goal of conservation and protection of the Barton Springs segment of the Edwards Aquifer” and whereby LCRA expressed its willingness to cosponsor projects and provide in-kind services and support for projects that conserve and develop the aquifer in a cost-effective and beneficial manner, specifically recognizing that excess flood flows may be an appropriate source of water for such projects;

WHEREAS, the LCRA and the City entered into a Settlement Agreement dated June 18, 2007, whereby LCRA and the City created a formal water resource management partnership for the purposes of “evaluat[ing] and implementing strategies that will optimize water supplies to meet water needs of the [City’s and LCRA’s] customers and the environment”;

WHEREAS, the Stoneledge Quarry Edwards Aquifer Recharge Enhancement Project meets the stated purpose of the 1988 MOU between LCRA and the District and which is consistent with the purposes of the 2007 Settlement Agreement between LCRA and Austin;

NOW THEREFORE, in consideration of these premises, the mutual covenants of each party, and other good and valuable consideration, the receipt and sufficiency of which are acknowledged, the Parties agree as follows:

II. DEFINITIONS

2.01. Project. Stoneledge Quarry Edwards Aquifer Recharge Enhancement Project, consists of the construction, operation and maintenance of the Facilities described in Section 2.02, and is located adjacent to Little Bear Creek in Hays County, (approximately 2.6 miles NW of the intersection of FM 1626 and FM 967) on 85 acres of property purchased by the City. (See Map attached as **Exhibit A.**) This 85 acre tract contains the 18 acre quarry adjacent to Little Bear Creek and all the area on which the Facilities will be constructed, operated and maintained.

2.02. Facilities. Flood diversion structures necessary to divert, monitor, and recharge flood waters from Little Bear Creek into Stoneledge Quarry.

2.03. Drought Trigger Levels. As defined in the District’s Rules, the level of water in the Aquifer and flow amounts at Barton Springs that determine whether the District puts into effect certain Aquifer pumping restrictions.

III.
CITY OF AUSTIN RESPONSIBILITIES

3.01. The City will fund construction, operation, and maintenance of all of the Facilities associated with the Project. The Facilities will be designed to divert into Stoneledge Quarry flows in Little Bear Creek above 50 cubic feet per second, which occurs during flood events.

3.02. The City will apply for and pay all necessary application costs and notice fees associated with obtaining State water rights permits from the Texas Commission on Environmental Quality and any other necessary permits from local, state or federal agencies.

3.03. The City will monitor and keep records of inflows into Stoneledge Quarry for the first 10 years of operation and will report to the other Parties on an annual basis.

3.05. The City will fund separate research related to Aquifer water as it deems appropriate.

3.06. The City will work with the other Parties on the development and implementation of a monitoring plan for the Project.

IV.
LOWER COLORADO RIVER AUTHORITY RESPONSIBILITIES

4.01. LCRA will reserve 40.2 acre-feet of firm water per year for use by the Project, as presented in surface water modeling technical memorandum attached as **Exhibit B**. The reservation shall be effective upon execution of this Agreement and shall continue for a period of fifty (50) years from the date the issuance of the applicable State water rights permit for this project.

4.02. LCRA will provide in-kind staff services, as determined by LCRA as necessary, to support acquisition of applicable State water rights permits for this project and will participate in review and evaluation of project implementation and monitoring.

4.03. LCRA will support issuance of the applicable State water rights permit for the Project.

V.
**BARTON SPRINGS/EDWARDS AQUIFER CONSERVATION DISTRICT
RESPONSIBILITIES**

5.01. The District will examine the feasibility of adjusting Drought Trigger Levels to account for additional water in the Aquifer due to recharge from the Stoneledge Quarry.

5.02. Any future withdrawals by current or new exempt users notwithstanding, the District will not consider water entering the Aquifer resulting from the Project as new water supply to be permitted by the District as available during severe drought and, to the extent such new supplies are quantified by scientific consensus as sustainable additional net recharge during severe drought, the District will designate them as Ecological Flows, as allowed under current rules.

5.03. The District will provide in-kind staff services, as determined by the District as necessary, to support acquisition of water rights and applicable State permits.

5.04. The District will contribute data collected under previous studies, including tracing, water quality sampling, monitoring wells, and water level measurements.

VI.
WATER RIGHTS

6.01. The Parties agree that water entering the Colorado River via Barton Springs and Barton Creek is state water subject to the prior appropriation system and a call by senior downstream water rights in the Colorado River Basin.

6.02. The Parties agree that water discharging from the Aquifer into Barton Springs is subject to use authorized under the City's water rights and LCRA's downstream senior water rights and LCRA's Water Management Plan.

6.03 The Parties recognize that the owner of the property overlying the groundwater within the boundaries of the District may have a legal claim to the groundwater, subject to restrictions and regulations imposed by the District.

VII.
INTERGOVERNMENTAL COMMUNICATIONS

7.01 To provide for consistent and effective communication between BSEACD, Austin, and the LCRA, each Party shall appoint a Principal Representative to serve as its central point of contact on matters relating to this Agreement. The BSEACD has

designated W. F. "Kirk" Holland as its Principal Representative, Austin has designated David A. Johns as its Principal Representative, and LCRA has designated Suzanne Zarling, Executive Manager, Water Services as its Principal Representative.

VIII. GENERAL PROVISIONS

8.01. Interpretation. Except where the context otherwise clearly requires, in this Agreement:

- (a) words imparting the singular will include the plural and vice versa;
- (b) all exhibits attached to this Agreement are incorporated by reference for all purposes as if fully copied and set forth at length; and
- (c) references to any document mean that document as amended or as supplemented from time to time; and references to any party mean that party, its successors, and assigns.

8.02. Entire Agreement. This Agreement, including any attached exhibits, constitutes the entire agreement between the parties regarding recharge of Stoneledge Quarry and supersedes all prior or contemporaneous understandings or representations, whether oral or written, respecting recharge of Stoneledge Quarry.

8.03. Amendment. No amendment of this Agreement will be effective until the amendment has been reduced to writing, each party has duly approved it, and is signed by the authorized representatives of the parties. Any amendment will incorporate this Agreement in every particular not otherwise changed by the amendment.

8.04 Termination of 1988 MOU Between LCRA and District. The Memorandum of Understanding between Lower Colorado River Authority and Barton Springs-Edwards Aquifer Conservation District, dated March 7, 1988, is hereby terminated.

8.05. No Amendment of Other Agreements. Unless otherwise expressly stipulated, this Agreement is separate from and will not constitute an amendment or modification of any other agreement between the parties.

8.06. Other Instruments, Actions. The parties agree that they will take such further actions and execute and deliver any other consents, authorizations, instruments, or documents that are necessary or incidental to achieve the purposes of this Agreement.

8.07. No Third Party Beneficiaries. Except as expressly provided in this Agreement, nothing will be construed to confer upon any person other than the parties any rights, benefits or remedies under or because of this Agreement.

8.08. No Joint Venture, Partnership, Agency. This Agreement will not be construed in any form or manner to establish a partnership, joint venture or agency, express or implied, nor any employer-employee or borrowed servant relationship by and among the parties.

8.09. Applicable Law. This Agreement will be construed under and according to the laws of the State of Texas.

8.10. Severability. The provisions of this Agreement are severable. If any court of competent jurisdiction will ever holds any word, phrase, clause, sentence, paragraph, section, or other part of this Agreement or the application of it to any person or circumstance to be invalid or unconstitutional for any reason, it will not affect the remainder of this Agreement and, in such event, this Agreement will be construed as if it had never contained such invalid or unconstitutional portion in it.

8.11. Venue. Venue for any suit arising under this Agreement will be in Travis County, Texas.


8.12. Duplicate Originals. The parties may execute this Agreement in one or more duplicate originals each of equal dignity.

8.13. Expiration of Agreement. This Agreement terminates upon the earlier of the expiration of the LCRA's reservation of water for this project or upon the termination or denial of the required State water rights permit, unless otherwise extended by separate written agreement.

8.14. Effective Date. This Agreement will be effective upon due execution by all parties.

APPROVED AS TO FORM:

CITY OF AUSTIN:


Assistant City Attorney

By: 
Sue Edwards
Assistant City Manager

Date: 4/2/11

APPROVED AS TO FORM:

Lyn Cleary
Attorney

**LOWER COLORADO RIVER
AUTHORITY:**

By: *Suzanne Zarling*
Suzanne Zarling
Executive Manager, Water Services

Date: 4/14/2011

APPROVED AS TO FORM:

Bill Dugat
Bill Dugat
General Counsel

**BARTON SPRINGS/EDWARDS
AQUIFER CONSERVATION
DISTRICT:**

By: *Mary Stone*
Mary Stone
President, Board of Directors

Date: May 19, 2011

ATTEST:

By: *C. Craig Smith*
C. Craig Smith
Secretary, Board of Directors

Date: 5/19/11

MEMORANDUM

TO: Austin-Lower Colorado River Authority Water Partnership Technical Committee

FROM: Richard Hoffpauir
Consultant

Kris Martinez, P.E.
Lower Colorado River Authority

DATE: April 21, 2009

RE: Evaluating the Impacts of Proposed Diversions from Little Bear Creek into
Stoneledge Quarry

1. Summary

The City of Austin proposes to use the Stoneledge Quarry to enhance the discharge at Barton Springs. The project will also serve as a pilot study to evaluate the benefits of developing recharge enhancement projects. A portion of the storm flows from Little Bear Creek would be diverted into a conveyance channel that connects with the quarry. Once impounded, the water would slowly recharge the Barton Springs Edwards Aquifer (BSEA) through the quarry's karst features. The storage capacity of the quarry is 385 acre-feet (ac-ft).

The TCEQ Water Availability Model (WAM) Run 3 Version 05/31/05 was used to evaluate the impact of the proposed diversion from Little Bear Creek on LCRA's downstream water rights associated with the Garwood, Lakeside, Pierce Ranch and Gulf Coast irrigation operations. The model was also used to estimate the amount of additional releases that would be needed to support downstream environmental flows conditions related to LCRA's Water Management Plan (WMP). Using a priority date senior to LCRA's Garwood water right, WAM results indicate that the proposed diversion on Little Bear Creek could cause a reduction in run-of-river (ROR) availability for the downstream water rights associated with the Gulf Coast and Lakeside irrigation operations. These two water rights are junior to the Garwood water right. The maximum reduction in ROR availability on a ten-year average basis is estimated to be approximately 15 acre-feet per year (ac-ft/yr). This reduction in availability would have to be made up with stored water releases from lakes Buchanan and Travis. WAM results also indicate that additional releases would be needed to support downstream environmental flows related to LCRA's WMP. The maximum amount of additional releases on a ten-year average basis is estimated to be 24 ac-ft/yr. The total combined impact from the reduction in ROR availability and additional releases is estimated to be 39 ac-ft/yr. An amount greater than 39 ac-ft/yr would need to be released to overcome delivery losses between the lakes, environmental flow gage points and the irrigation divisions. Delivery losses are estimated

to be 3.1%. An additional release of 1.2 ac-ft/yr would be needed to make up for delivery losses. Therefore, about 40.2 ac-ft/yr would need to be released from lakes Buchanan and Travis to make up for the total estimated impacts.

2. Background

The inactive Stoneledge Quarry is located off-channel and near Little Bear Creek within the Onion Creek watershed of the Colorado River. Approximately 0.34 square miles (215 acres) of drainage area have been impounded by the quarry since excavation began in the 1970's. The water table of the BSEA at times intersects and is exposed at the lowest points within the quarry. Supplementing storage within the quarry with flows from Little Bear Creek would supplement the recharge over time to the BSEA.

A bypass weir will be used to restrict diversions from Little Bear Creek to events of 50 cfs or greater. Approximately half of the flows on Little Bear Creek in excess of 50 cfs can be diverted by gravity into the connecting conveyance channel as long as storage capacity is available. The location of the proposed diversion is below almost all of the known natural stream recharge features on Little Bear Creek based on stream flow measurements. There is approximately 10.9 square miles (6,984 acres) of upstream contributing drainage area, as shown in Figure 1. The location of the Stoneledge Quarry in relation to the City of Austin is shown in Figure 2.

3. WAM Simulation Results

The WAM results indicate the average annual diversion of flows from Little Bear Creek into Stoneledge Quarry could be 155.5 ac-ft/yr. During a repeat of the drought hydrology from 1947 through 1956, the WAM estimates an average diversion of 1.5 ac-ft/yr would be available. As shown in Figures 3 and 4, the annual simulated diversion from Little Bear Creek is zero for approximately 40% of the period of record.

Figure 1. Location of the Stoneledge Recharge Enhancement Project

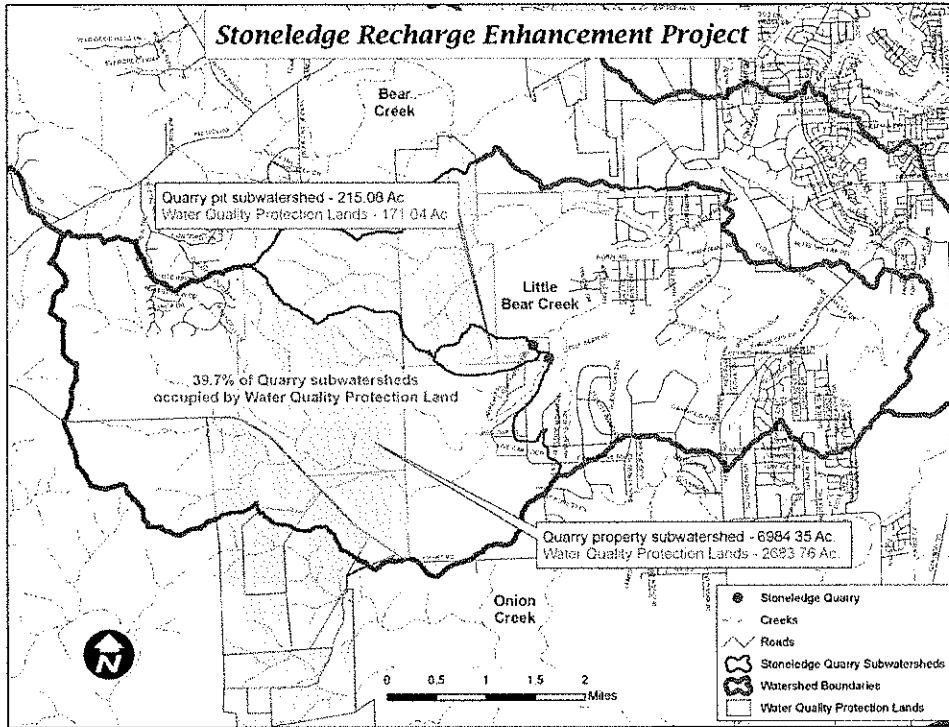


Figure 2. Location of Stoneledge Quarry in relation to Austin

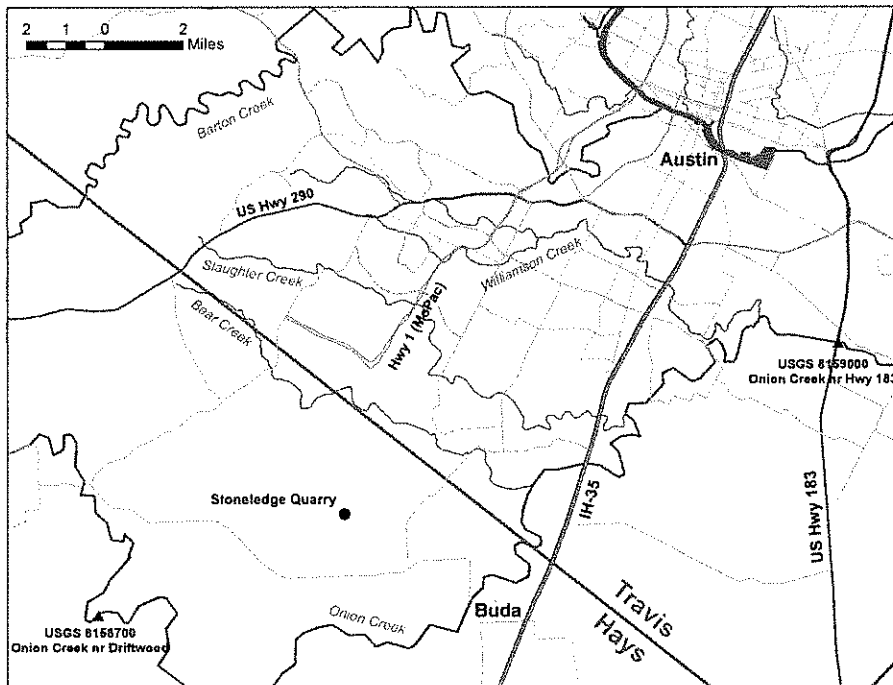


Figure 3. Diversions from Little Bear Creek

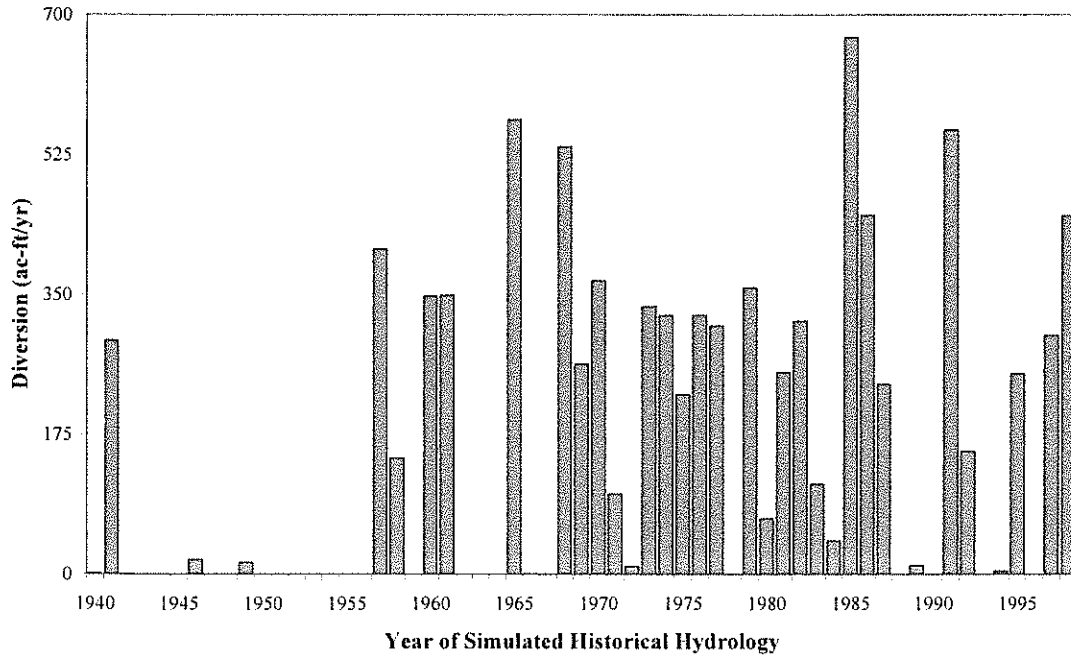
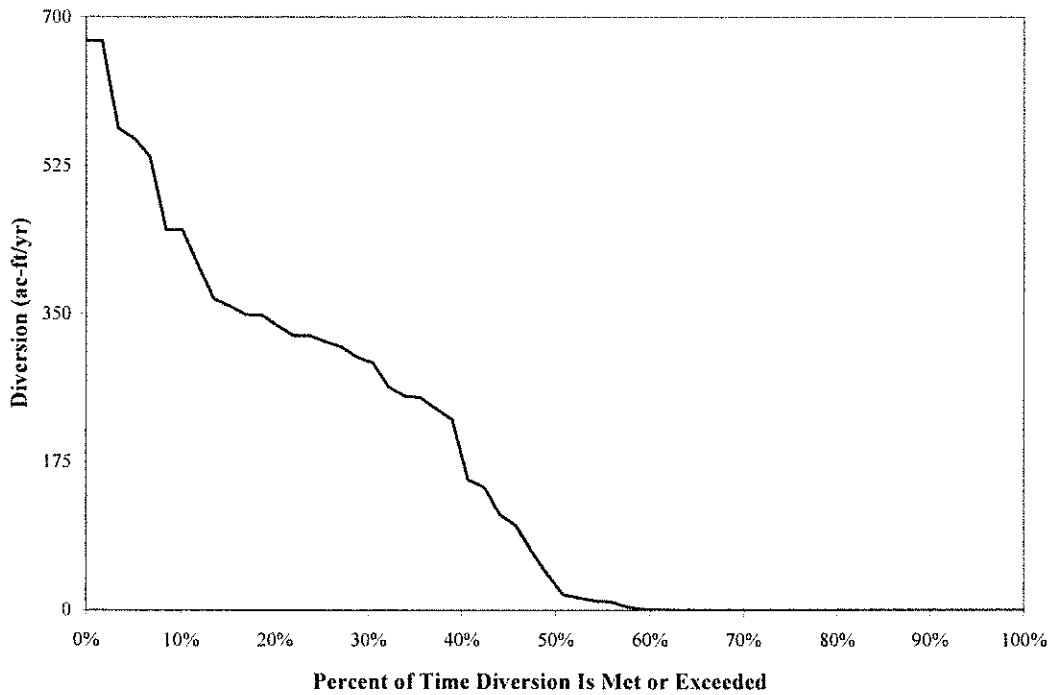
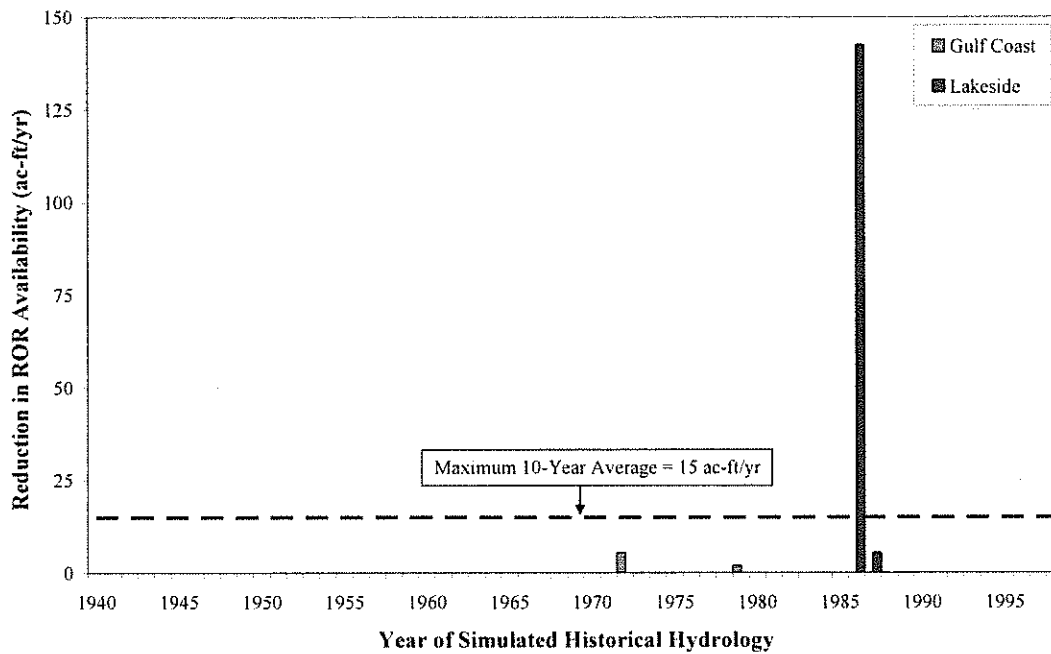


Figure 4. Reliability of Diversion from Little Bear Creek



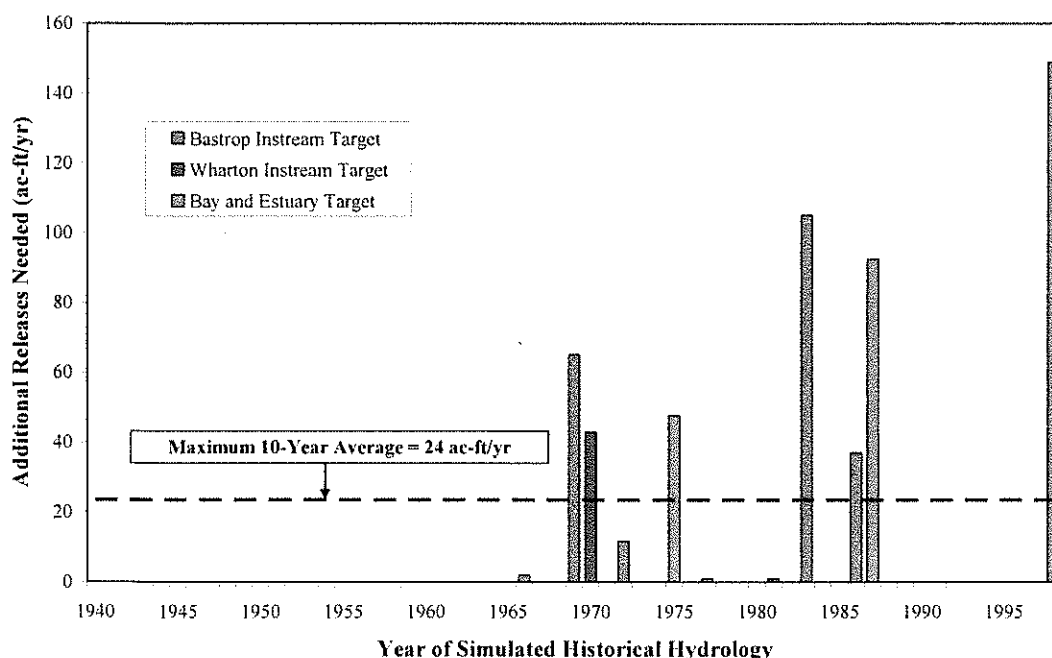
Proposed diversions from Little Bear Creek into the Stoneledge Quarry were modeled with a priority date senior to LCRA's irrigation rights, simulating an operation that would allow diversions to occur without reduction from downstream priority calls on inflow. The maximum reduction in ROR availability on a ten-year average basis for LCRA's downstream irrigation water rights is estimated to be 15 ac-ft/yr. Figure 5 illustrates the WAM's estimated reduction of water availability to LCRA's irrigation rights downstream of the Onion Creek watershed as a result of the seniority assumption for Stoneledge Quarry.

Figure 5. Reduction in Run-of-River Availability for Downstream LCRA Irrigation Rights by Senior Diversions on Little Bear Creek



Senior diversions into Stoneledge Quarry from Little Bear Creek would also reduce the flow on Onion Creek that contribute to flow in the Colorado River. To make up for the reduction, LCRA would need to release more water to support instream flows on the Colorado River and freshwater inflows to Matagorda Bay. The maximum amount of additional releases on a ten-year average basis is estimated to be 24 ac-ft/yr. Figure 6 shows the estimated amount of additional releases needed to support environmental flows under LCRA's WMP.

Figure 6. Additional Releases Needed to Supplement Downstream Environmental Flows due to Senior Diversions on Little Bear Creek



The total combined impact from the reduction of ROR availability and additional releases needed for environmental flows is estimated to be 39 ac-ft/yr. An amount greater than 39 ac-ft/yr (i.e. approximately 40.2 ac-ft/yr) would need to be released due to downstream delivery losses. The losses incurred in delivering water to the confluence of the Colorado River and Onion Creek were estimated using a methodology described in the “Downstream Contract Conveyance Losses” memorandum (Landreth, 11/15/07). Using this methodology, delivery losses were estimated to be 3.1%. Thus, an additional release of 1.2 ac-ft/yr would be needed to make up for delivery losses.

4. Further Study

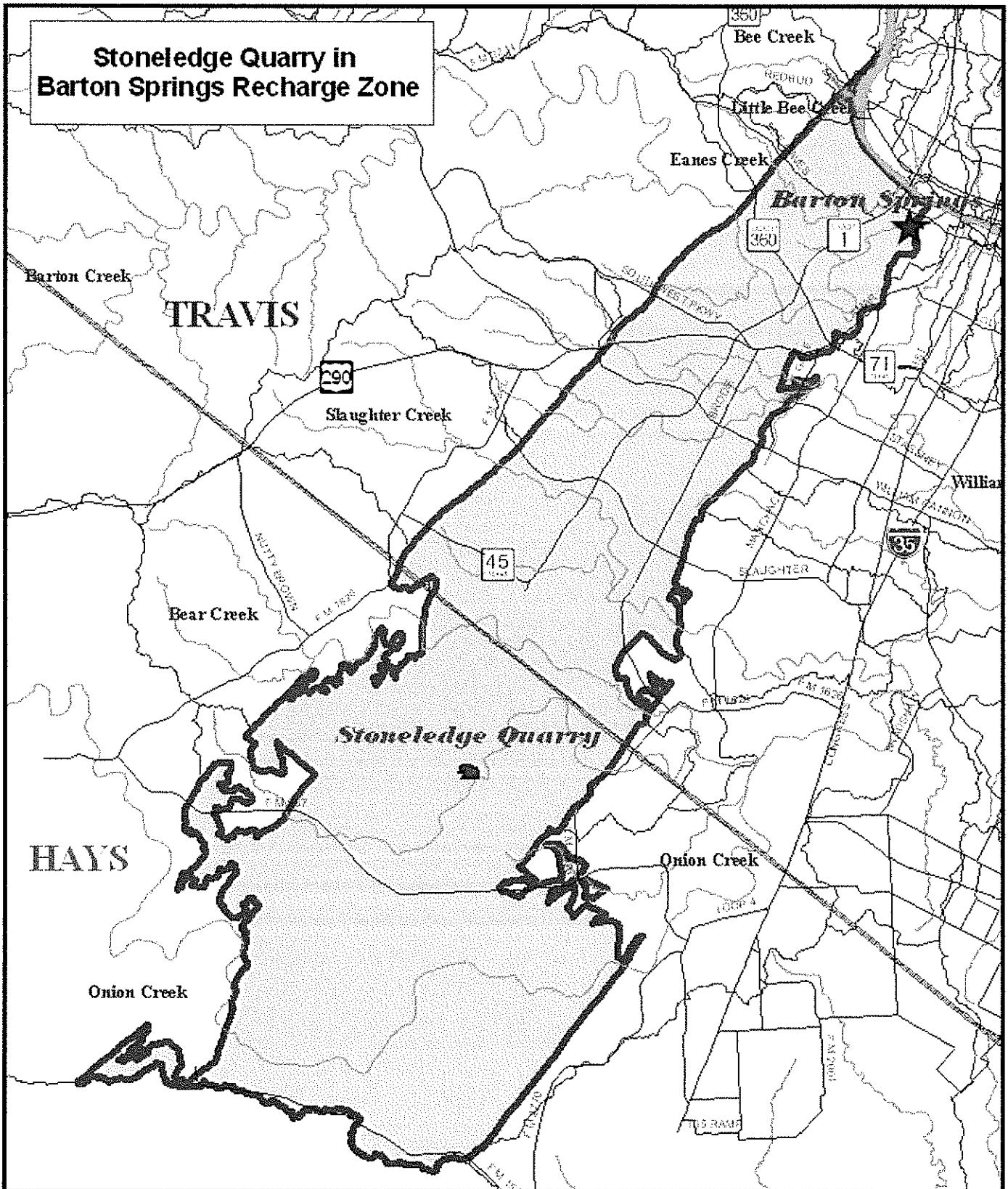
The draft version of Permit 5731 (LCRA’s unappropriated flows permit) was included in the simulation though the impacts are not reported in this memo. When the special conditions are finalized and the permit is granted, it may be necessary to revisit the WAM impact analysis. Permit 5731 will carry a senior priority date to any surface water diversion permit sought for the Stoneledge Quarry project.





Increases to spring flow discharge as a result of enhanced recharge to the BSEA were not added to the WAM. If Barton Springs experiences a quantifiable increase in spring flow, this information could be encoded into the WAM as a flow adjustment or return flow event. The increase in available State water at Barton Springs may offset some modeled impacts to LCRA’s downstream water rights and environmental flow maintenance. Similarly, the rate of recharge from Stoneledge Quarry used in the WAM is an approximation based on limited data. Additional monitoring will help to improve the




WAM representation of the rate of recharge, and therefore help to improve the simulated time series of available storage capacity to be filled by diversions from Little Bear Creek and the quarry's natural drainage area.

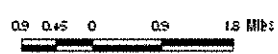
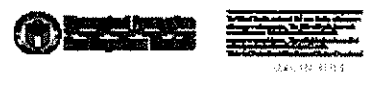
The City of Austin Watershed Protection and Development Review Department has and continues to collect stream flow and precipitation data at the proposed diversion channel location on Little Bear Creek. The data covers November 3, 2003 through the present in 1-minute increments. These data were used to calibrate an equation for naturalized flow transfer within the WAM. As more data become available, the equation of gaged to ungaged transfer of naturalized flow within the WAM may be improved.

Stoneledge Quarry in Barton Springs Recharge Zone



-  Stoneledge Quarry
-  Barton Springs Recharge Zone
-  BCCZ Watersheds
-  Water Features

-  Barton Springs
-  County Line
-  Road



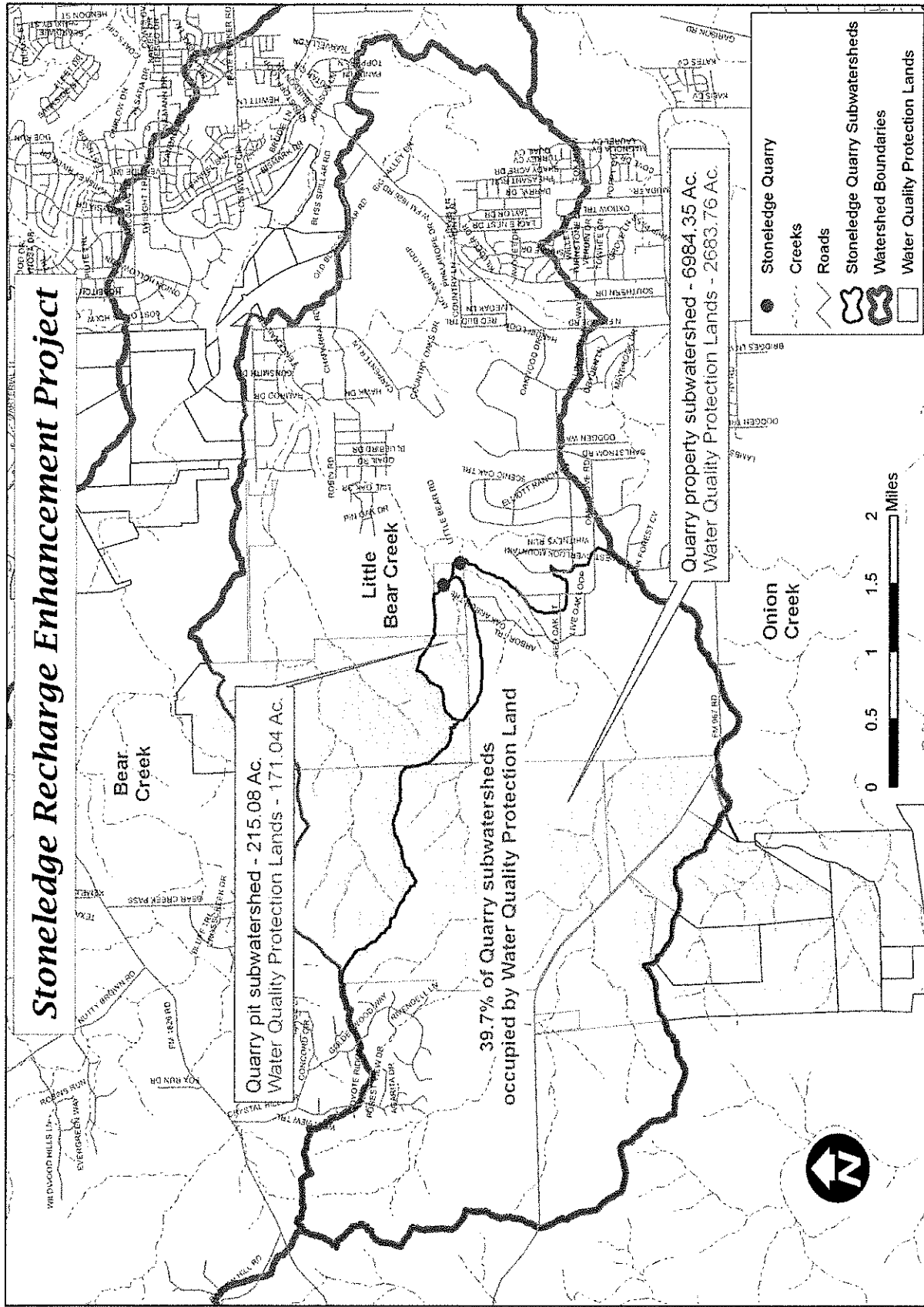
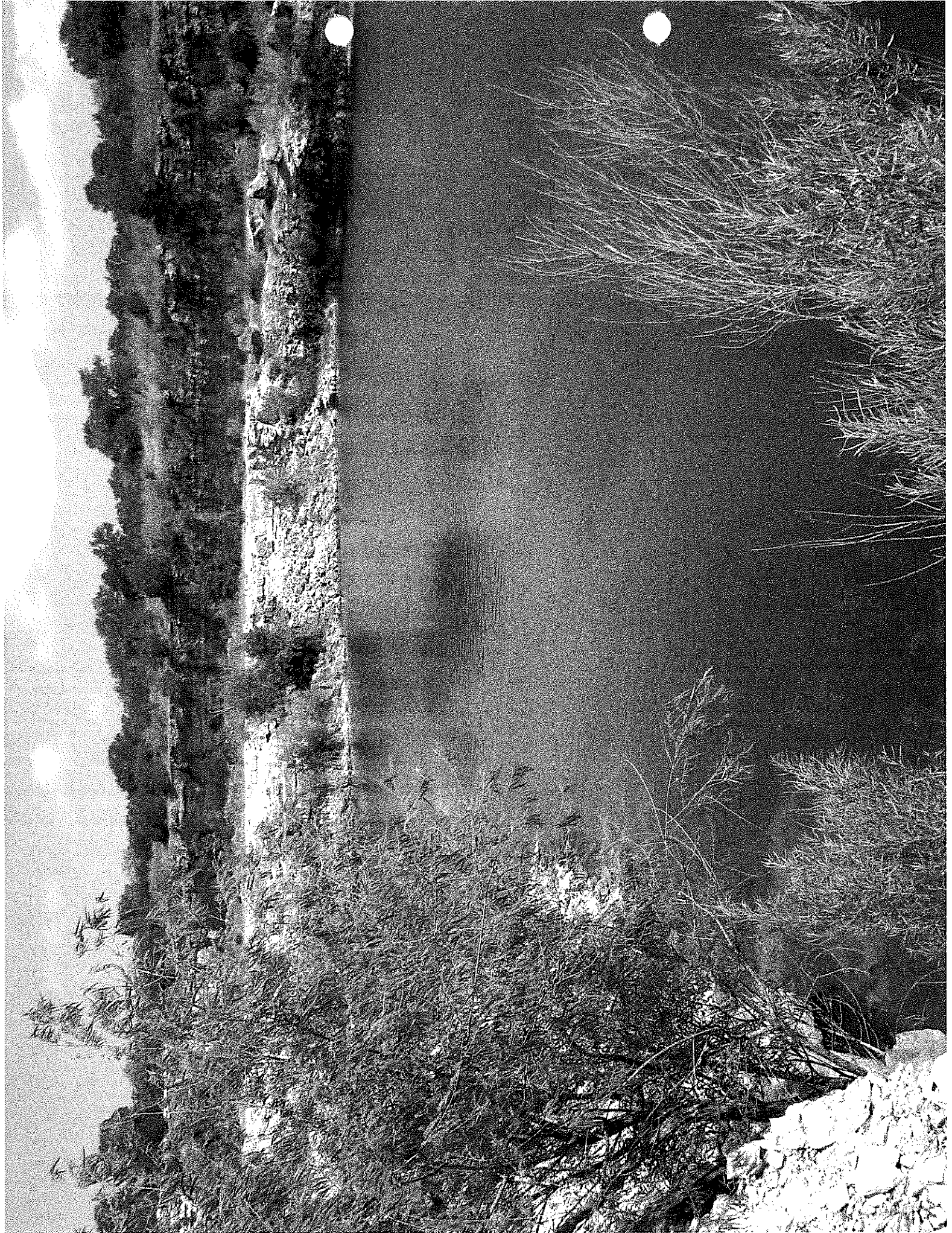


Figure 1. Location of the Stoneledge Recharge Enhancement Project







PRELIMINARY DESIGN STUDY
OF THE
STONELEDGE QUARRY DIVERSION
IN
HAYS COUNTY, TEXAS
FOR



AND



JC **JONES & CARTER, INC.**
ENGINEERS • PLANNERS • SURVEYORS
805 Las Cimas Parkway, Suite 230 TEL 512 441 9493
Austin, Texas 78746-5493 FAX 512 445-2286

SEPTEMBER 2005

PRELIMINARY DESIGN STUDY
OF THE
STONELEDGE QUARRY DIVERSION
IN
HAYS COUNTY, TEXAS
FOR
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AND
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SEPTEMBER 2005

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V. ANALYSIS.....3

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EXHIBITS

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TOPOGRAPHIC PLAN.....EXHIBIT 2

BARTON SPRINGS RECHARGE ZONE.....EXHIBIT 3

OPTION ONE PLAN.....EXHIBIT 4

OPTION TWO PLAN.....EXHIBIT 5

OPTION ONE ESTIMATE..... EXHIBIT 6

OPTION TWO ESTIMATE..... EXHIBIT 7

DISCHARGE TABLES.....EXHIBIT 8

INTRODUCTION

On behalf of the Hill Country Conservancy, Jones & Carter, Inc. has performed a preliminary design study on the construction of a diversion project on Little Bear Creek in Hays County, Texas. The goal of the diversion project is to construct a channel or culverts to divert a portion of the runoff from Little Bear Creek into the Stoneledge Quarry.

The Stoneledge Quarry is no longer active and is owned by the City of Austin. The 85 acre quarry property, along with the 1,325 acre property west of the quarry, are two of several properties purchased by the City of Austin to provide open space and water quality protection in the Barton Springs Recharge Zone. The City is hoping to realize additional benefit from the quarry site by diverting runoff into the quarry and allowing the runoff to recharge into the Barton Springs segment of the Edwards Aquifer. Preliminary estimates show that up to 385 acre-feet of runoff could be diverted to fill the quarry during storm events. Exhibit 1 provides a location map of the Stoneledge Quarry property.

EXISTING CONDITIONS

Stoneledge Quarry is an inactive gravel quarry located in the north-central area of Hays County approximately 2 miles southwest of the Travis County line. It was purchased by the Hill Country Conservancy and conveyed to the City of Austin in July 2004 along with several other properties. The City of Austin has established a program to acquire land and conservation easements in the Barton Springs Recharge and Contributing Zones of the Edwards Aquifer.

The quarry occupies about one third of the 84.64 acre property and is situated in the central portion of the property. The depth of the quarry excavation below ground level ranges from 40 to 60 feet. The ground surface ranges from elevation 818 in the northwest corner to 790 at the northeast corner. Two pools of water are present in the bottom of the quarry at elevation 744. Exhibit 2 provides the existing topography for the Stoneledge Quarry property.

Little Bear Creek flows across the southeast corner of the site, flowing in a northeast direction. The creek is a dry creek and flow occurs across the quarry property only during rainfall events of greater than a couple of inches. The contributing watershed of approximately ten square miles is rural with the Hays County Oaks and Elliott Ranch Subdivisions located south of the quarry site. Little Bear Creek flows through an 81 acre greenbelt and drainage easement prior to entering the quarry property. A concrete weir and gauging station were installed where the creek leaves the site at the east property line; the gauging station measures the creek flow during rainfall events.

While surface runoff flows into Little Bear Creek and eventually discharges into the Colorado River, rainfall that infiltrates into the ground enters the Edwards Aquifer in this

portion of Hays County. The quarry site is located in the Barton Springs Recharge Zone area of the Edwards Aquifer, therefore rainwater that infiltrates into the quarry is conveyed to Barton Springs in Austin. Exhibit 3 provides a map of the Barton Springs recharge zone.

OBJECTIVE

The objective of the project is to divert runoff from Little Bear Creek into the Stoneledge Quarry, where it will infiltrate into the Barton Springs Recharge Zone. The City of Austin has requested a minimum flow of 50 cfs be maintained in Little Bear Creek, therefore the elevation of the diversion structure must allow low flows to continue in Little Bear Creek.

A hydrologic study of Onion Creek was performed by Halff Associates using the HEC-HMS software model. Little Bear Creek is a tributary to Bear Creek, which is a tributary to Onion Creek, and Onion Creek discharges into the Colorado River east of Austin. The results of the hydrologic study include peak flow rates, hydrographs and runoff volumes for each of the sub-basins of the Onion Creek Watershed. Models for the 2, 5, 10, 25, 50, and 100-year frequency storm events can be used to determine the flows in Little Bear Creek and the estimated volume of runoff that will be generated during each storm event.

The HEC-HMS model shows the sub-basin area contributing to Little Bear Creek is approximately 10 square miles. A diversion was added to the HEC-HMS model to determine the amount of runoff that would be diverted to the quarry during each storm event. The revised model provides the amount of runoff diverted into the quarry, the peak discharge into the quarry, and the peak discharge continuing down Little Bear Creek during each storm event.

OPTIONS

The two options for diverting the runoff from Little Bear Creek into the Stoneledge Quarry are to construct a diversion channel or to install culverts. A small berm with an eight-foot wide weir opening will be constructed across Little Bear Creek to regulate the flow in the main channel and allow a portion of the flow to be diverted into the quarry.

As Little Bear Creek enters the quarry site, minimal excavation of the creek would be required to direct the low flow discharges through an eight-foot wide weir and downstream. The weir will regulate the flow so that when the depth reaches the 50 cfs minimum flow, runoff will begin to be diverted into the quarry. As the flow increases, an increasing amount of runoff will be diverted to the quarry.

One option is for a diversion channel to be excavated to convey the runoff to the quarry. The diversion channel would form an arc to divert the low from a northeast direction to a southwest direction and discharge onto a ramp running along the south wall of the quarry. A fifty foot wide weir would taper down to a thirty foot wide channel. The depth of the

channel would vary up to 30 feet and the width would be 30 feet with vertical walls on each side. The channel would discharge onto the ramp and flow down the ramp to the bottom of the quarry. See Exhibit 4 for a plan of the diversion channel.

A second option would be to bore two 6-foot diameter culverts from the bottom of the quarry at a 5 percent grade approximately 550 feet in a southeast direction to a point northwest of the Little Bear Creek channel. The culvert headwall would be situated at the same location as the fifty foot weir under option one. The culvert endwall would be located in the southeast portion of the quarry. See Exhibit 5 for a plan of the diversion culverts.

ANALYSIS

The advantages and disadvantages associated with each option will aid in determining whether a channel or culverts should be used to divert runoff from Little Bear Creek into the Stoneledge Quarry.

- Option 1: This option would include the construction of the diversion channel including excavation of approximately 500 feet of soil and rock starting at the edge of the berm. The channel would narrow down from a 50-foot weir at the berm to a 30-foot channel for the last 450 feet. The channel would discharge onto the entrance ramp running along the south wall of the quarry. The ramp may need to be reinforced or stabilized to prevent erosion by the runoff. The fence around the top of the quarry would need to be extended along each side of the top of the channel as a safety measure due to the vertical wall of the channel. Additional excavation would be required to provide an access road across the channel for monitoring and maintenance of the quarry. The access drive would be 20 feet wide and require up to 10 feet of excavation to be constructed. This option would allow the maximum amount of runoff to be diverted to the quarry for the lower range of flow rates. A preliminary cost estimate can be found in Exhibit 6.
- Option 2: This option would include the boring of two 72-inch tunnels and the installation of concrete pipe and headwalls at each end. The two bores would start at the southeast corner of the quarry bottom and extend 550 feet to the same point as the fifty foot weir just north of the creek. A concrete headwall would divert the runoff from the creek into the two pipes. A drawback to this option is that the two six foot culvert openings are small than the thirty foot channel and less flow will be diverted during the smaller storm events. The option would not require additional excavation for the access drive since the existing access road would pass over the pipes. The culverts would outfall at the bottom of the quarry, so there would be less need to protect against erosion in the quarry. A preliminary cost estimate can be found in Exhibit 7.

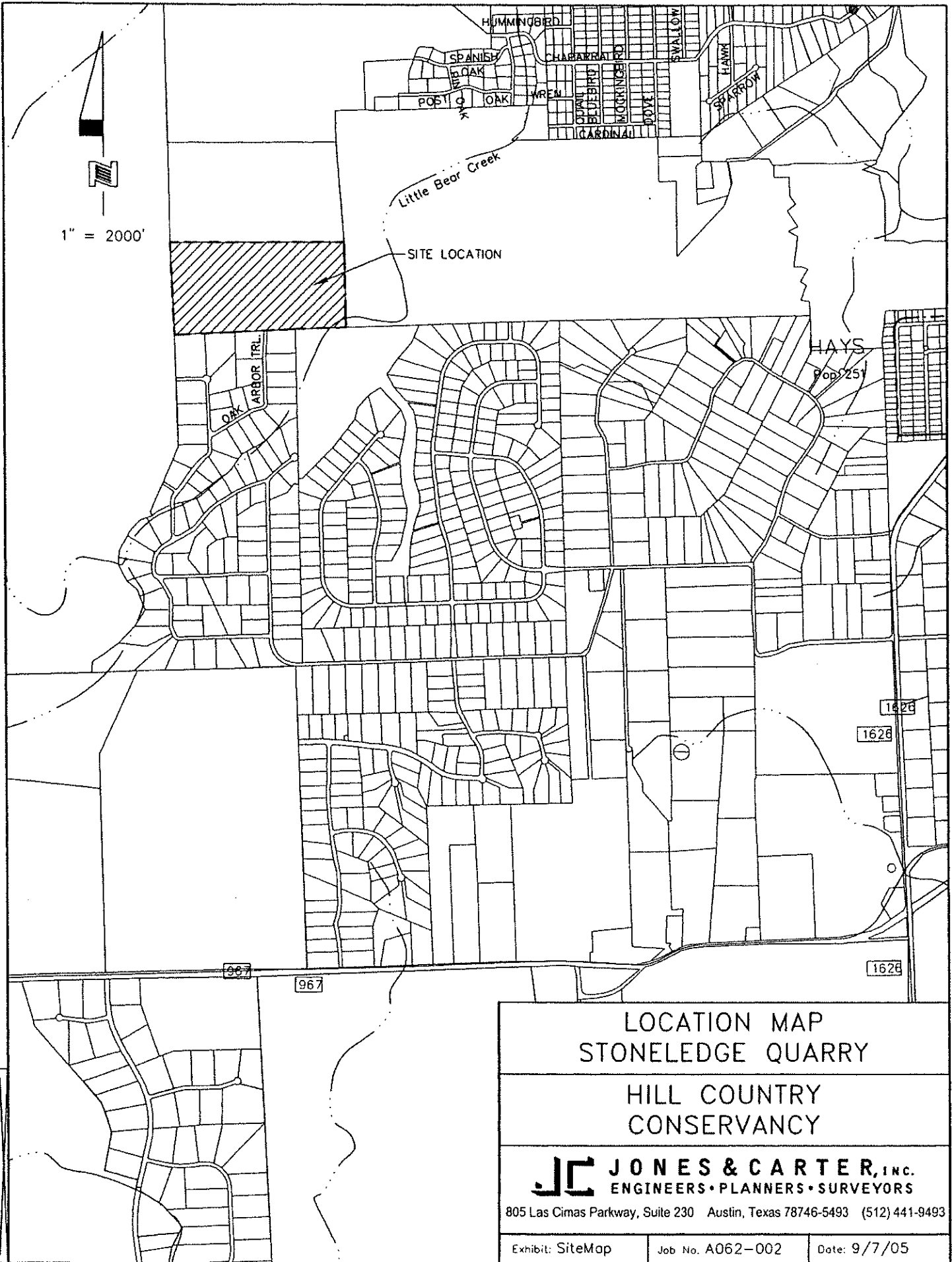
To verify the depth of water needed to divert runoff from Little Bear Creek into the quarry, the HEC-HMS model was revised to include a diversion in the reach of Little

Bear Creek that passed through the quarry site. Using an eight foot weir for the creek, a fifty foot weir for the diversion, and a berm at elevation 778, the model was run for the various frequency storm events. The results showed that the quarry would be about one-third full after the 2-year frequency event, would fill during a storm event less than the 5-year frequency storm event and would fill before the peak discharge is reached for the 100-year frequency storm. Exhibit 8 shows the discharge rates for the various storm events and the approximate water depth.

CONCLUSION

Either of the two options will allow runoff from Little Bear Creek to be diverted into the Stoneledge Quarry. After the 50 cfs minimum flow is reached, increasing amounts of runoff would be diverted to the quarry as the depth of flow increases. The diversion channel will allow more water to be diverted during the smaller storm events. Also, the preliminary cost estimate for the channel is significantly less than the preliminary cost estimate for the culverts. Therefore, the channel is the most cost effective option to divert the maximum amount of runoff into the quarry.

EXHIBIT 1
LOCATION MAP



LOCATION MAP
STONELEDGE QUARRY

HILL COUNTRY
CONSERVANCY

JC JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS

805 Las Cimas Parkway, Suite 230 Austin, Texas 78746-5493 (512) 441-9493

Exhibit: SiteMap	Job No. A062-002	Date: 9/7/05
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EXHIBIT 2

TOPOGRAPHIC PLAN

EXHIBIT 3

BARTON SPRINGS RECHARGE ZONE

 Barton Springs Contributing Zone
 Barton Springs Recharge Zone

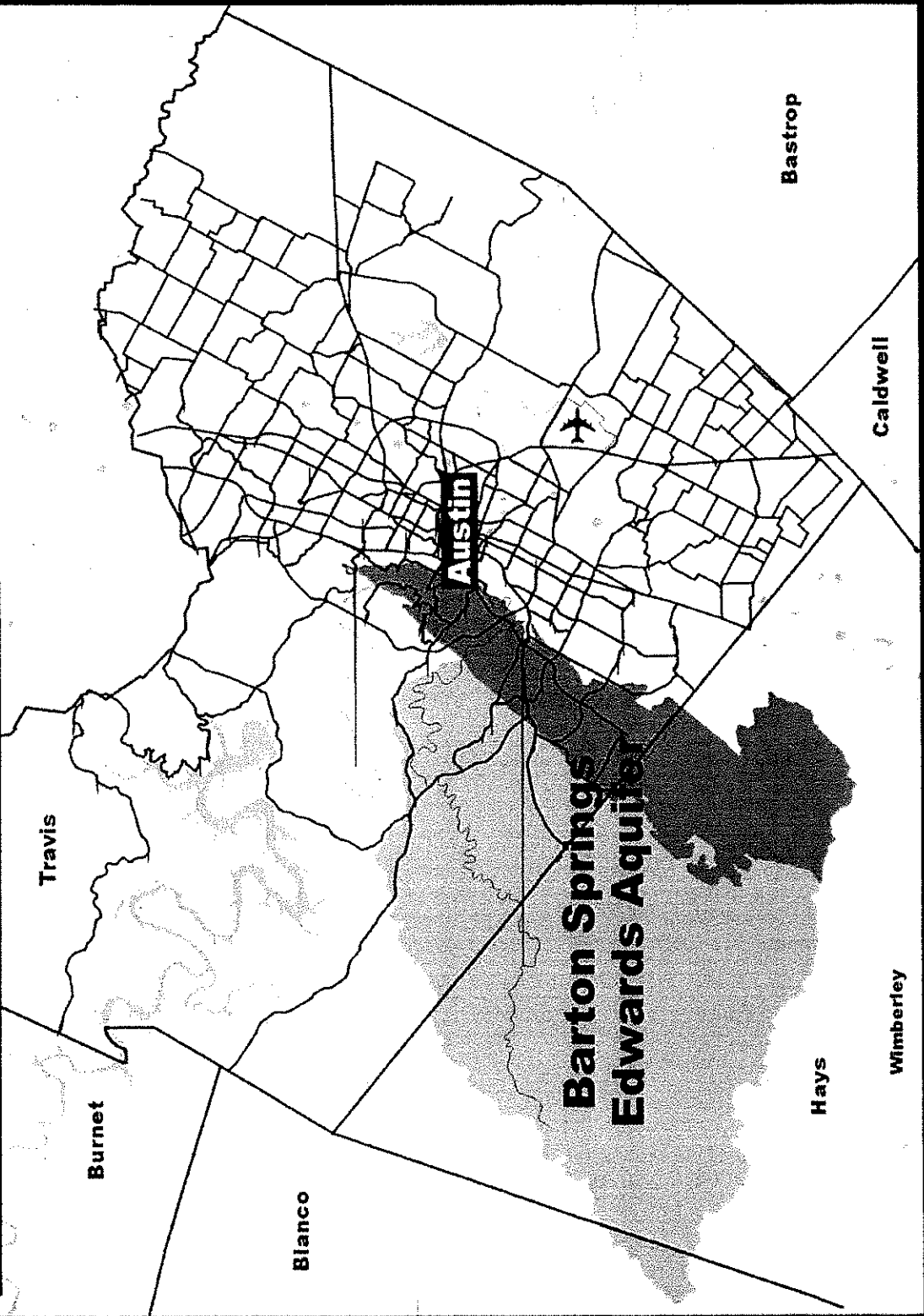


EXHIBIT 4
OPTION 1 PLAN

EXHIBIT 5
OPTION 2 PLAN

EXHIBIT 6

OPTION 1 ESTIMATE

**PRELIMINARY ESTIMATE OF PROBABLE COST
STONELEDGE QUARRY PROJECT
HILL COUNTRY CONSERVANCY AND CITY OF AUSTIN**

OPTION 1: DIVERSION CHANNEL

OPTION 1A: HAULING EXCAVATED MATERIAL OFFSITE

DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
EXCAVATION FOR CHANNEL	12,500	CY	\$25	\$312,500
CONCRETE WEIR WALL	124	SF	\$1,000	\$124,000
GRADING FOR BERM	100	CY	\$20	\$2,000
EROSION CONTROLS	1	LS	\$2,000	<u>\$2,000</u>
TOTAL				\$440,500
CONTINGUENCY (25 PERCENT)				<u>\$110,125</u>
GRAND TOTAL				\$550,625

OPTION 1B: LEAVING EXCAVATED MATERIAL ONSITE

DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
EXCAVATION FOR CHANNEL	12,500	CY	\$10	\$125,000
CONCRETE WEIR WALL	124	SF	\$1,000	\$124,000
GRADING FOR BERM	100	CY	\$5	\$500
EROSION CONTROLS	1	LS	\$2,000	<u>\$2,000</u>
TOPSOIL AND SEEDING	25,000	SY	\$2	<u>\$50,000</u>
TOTAL				\$301,500
CONTINGUENCY (25 PERCENT)				<u>\$75,375</u>
GRAND TOTAL				\$376,875

EXHIBIT 7

OPTION 2 ESTIMATE

**PRELIMINARY ESTIMATE OF PROBABLE COST
STONELEDGE QUARRY PROJECT
HILL COUNTRY CONSERVANCY AND CITY OF AUSTIN**

OPTION 2: TWO 6-FOOT CULVERTS

DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
72-INCH RCP CULVERT	1,000	LF	\$1,200	\$1,200,000
72-INCH HEADWALLS	2	EA	\$6,000	\$12,000
CONCRETE WEIR WALL	124	SF	\$1,000	\$124,000
GRADING FOR BERM	100	CY	\$20	\$2,000
EROSION CONTROLS	1	LS	\$2,000	<u>\$2,000</u>
TOTAL				\$1,340,000
CONTINGUENCY (25 PERCENT)				<u>\$335,000</u>
GRAND TOTAL				\$1,675,000

EXHIBIT 8
DISCHARGE TABLES

**ESTIMATED DISCHARGE TABLES
STONELEDGE QUARRY PROJECT
HILL COUNTRY CONSERVANCY AND CITY OF AUSTIN**

$Q = C * L * (h + (V^2 / 2g))^{1.5}$ Broad-crested weir equation

CREEK FLOW

Bottom of Weir 1 at 775.0

Bottom Weir 2 at 778.0 (Berm)

Weir 1 = 8 ft

Weir 2 = 80 ft

ELEV	H (ft)	Q (cfs)	V (fps)	H (ft)	Q (cfs)	V (fps)	Q total (cfs)
775	0	0	0				0
776	1	26.1	3.0				26
776.5	1.5	49.5	4.1				50
777	2	76.8	4.8				77
778	3	142.8	5.9	0			143
779	4	229.4	7.0	1	237.6	3.4	467
780	5	326.0	8.1	2	761.7	4.8	1088
781	6	426.8	8.8	3	1390.9	5.8	1818
782	7	537.7	9.5	4	2141.8	6.7	2680
783	8	658.4	10.2	5	2994.9	7.5	3653
784	9	792.3	11.0	6	3955.0	8.3	4747
785	10	924.0	11.5	7	4967.6	8.9	5892

OPTION ONE - BYPASS CHANNEL

Bottom of Weir at 776.5

Weir = 50 ft

ELEV	H (ft)	Q (cfs)	V (fps)
776.5	0	0	0
777	0.5	59.5	2.4
778	1.5	307.3	4.1
779	2.5	661.6	5.3
780	3.5	1098.2	6.3
781	4.5	1596.7	7.1
782	5.5	2151.5	7.8
783	6.5	2767.1	8.5
784	7.5	3424.5	9.1
785	8.5	4153.0	9.8

OPTION TWO - CULVERTS

Entrance Elevation = 775.0

Two 72-inch RCP Culverts

ELEV	H (ft)	Q (cfs)	V (fps)
776.5	1.5	65	0
777	2	100	2.0
778	3	130	3.7
779	4	220	4.8
780	5	320	5.8
781	6	415	7.3
782	7	525	9.3
783	8	610	10.5
784	9	700	12.4
785	10	760	13.4

DISCHARGE SUMMARY TABLE FOR OPTION ONE AND CREEK

ELEV	CHANNEL (cfs)	CREEK (cfs)	TOTAL (cfs)	CHANNEL FLOW (%)
775	0	0	0	0
776	0	26	26	0
776.5	0	50	50	0
777	60	77	136	44
778	307	143	450	68
779	662	467	1129	59
780	1098	1088	2186	50
781	1597	1818	3414	47
782	2151	2680	4831	45
783	2767	3653	6420	43
784	3425	4747	8172	42
785	4153	5892	10045	41

DISCHARGE SUMMARY FROM HEC-HMS MODEL
 STONELEDGE QUARRY PROJECT
 HILL COUNTRY CONSERVANCY AND CITY OF AUSTIN

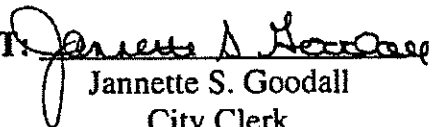
PARAMETER	DESIGN FREQUENCY STORM EVENT			
	2	5	10	100
UPSTREAM FLOW (cfs)	318.6	1,714.3	3646	12345
DIVERSION FLOW (cfs)	203.6	903.4	1688	3494
LITTLE BEAR CREEK (cfs)	115.0	810.9	1959	12345
DIVERTED FOW VOLUME (ac-ft)	96.5	385	385	385
APPROX. ELEVATION AT BERM	777.5	779.5	781.2	785
DEPTH (ft)	1.0	3.0	4.7	10

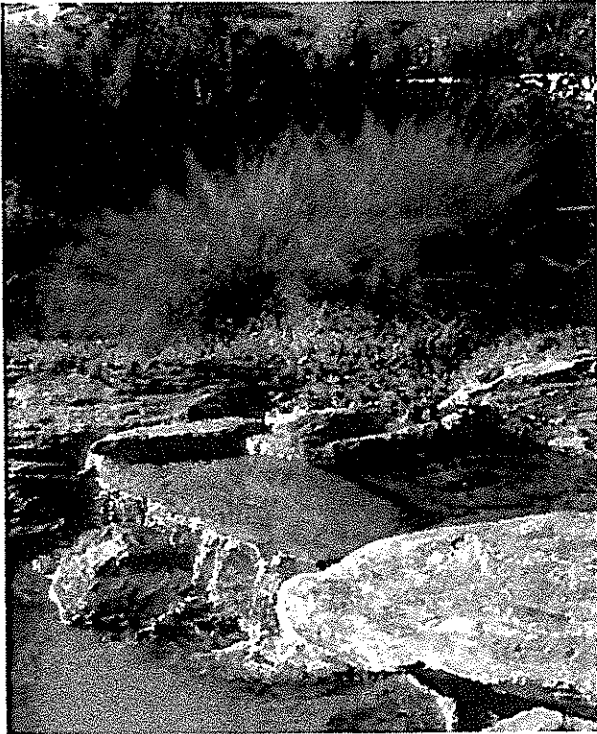
RESOLUTION NO. 20140417-004

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

Council repeals Resolution Nos. 20090924-007 and 20120802-010, and adopts the City of Austin Utility Profile & Water Conservation Plan for Municipal and Wholesale Water Use as shown in Exhibit A. This plan is a requirement of the Texas Commission on Environmental Quality.

ADOPTED: April 17, 2014

ATTEST: 
Jannette S. Goodall
City Clerk



*Developed to Meet Requirements
Outlined in 30 TAC § 288.2 and § 288.5*

City of Austin

**Utility Profile &
Water
Conservation Plan
for Municipal and
Wholesale Water
Use**

May 2014

**Austin Water Utility
Water Conservation Division
City of Austin, Texas
PWS # 227000**

Texas Commission on Environmental Quality



UTILITY PROFILE & WATER CONSERVATION PLAN
FOR
MUNICIPAL & WHOLESALE WATER USE
BY
PUBLIC WATER SUPPLIERS

Name of Entity: City of Austin Water Utility

Address: 625 East 10th Street Austin, Texas 78701

Telephone Number: (512) 974-2199 Fax: (512) 974-3504

Water Right No(s): 14-5471

Regional Water Planning Group: Region K

Name and Phone Number of Person/Department responsible for implementing
water conservation program: Drema Gross (512) 974-2787

Form Completed by: Drema Gross

Title: Water Conservation Division Manager

Signature: 

Date: 4/28/14

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UTILITY PROFILE & WATER CONSERVATION PLAN FOR MUNICIPAL AND WHOLESALE WATER USE

Austin Water prepared this Utility Profile & Water Conservation Plan for Municipal and Wholesale Water Use to comply with Title 30 Texas Administrative Code §288.2 and 288.5. The utility profile is used to convey information about the City of Austin's (the City's) water and wastewater system to the Texas Commission on Environmental Quality (TCEQ). The water conservation plan provides an overview of Austin's current water conservation initiatives and future plans within the framework recommended by form TCEQ-10218 and 20162.

UTILITY PROFILE

Population and Service Area Data

The City's service area includes City retail customers and wholesale customers. Several wholesale customers' service area extends outside the City's service area because of the wholesale customer's infrastructure design and layout, operational limitations, or water supply demands.

Population is based on the City Demographer's estimate of the City's population (within the City's corporate limits and extraterritorial jurisdiction) and the population of the surrounding counties. Every ten years, Austin Water obtains updated Census data and refines the City's population projections based on that information. In addition, Austin Water uses information from the City's Demographer and GIS information, including information about the City's water service areas, to roughly estimate the population of surrounding areas. Austin Water validates the City's projected population once the projection year has passed. Austin Water does not project wholesale service area population past the year 2040 because of the greater uncertainty of reliable projections.

	Retail	Wholesale	Total
Service Area (square miles)	280.33 (By pressure zone boundaries)	Wholesale Water Service Area: 84.98 Emergency Water Service Only: 49.87 Total: 132.86*	554.45
Current Population			
Service Area	891,895	54,692	946,587
Water Service	891,895	54,692	946,587
Wastewater Service	864,675	48,168	912,843
Population Served for Previous Five Years			
FY 2009	828,628	44,000	872,628

FY 2010	825,763	50,610	875,936
FY 2011	840,459	51,538	891,997
FY 2012	854,747	52,414	907,161
FY 2013	874,406	53,620	928,026
Projected Service Area Population			
FY 2020	990,267	60,724	1,050,991
FY 2030	1,190,265	72,989	1,263,254
FY 2040	1,391,457	85,326	1,476,783
FY 2050	N/A	N/A	1,726,405
FY 2060	N/A	N/A	2,018,221

*Total is smaller than the sum of the two parts due to overlap in the service areas.

A copy of the City's service-area map and system layout is included in Appendix A, a copy of the wholesale service-area map is included in Appendix B and a copy of the Certificate of Convenience and Necessity (CCN) Map is included in Appendix C.

Customer Information

Customer Connections

Current Active Connections

Customer Type	Metered	Not-Metered	Total
Residential*	198,970	0	198,970
<i>Single-Family</i>	193,278	0	193,278
<i>Multi-Family</i>	5,692	0	5,692
Commercial	16,906	0	16,906
Industrial (Large Volume)	28	0	28
Other (Wholesale)	51	0	51

*Includes multi-family use

Number of New Connections per Year for Treated Water Users for Most Recent Three Years

Year	FY 2011	FY 2012	FY 2013
Residential*	1,363	837	2,382
Single-Family	1,309	878	2,555
Multi-Family	54	-41	-173
Commercial	218	367	537
Industrial (Large Volume)	-6	-1	8
Other (Wholesale)	0	2	0

*Includes multi-family use

High Volume Customers

The table on the following page shows annual treated water use for FY 2013 for the five highest volume customers of Austin Water.

Usage by High Volume Customers

	Customer	Use (1,000 gal/year)	Treated/Raw Water
1	Samsung Austin	1,436,772	Treated
2	Water District 10	850,565	Treated
3	University of Texas	849,204	Treated
4	Freescale, Inc.	648,085	Treated
5	Wells Branch MUD	469,564	Treated

Wholesale Customers

All water delivered to wholesale contracts is treated water. Wholesale water usage represents approximately seven percent of total water delivered to all City retail and wholesale customers. Following is a list of City wholesale customers, the contracted amount of potable water, and their annual use for FY 2013.

Wholesale Customer	Contracted Amount (acre-feet)	FY 2013 Water Delivered (acre-feet)
<i>Water/Wastewater</i>		
Lost Creek MUD	no maximum	713.81
Mid-Tex Utilities	2,532.42 Phase 1 4,032.52 Phase 2	n/a (not connected at this time)
North Austin MUD #1	no maximum	1,239.50
Northtown MUD	no maximum	900.44
Shady Hollow MUD	no maximum	583.58
Wells Branch MUD	no maximum	1,496.45
City of Manor	1,680.75	(meter testing only- water not initiated to date)
City of Rollingwood	1,119.43	420.66
City of Sunset Valley	715.77	350.35
<i>Water Only</i>		
Creedmoor-Maha WSC	838.76	171.81
High Valley WSC	68.33	22.53
Marsha WSC	26.89	37.65
Manville WSC	4,480.93 (contract ended January 1, 2014)	62.18
Night Hawk WSC	42.70	40.20
Aqua Texas-Morningside	52.42	10.31
Aqua Texas-Rivercrest Water Systems	1,119.43	392.72
Travis County WCID #10	11,200.72	2,597.69
Village of San Leanna	325.83	15.91
Windermere Utility	2,240.47	20.50

Water Emergency		
Travis County MUD #4	no maximum	n/a
Travis County WCID 17	no maximum	n/a
Riverplace MUD	no maximum	n/a

Water Use Data for Service Area

In the following two tables, the first shows the total amount of water delivered at point of diversion(s) for the previous five years for all water uses and the second shows the total amount of water diverted for municipal use. The data was determined from a master meter located at the point of diversion.

Monthly Diversions for All Water Uses (in acre-feet)

Year	2009	2010	2011	2012	2013
January	11,899.99	9,976.12	9,895.75	10,314.36	10,419.87
February	10,977.96	8,469.47	9,592.67	9,233.69	9,735.43
March	11,993.55	9,836.66	11,899.88	10,257.84	11,616.63
April	12,108.80	11,020.98	14,141.72	12,484.96	11,036.58
May	13,791.66	13,506.95	14,810.51	12,664.83	12,131.31
June	16,462.53	13,558.41	16,950.97	15,240.85	13,321.06
July	18,652.19	13,179.72	19,155.41	14,438.09	13,884.32
August	18,124.10	16,623.93	20,278.29	16,465.64	15,268.83
September	12,053.23	12,639.22	15,892.97	14,149.76	13,259.13
October	10,535.46	13,534.55	14,246.34	12,520.04	11,436.46
November	10,016.62	11,620.04	11,640.63	12,168.71	9,884.67
December	9,647.38	11,005.24	9,835.62	11,188.14	9,648.46
TOTAL	156,263.46	144,971.30	168,341.00	151,126.90	141,642.74

Total Amount of Water Diverted for Municipal Use (in 1,000 gallons)

Year	Total Water Pumpage
FY 2009	54,418,000
FY 2010	45,298,000
FY 2011	54,997,000
FY 2012	49,195,000
FY 2013	47,753,000

The table below shows the historical water sales for the past five years by customer category.

Historical Water Sales (in 1,000 gallons) for the past five years

Year	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Residential	28,976,749	24,017,839	29,558,377	26,337,158	25,057,301
<i>Single-Family</i>	<i>19,697,750</i>	<i>15,290,505</i>	<i>20,080,364</i>	<i>17,437,863</i>	<i>16,056,805</i>
<i>Multi-Family</i>	<i>9,278,999</i>	<i>8,727,335</i>	<i>9,478,012</i>	<i>8,899,295</i>	<i>9,000,495</i>

Commercial	12,587,725	10,020,054	12,552,682	11,197,484	10,746,517
Industrial	2,888,537	2,541,883	3,022,839	3,264,409	3,083,198
Wholesale	3,624,703	2,755,884	3,514,443	3,160,967	2,954,276
Other	176,857	119,627	69,262	55,685	56,242
TOTAL	48,254,571	39,455,287	48,717,603	44,015,703	41,897,534

Water Supply System Data

Water Supply Sources

Austin Water receives 100 percent surface water through a combination of water rights and a firm water back-up contract with Lower Colorado River Authority (LCRA). The current authorized supply is 325,000 AF/year based on a 1999 water supply contract with LCRA. In 2007, the City entered into an agreement with LCRA for an additional 250,000 AF/year (total of 575,000 AF/year) to be planned and purchased at a future time, likely incrementally, for future use.

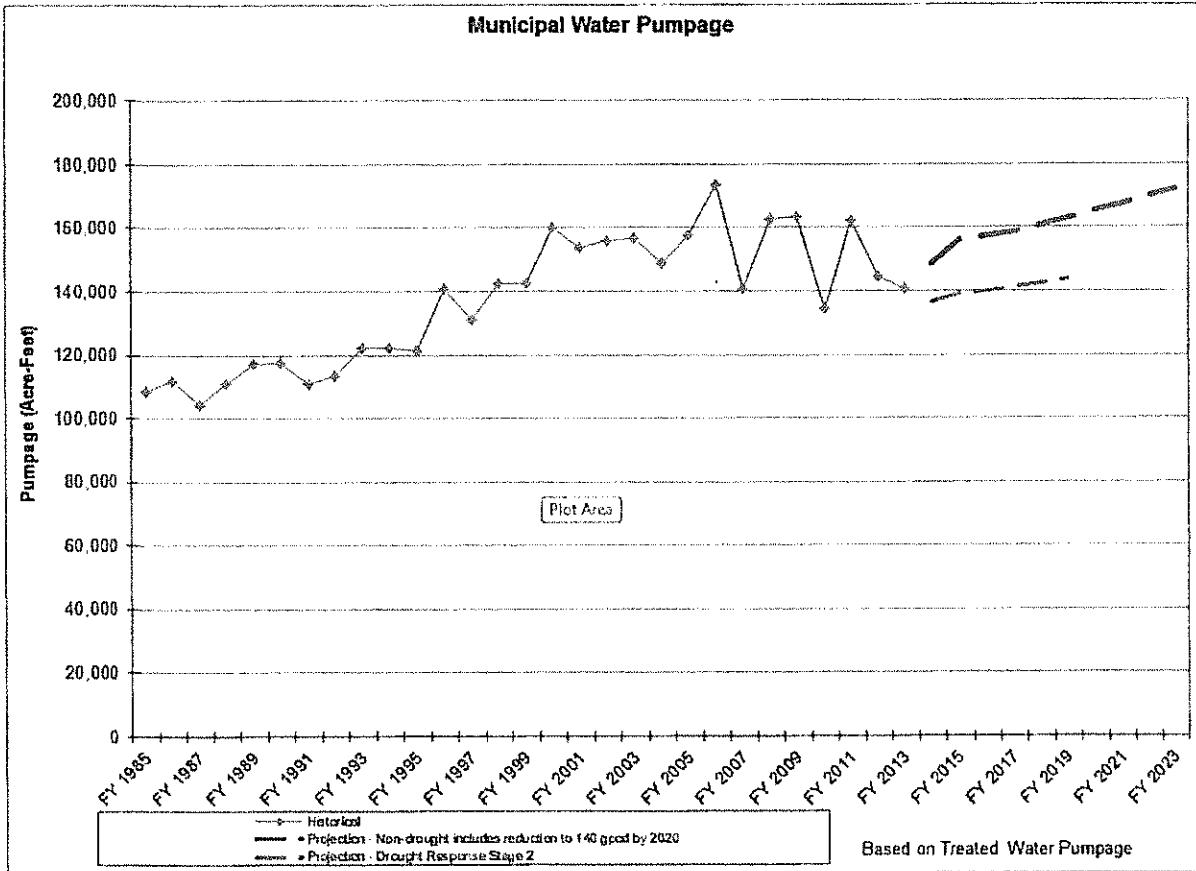
Treatment and Distribution System

Austin Water's current water treatment and distribution system has a design daily capacity of 285 MGD including 14 MG of elevated and 158 MG of ground storage capacity. Less than 3 percent of filter backwash is recycled to the head of the plants.

Austin Water operates two water treatment plants with a third currently under construction and scheduled to be operational by 2014. The system comprises 3,708 miles of water mains, nine major pressure zones, 36 water pumping stations and local boosters and 35 city-maintained reservoirs with 172 million gallons of effective storage capacity.

Projected Water Demands

Projected water supply demands for the City's service area are shown in the chart on the following page and are based on population trends, historical water use, and expected conservation savings.



Wastewater System Data

The design capacity of the Austin Water wastewater treatment plants is currently 135 MGD. The City has two major wastewater treatment plants that provide wastewater treatment for almost 95 percent of City customers: Walnut Creek (Walnut Creek) Wastewater Treatment Plant (WWTP) and South Austin Regional (SAR) WWTP. Both Walnut Creek and SAR discharge most of their treated effluent to the Colorado River. Some of the treated effluent from these plants is used as reclaimed water for golf course irrigation, cooling tower, and other non-potable uses. The City also has a major wastewater treatment facility that handles biosolids (Hornsby Bend WWTP).

In addition to the major plants, the City has nine small wastewater treatment plants that serve small areas in their vicinity and has an ownership interest in the Brushy Creek Regional Wastewater System. Together they serve the remaining five percent of City customers. Most of these plants discharge their treated effluent to the Colorado River. The Brushy Creek Regional Wastewater System, however, discharges to the San Gabriel River, a tributary of the Brazos River. Others irrigate golf courses and do not discharge to the surface waters.

The City is the owner or has an ownership interest of all these wastewater plants. Austin Water operates and maintains all the plants except for:

- a. the Lost Creek MUD plant, which is operated and maintained by the Lost Creek MUD until December 31, 2015 (after that date, the City will assume operation and maintenance responsibilities and the Lost Creek MUD customers will become City retail customers);
- b. the River Place MUD plant, which is operated and maintained by the River Place MUD until October 1, 2014 (after that date, the City will assume operation and maintenance responsibilities and the River Place MUD customers will become City retail customers); and
- c. the Brushy Creek Regional Wastewater Treatment Plant, which is operated by the Brazos River Authority (the Brushy Creek Regional Wastewater Treatment Plant only provides wastewater treatment for a very small portion of City retail customers).

Appendix D shows the wastewater treatment plant permits. Appendix E shows a map of the large wastewater treatment plants, and Appendix F shows a map of the small wastewater treatment plants.

Use of Treated Effluent

Walnut Creek Wastewater Treatment Plant uses approximately 1.5 million gallons per day (MGD) of treated effluent for plant washdown and chlorination/dechlorination.

South Austin Regional (SAR) Wastewater Treatment Plant uses approximately 1.5 MGD of treated effluent for plant washdown and chlorination/dechlorination.

Hornsby Bend uses an additional 0.5 MGD of treated effluent from SAR. Also, Hornsby Bend does on-site irrigation from an on-site pond system (not treated effluent from the plants).

Wastewater Data for Service Area

Austin Water's wastewater system serves approximately 80 percent of the City's water system service area. The treated volume includes those wholesale wastewater customers that receive wastewater service by the City.

Monthly Volume Treated (in million gallons)

Year	2009	2010	2011	2012	2013
January	2,594.01	3,339.52	2,737.83	3,192.97	3,005.28
February	2,450.64	3,227.40	2,593.82	3,182.155	2,603.51
March	2,767.26	3,360.61	2,859.47	3,639.88	2,947.94
April	2,697.20	2,945.99	2,731.45	3,073.68	3,023.13
May	2,829.79	2,806.37	2,845.53	3,410.44	3,171.07
June	2,727.28	2,813.31	2,795.27	2,979.66	2,848.07

July	2,754.11	3,054.46	2,896.89	3,314.41	2,903.08
August	2,803.49	2,845.80	2,935.06	3,113.73	2,850.84
September	2,928.78	3,287.05	2,743.75	2,743.75	2,891.32
October	3,457.01	2,697.17	2,853.61	3,065.72	3,660.49
November	3,017.43	2,506.09	2,814.31	2,722.64	3,647.03
December	3,099.03	2,603.86	3,195.99	2,780.66	3,173.98
TOTAL	34,126.03	35,487.64	34,002.98	37,219.69	36,725.75

WATER CONSERVATION PLAN FOR MUNICIPAL & WHOLESALE WATER USE

Austin Water has three primary goals for its conservation programs: to reduce average per capita demand, to reduce peak demand, and to delay the point at which total water diversions trigger additional payments to LCRA. Because peak demand and total use goals are long-range, only the per capita goal is addressed here.

Water Conservation Goals

On May 13, 2010, Austin’s City Council adopted a goal of reducing total water use to 140 gallons per capita per day (GPCD) by the year 2020. Austin Water is currently working with the advisory Resource Management Commission to construct a plan to reduce average water use that balances anticipated population growth and cost with conservation. The goals in this Conservation Plan reflect reaching the City Council set goal of reducing water use to 140 GPCD by 2020. Progress will be evaluated annually to determine what additional measures may be necessary to further reduce water use in pursuit of the Council-set goal.

Five- & Ten-Year Goals for Water Savings from Conservation

	Historic 5-year Average	Baseline	FY 2019 Goal		FY 2024 Goal
Total GPCD	149	162	Non-Drought Conditions:	141	138
			Drought Response Stage 2:	124	
Residential GPCD	87	96	85		83

Water demand can fluctuate greatly depending on weather conditions. Hot and dry years typically raise demand while colder and wetter years lower it. Currently, Central Texas is in the midst of a prolonged drought of a severity approaching historic proportions. As a result of reaching the trigger established by its Drought Contingency Plan, the City has been in Drought Response Stage 2 watering restrictions since September 2012. Because of the strong response from City water customers to the Stage 2 once-a-week watering schedule, water use has dropped significantly.

The water savings goals in the Conservation Plan typically reflect reductions in water use resulting from year-round Conservation Stage measures and conservation programming rather than drought response efforts. For this Water Conservation Plan, the City chose to use FY 2011, instead of FY 2013, as the baseline year for developing the non-drought GPCD goals for FY 2019 and FY 2024. This allows the impacts of drought restrictions on water use, which are typically short-term, to be largely separated out from the longer-term impacts of conservation efforts. The historic five-year GPCD average encompasses water usage from FY 2009 through FY 2013.

Since weather forecasts suggest that the drought conditions gripping the region could persist for at least the next five years, Austin Water has also included an additional GPCD projection from the Utility’s five-

year financial forecast, which assumes continued Stage 2 drought conditions and thus Stage 2 Drought Response watering restrictions and other Stage 2 measures. Once the drought is over, consumption is likely to increase beyond drought levels, but is not anticipated to reach previous consumption levels. Austin Water is currently analyzing these dynamics, including looking at similar situations which have occurred around the country, and will later change forecasts based on the outcome of that analysis. Also, total GPCD could go below even the five-year forecast if drought conditions should worsen and require Austin to implement Drought Response Stages 3 or 4.

Water Loss Goals

Austin Water is undertaking a comprehensive effort to reduce unaccounted-for water and to improve the quality of data in water loss estimates. It is expected that water loss percentages will fluctuate annually with weather and demand conditions, and that some fluctuation will occur as a result of improved data collection. Austin Water conducts annual Water Loss Audits according to Texas Water Development Board methodology and has made significant progress in reducing unaccounted-for water. An internal Water Accountability Committee monitors progress and makes recommendations for reducing lost water. Austin Water has dedicated one FTE specifically for addressing water loss.

Historical Water Loss

Fiscal Year	Amount (gal)	Percentage
2009	5,882,655,456	10.81
2010	4,719,352,698	10.56
2011	5,394,581,008	10.01
2012	4,069,307,067	8.45
2013	5,041,056,069	10.74

Five & Ten Year Goals for Reducing Water Loss

	Historic 5-year Average	Baseline	FY 2019 Goal	FY 2024 Goal
Water Loss (GPCD)	16.18	17.27	14.26	13.97
Water Loss (Percentage)	12.13	11.98	10.11	10.05

The five-year averages for Water Loss GPCD and Water Loss Percentage used the water loss audits from FY 2009 through FY 2013. They were calculated using the retail population and with all sales to wholesale customers subtracted out of water produced and water billed.

The projected water loss GPCD and water loss percentages were calculated using an Infrastructure Leakage Index (ILI) of 2.5. The increase in number of miles of mains and number of connections was based on the annual rate of increase since 2008. The total GPCD was multiplied by projected population to yield Total Water Production. The Unaccounted for Annual Real Loss was then calculated, and with the ILI of 2.5, was used to derive the Total Real Loss. Apparent Losses were calculated by multiplying Total Water Production by .0214 and added to Real Losses to yield Total Losses. Total Losses divided by

the projected population to gives the Water Loss GPCD. The Total Losses divided by Total Water Production yielded Water Loss Percentage.

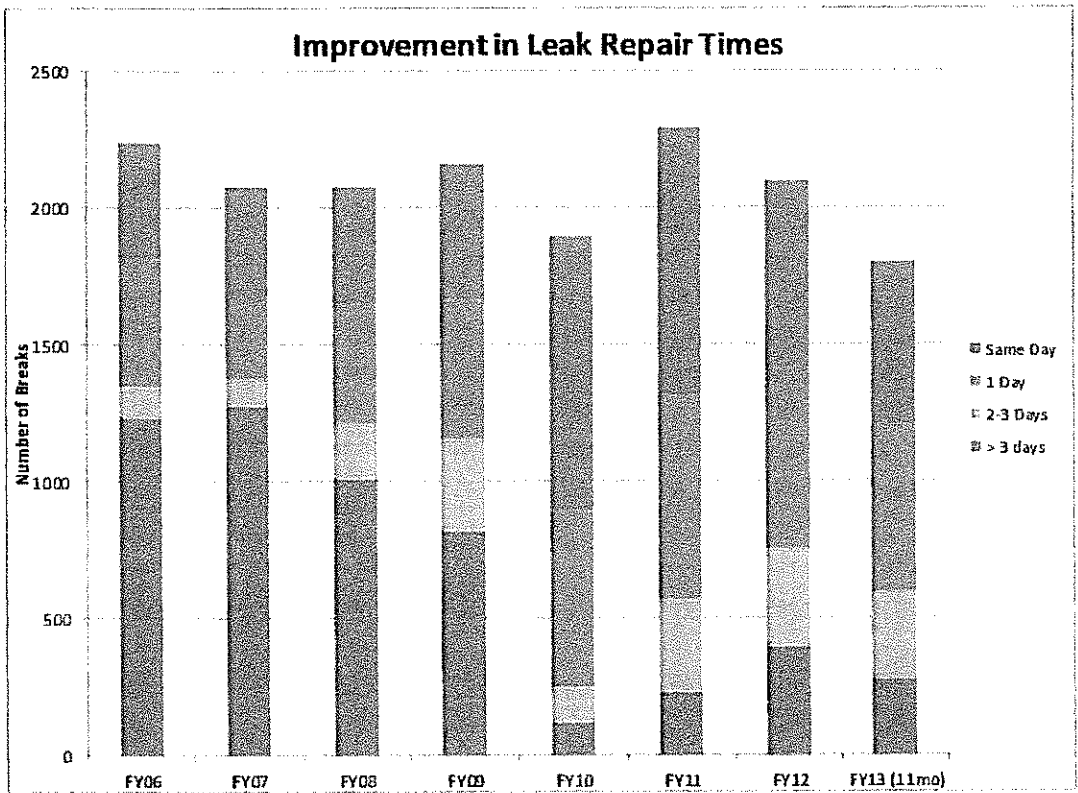
Unaccounted-For Water Uses

Austin Water has a comprehensive plan to reduce unaccounted-for retail water use, including contracts for subsurface leak detection of the entire distribution system on a five-year schedule. Austin Water routinely analyzes consumption data for zero-reads and suspicious patterns for City retail customers and wholesale master meters. Austin Water has two full-time employees dedicated to meter tampering and theft investigations. Additionally, theft from City hydrants can be reported to 3-1-1, as advertised on numerous water hydrants in areas with high construction traffic. Austin Water has also added staff to reduce response times for reported leaks, and is undergoing an extensive capital project to replace piping with a history of leaks and breaks. "Renewing Austin", launched in April 2012, is a five-year program to upgrade aging water lines and ensure the reliability of Austin's water distribution system.

Leak Detection

Austin Water has staff that performs leak detection, and also contracts for leak detection services to locate subsurface leaks in the water distribution system. By the close of FY 2012, Austin Water completed a five-year project to perform leak detection on all distribution mains. Another cycle of leak detection efforts is currently in progress.

In FY 2009, Austin Water added a second shift to its leak response teams to reduce the amount of time a reported leak continues before repair. A graph indicating improvement in repair times is shown on the following page.



Record Management System for City Retail Customers and Wholesale Master Meters

Daily water pumping records are maintained at the treatment facilities. The City maintains records of water distribution and sales through a central billing system which segregates water sales into Single-family Residential, Multi-family, Commercial, Wholesale, and Large Volume Industrial user classes which are then charged different rates for water and wastewater services. The Customer Care and Billing database (CC&B) provides a central location for water billing information. Austin Water also maintains a wholesale database that allows for monitoring compliance with wholesale customer contract provisions. A separate database, Hansen, serves as the database of record asset management and tracking work orders and service requests. Hansen interfaces with GIS information to allow mapping of utility distribution lines, hydrants and meters, and to geographically track service requests.

Metering Devices

The meters that Austin Water installs for its retail customers are tested to measure the flow within a ± 5 percent accuracy range. Each meter of 1½ inches or larger is tested before installation, and 10 percent of the smaller meters are tested. Three inch or larger meters are tested routinely through a contract with a private firm. Small meters are replaced when a problem is suspected as replacement is more cost effective than repair for 1" and smaller meters.

For wholesale customers, Austin Water staff annually tests wholesale master meters that are three inches and above. The accuracy range considered acceptable for these meters varies according to the specifics of each wholesale customer's contract, but are generally required to be within a ± 5 percent accuracy range. Wholesale customer master meters of less than three inches are periodically replaced by Austin Water staff.

Universal Metering

Austin Water universally meters all of its customers. Wholesale customers have one or more master meters. All master meters are routinely tested as part of their contract with the City.

Continuing Public Education & Information

Austin Water uses public education and community outreach as a means of encouraging participation in water conservation programs and incentives, as well as to build awareness about permanent and seasonal water use restrictions.

School Education Programs

Austin Water offers the *Dowser Dan* musical program for elementary school students in areas served by Austin Water. Students in grades 1-4 learn about the water cycle, water conservation and water systems through a 45-minute presentation and accompanying worksheets and materials. Austin Water also is a partner with Campfire Kids and the Colorado River Foundation to develop water conservation and stewardship curriculum modules and support activities for afterschool programs and special events.

Advertisements / Program Marketing

Advertising provides citizens information about water conservation and programs available to encourage water conservation. Advertisements are regularly placed in the *Austin American-Statesman* as well as in neighborhood newspapers and local radio and television stations. Local celebrities have appeared in several television and radio commercials in the past promoting the watering schedule and discouraging the waste of water. Additionally, information is provided directly to customers in utility bills and through direct mail outs to high water users.

Electronic Newsletters

In March 2004, Austin Water's Water Conservation Division began the "WaterWise Newsletter" as part of an effort to communicate more regularly with customers and increase participation in water conservation initiatives. The newsletter is distributed electronically to a database of approximately 30,000 customers. Customer email addresses are collected from program applications and information requests, and visitors to the Water Conservation website are encouraged to self-subscribe by providing an email address. In 2013, Austin Water launched the "WaterWise Commercial Newsletter" with conservation information related to commercial, industrial and institutional customers.

Workshops, Presentations and Outreach Programs

Austin Water offers presentations on water conservation techniques and available programs to a variety of interest groups including homeowners associations, garden clubs, professional organizations and other community groups. Austin Water also participates in festivals, school events and informational fairs by providing staff and materials to promote water conservation. In 2009, it developed a Water Conservation Speakers Bureau, allowing area groups to schedule speakers on topics of interest. Staff members are available to speak on topics that include conservation measures, irrigation, leak detection, and water waste. Each year, Austin Water typically participates in more than 100 events and programs. Austin Water also provides continuing education credits toward license renewal for licensed irrigators through its annual *Water Wise Irrigation Professionals Seminar*.

Web Page/Social Networking

Austin Water provides a wide range of water conservation information on its website, www.WaterWiseAustin.org. All water conservation programs offered by the City, including the various rebate and free water use audit programs, are described on the website. For customer convenience, program applications are also available on-line. Tips on strategies for reducing indoor and outdoor water use are provided for businesses as well as the general public. In order to enhance the amount and quality of information provided to the public, the City's web page also provides links to other websites providing water conservation information. Austin Water incorporates social media into its communication efforts by providing updates on conservation-related topics via Facebook, Twitter, and YouTube.

Peak Day Management Campaign

In 2012, the City revised its Water Conservation Code (Chapter 6-4 of City Code) to include mandatory watering days for all City water customers, limiting outdoor water use to no more than twice per week, with limited exceptions for efficient irrigation technologies. Education efforts are increased during the summer months when water use is highest. Messages urge citizens and businesses to comply with the watering schedule. Austin Water produces magnets and stickers with the watering guidelines to assist citizens in following the recommended schedule.

Austin Water enforces its water use ordinance through routine patrols and by following up on water waste reports made through the City's 3-1-1 hotline. It is unlawful in the City of Austin to operate an irrigation system with excessive pressure that creates misting, to allow water to spray onto or over a paved surface, and for irrigation water to run off into the street or pond in parking lots or paved areas. Customers found to be in violation of these conditions or of the mandatory watering schedule may be penalized by a fine on their water bill which can escalate for repeated offenses.

Non-Promotional Water Rate Structure

Austin Water has a five-tiered water rate structure for residential customers to discourage excessive water use. Commercial and multifamily customers are encouraged to conserve water during the irrigation season through peak and off-peak rates, as illustrated below.

Single Family Residential (effective 11/1/2013)	
Amount	Volume Unit Charge (per 1,000 gallons)
2-2,000 gallons	\$ 1.84
2,001-6,000 gallons	\$ 3.39
6,001-11,000 gallons	\$ 6.20
11,001-20,000 gallons	\$ 9.95
Over 20,000 gallons	\$ 12.84
Multifamily	
Off Peak (Nov-June)	\$ 4.38
Peak (July-October)	\$ 4.82
Commercial	
Off Peak (Nov-June)	\$ 5.38
Peak (July-October)	\$ 5.91

Wholesale customers and several large volume/industrial customers have individual rates established through negotiated contracts.

Reservoir Systems Operations Plan

LCRA owns and operates the key water supply reservoirs in the region, Lakes Travis and Buchanan. LCRA operates these reservoirs in accordance with its state-approved Water Management Plan. The plan governs operation of Lakes Travis and Buchanan and is reviewed periodically to keep pace with growing water demands and improved information. The link to LCRA's *Water Management Plan for the Lower Colorado River Basin (Effective September 20, 1989 Including Amendments Approved by TCEQ through January 27, 2010)* is: http://www.lcra.org/library/media/public/docs/water/wmp/lcra_wmp_june2010.pdf

Both Lake Austin and Lady Bird Lake, also on the lower Colorado River, are owned by the City of Austin and are operated as pass-through pools.

Contract Requirements for Successive Customer Conservation

Wholesale water supply contracts entered into, amended, extended, or renewed after official adoption of the City's 2009 Utility Profile and Water Conservation Plan are required to include language stating that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements of 30 TAC Chapter 288. However, all City wholesale customers only resell City wholesale water to their retail customers. The City's wholesale customers do not sell City wholesale water to another utility that then resells the water to its retail

customers (i.e. successive wholesale customers). Therefore; the requirement related to successive wholesale customers does not apply to the City.

Wholesale water supply contracts entered into, amended, extended, or renewed after official adoption of the City's 2009 Utility Profile & Water Conservation Plan include language stating that the wholesale customer will adhere to the City's water management ordinance and establish a water conservation program similar to the one enforced by the City. Enforcement of these ordinances is the responsibility of the entities receiving City wholesale water. The City is willing to assist as requested by the wholesale entity.

Enforcement Procedure & Plan Adoption

The 2014 Utility Profile & Water Conservation Plan for Municipal and Wholesale Water Use is expected to be reviewed by Austin City Council on April 17, 2014. Once reviewed and approved the following statement will be included in the Plan:

"Authority to implement this plan is granted by the Austin City Council. Austin City Council approved the 2014 Utility Profile & Water Conservation Plan for Municipal and Wholesale Water Use on April 17, 2014."

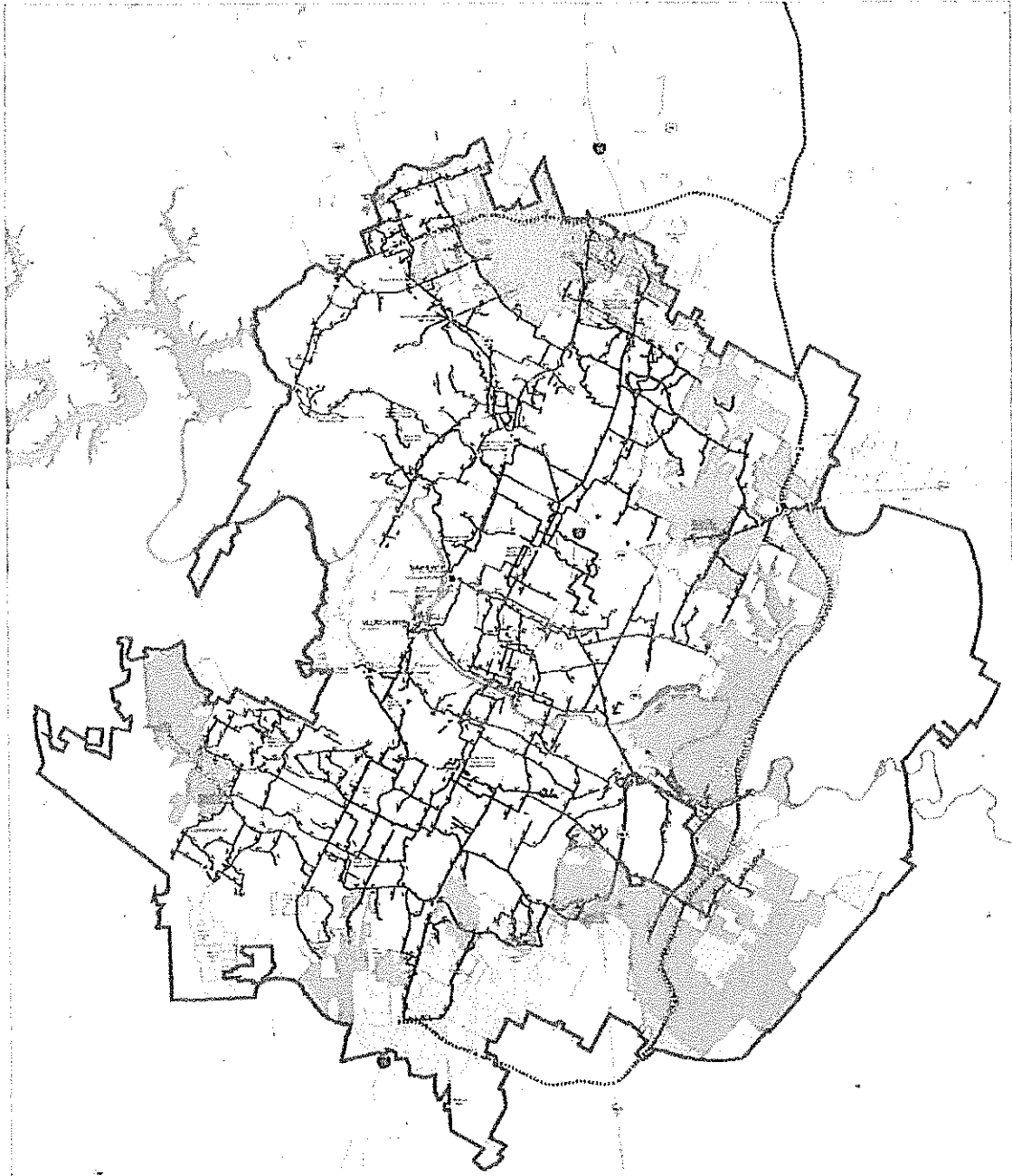
Coordination with the Regional Water Planning Group(s)

The Austin Water service area is located within the Region K Planning Group. Austin Water has provided a copy of this water conservation plan to the Region K Planning Group.

Plan Review and Update


Austin Water staff review conservation programs and targets annually. The Utility Profile and Water Conservation Plan for Municipal and Wholesale Water Use is reviewed and updated every five years according to TCEQ requirements under Title 30 Texas Administrative Code §288.30 or more frequently as needed to reflect changes in water conservation policy. Wholesale customers are provided any updates of the City's water conservation ordinance(s). The next revision of the plan is expected not later than May 1, 2019.

Appendix A
Service Area Map

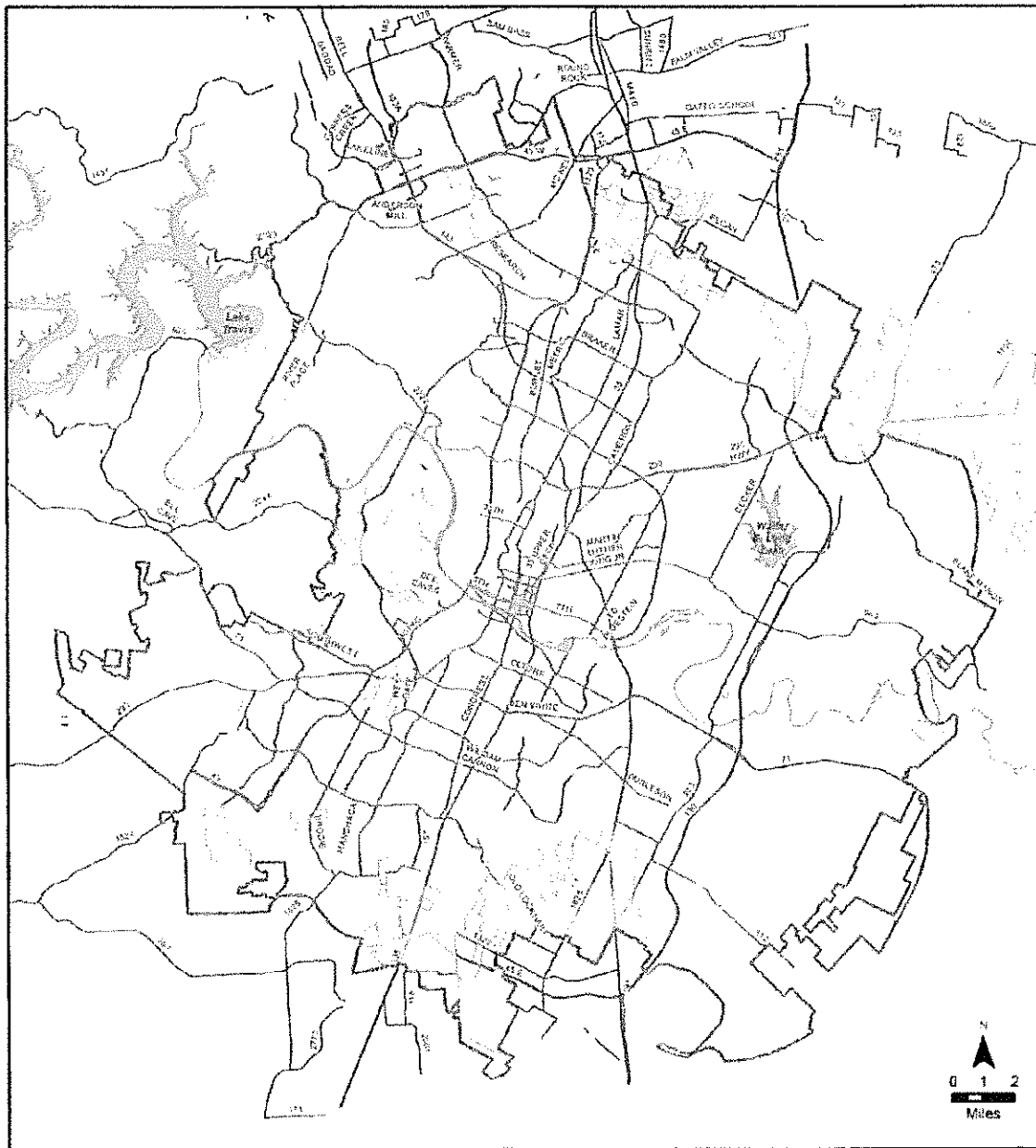






1	Water Main	2	Water Main	3	Water Main	4	Water Main	5	Water Main
6	Water Main	7	Water Main	8	Water Main	9	Water Main	10	Water Main
11	Water Main	12	Water Main	13	Water Main	14	Water Main	15	Water Main
16	Water Main	17	Water Main	18	Water Main	19	Water Main	20	Water Main
21	Water Main	22	Water Main	23	Water Main	24	Water Main	25	Water Main
26	Water Main	27	Water Main	28	Water Main	29	Water Main	30	Water Main
31	Water Main	32	Water Main	33	Water Main	34	Water Main	35	Water Main
36	Water Main	37	Water Main	38	Water Main	39	Water Main	40	Water Main
41	Water Main	42	Water Main	43	Water Main	44	Water Main	45	Water Main
46	Water Main	47	Water Main	48	Water Main	49	Water Main	50	Water Main
51	Water Main	52	Water Main	53	Water Main	54	Water Main	55	Water Main
56	Water Main	57	Water Main	58	Water Main	59	Water Main	60	Water Main
61	Water Main	62	Water Main	63	Water Main	64	Water Main	65	Water Main
66	Water Main	67	Water Main	68	Water Main	69	Water Main	70	Water Main
71	Water Main	72	Water Main	73	Water Main	74	Water Main	75	Water Main
76	Water Main	77	Water Main	78	Water Main	79	Water Main	80	Water Main
81	Water Main	82	Water Main	83	Water Main	84	Water Main	85	Water Main
86	Water Main	87	Water Main	88	Water Main	89	Water Main	90	Water Main
91	Water Main	92	Water Main	93	Water Main	94	Water Main	95	Water Main
96	Water Main	97	Water Main	98	Water Main	99	Water Main	100	Water Main



City of Austin 
 Austin Water Utility
 July 2013
Major Water Facilities Reference Map
Produced by CIP Services

Appendix B
Wholesale Service Area Map



-  AWU Wholesale Water Customers
-  AWU Wholesale Water Customers - Emergency Only
-  AWU Retail Water Service as of May 2013
-  Impact Fee - Service Area Boundary 2014

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. This product has been produced by the Austin Water Utility for the sole purpose of geographic reference. No warranty is made by the City of Austin regarding specific accuracy or completeness.



City of Austin
Austin Water Utility
February 2014

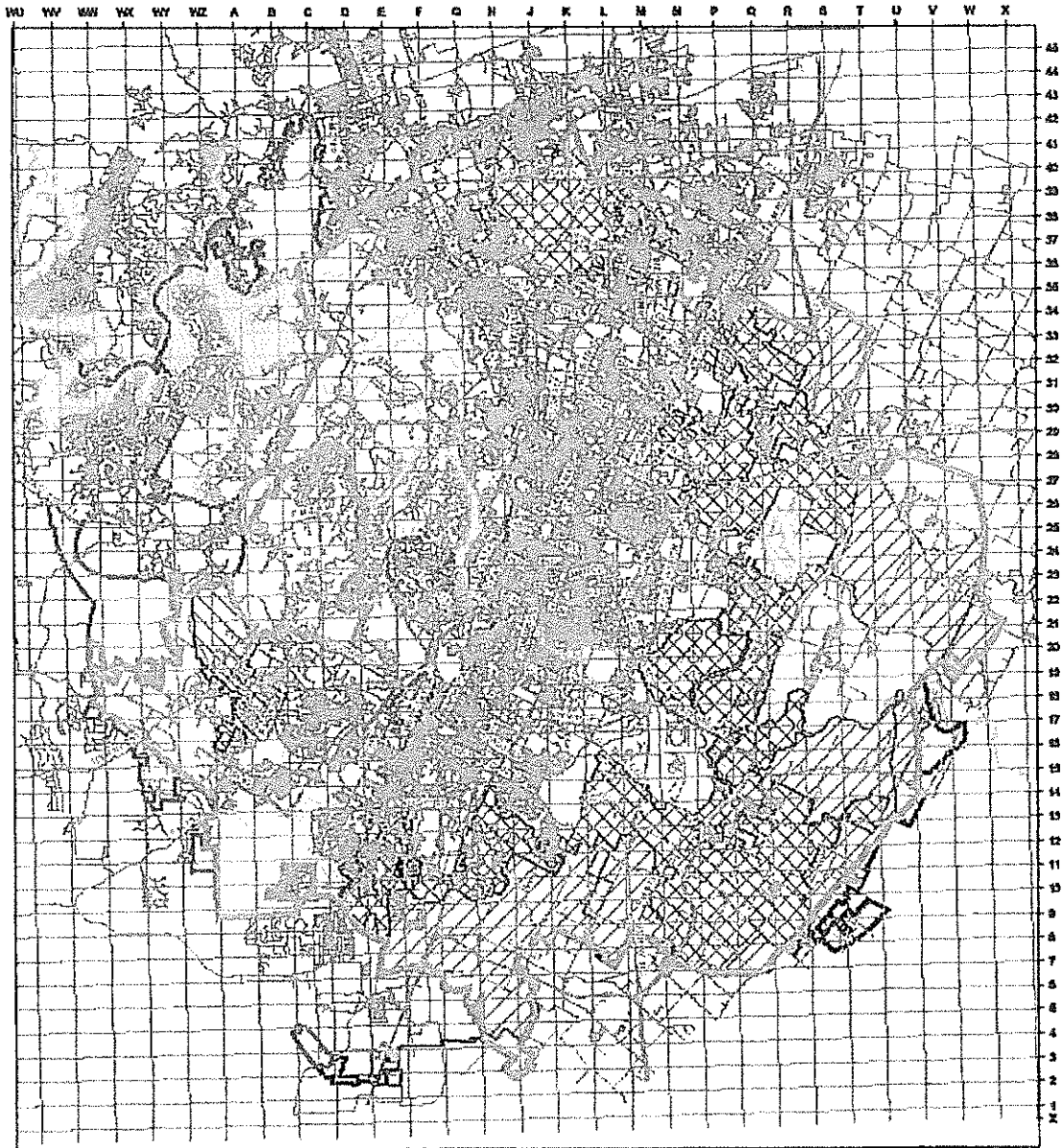







Wholesale Customers



Produced by GIS Services

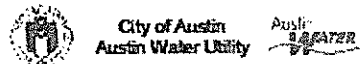
Appendix C

Certificate of Convenience and Necessity Area Map



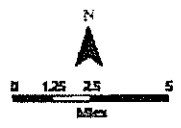
-  Austin Water CCN
-  Austin Wastewater CCN
-  Desired Development Zone
-  Drinking Water Protection Zone
-  Impact Fee & Service Area Boundary

-  Full-purpose City Limit
-  Austin Water & Wastewater CCNs



September 2011

City of Austin Water & Wastewater CCN



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Produced by GIS Services

Appendix D

Wastewater Treatment Plants and Permits

City of Austin (CN600135198)
Austin Water
Wastewater Treatment Plants and Permits

1. Walnut Creek Wastewater Treatment Plant, TPDES Permit No. WQ0010543011, EPA ID No. TX0046981, RN101607901, 75 MGD (annual average), 10/15/2 (monthly average) and 5/5/2 (annual average) to the Colorado River
2. South Austin Regional Wastewater Treatment Plant, TPDES Permit No. WQ0010543012, EPA ID No. TX0071889, RN101607794, 75 MGD (annual average), 10/15/2 (monthly average) and 5/5/2 (annual average) to the Colorado River
3. Wild Horse Ranch Wastewater Treatment Plant, TPDES Permit No. WQ0010543013, EPA ID No. TX0124800, RN103014577, 0.75 MGD, 5/5/2/1 to a tributary of Gilleland Creek
4. Whisper Valley Wastewater Treatment Plant, TPDES permit No. WQ0010543014, EPA ID No. TX0129950, RN105331755, (inactive, plant not constructed yet), contemplated discharge of 3 MGD (annual average), 5/5/2/1 to Gilleland Creek
5. Pearce Lane Wastewater Treatment Plant, TPDES Permit No. WQ0010543015, EPA ID No. TX0132934, RN106066715, (inactive, plant not constructed yet), contemplated discharge of 0.3 MGD 5/5/2/1 to a tributary of Dry Creek
6. Harris Branch Wastewater Treatment Plant, TPDES Permit No. WQ0013318001, EPA ID No. TX0101532, RN102806635, 0.4 MGD, 5/5/2/1 to Harris Branch
7. Thoroughbred Farms Wastewater Treatment Plant, TPDES Permit No. WQ0014459001, EPA ID No. TX0067466, RN101265254, 0.065 MGD, 20/20 to Dry Creek
8. Dessau Wastewater Treatment Plant, TPDES Permit No. WQ0012971001, EPA ID No. TX0097870, RN102077328, 0.5 MGD, 10/15/3 to a tributary of Harris Branch
9. Anderson Mill Wastewater Treatment Plant, TPDES Permit No. WQ0011459001, EPA ID No. TX0034207, RN101612737, 0.99 MGD, 7/15/3 to Lake Creek
10. Brushy Creek Regional Wastewater Treatment Plant (Co-permittee with City of Round Rock, City of Cedar Park, and Brazos River Authority), TPDES Permit No. WQ010264002, EPA ID No. TX0101940, RN10082260, 21.5 MGD (annual average), 10/15/2, to Brushy Creek
11. Balcones Water Reclamation Plant, TCEQ Permit No. WQ0011363001, RN102095114, no discharge, irrigation of golf course, 0.292 MGD/10
12. Lost Creek Water Reclamation Plant, TCEQ Permit No. WQ0011319001, RN100641653, no discharge, irrigation of golf course, 0.42 MGD, 10/15
13. River Place Water Reclamation Plant, TCEQ Permit No. WQ0011514001, RN100843283, no discharge, irrigation of golf course, 0.207 MGD, 5/5

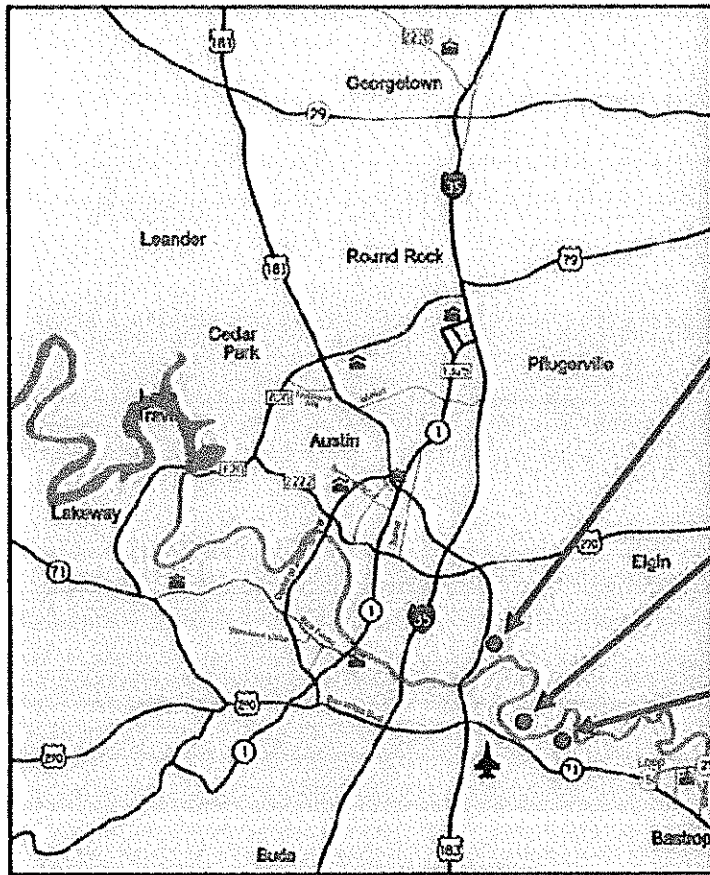
14. Hornsby Bend Biosolids Management Plant, TCEQ Permit No. WQ0003823000, EPA ID No. TXL0050005, RN101607679, biosolids treatment plant, no discharge

Plants 1 through 10 are permitted to discharge to a stream. Plants 11 through 14 are not permitted to discharge to the waters of the state.

Permitted flows are expressed as monthly averages unless specified otherwise. Effluent quality is expressed as monthly average (unless specified otherwise) and written after the permitted average flow in the following order: 5-day Carbonaceous Biochemical Oxygen Demand (CBOD₅)/Total Suspended Solids (TSS)/Ammonia-Nitrogen (NH₃-N)/Total Phosphorus (TP), when applicable. For Balcones, Onion Creek, Lost Creek, River Place and Thoroughbred Farms, the effluent limit is on 5-Day Biochemical Oxygen Demand (BOD₅), and not on CBOD₅.

Appendix E

Map of Large Wastewater Treatment Plants



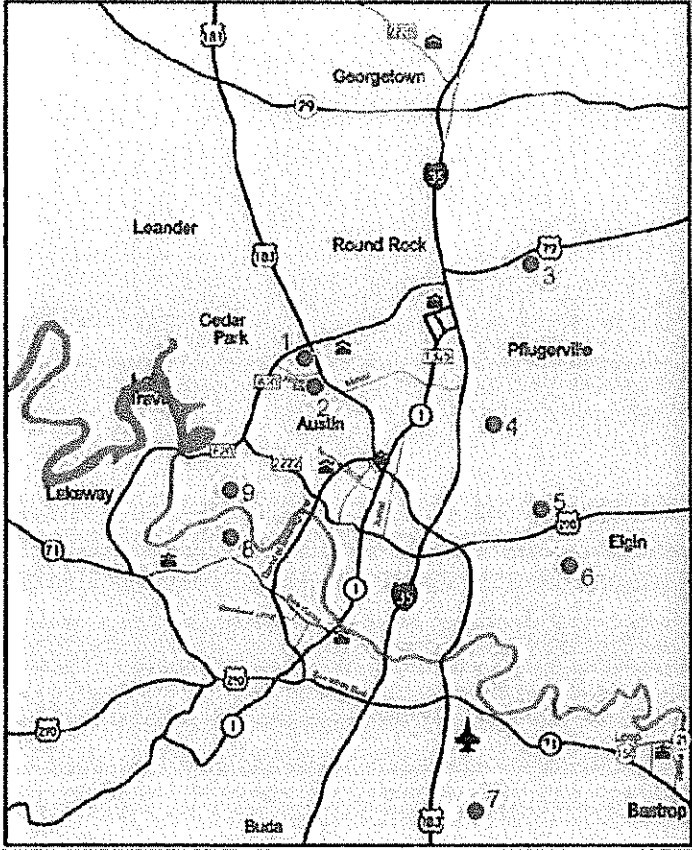
Walnut Creek
Wastewater
Plant
(1977)

Hornsby Bend
Biosolids
Plant
(1956)

South Austin
Regional
Wastewater
Plant
(1986)

Appendix F

Map of Small Wastewater Treatment Plants



Austin's Small Wastewater Plants

- 1 Anderson Mill
- 2 Balcones
- 3 Brushy Creek Regional
- 4 Dessau
- 5 Harris Branch
- 6 Wild Horse Ranch
- 7 Thoroughbred Farms
- 8 Lost Creek
- 9 River Place

RESOLUTION NO. 20120816-005

WHEREAS, the adoption and periodic update, as appropriate, of the City's Drought Contingency Plan is a requirement of the Texas Commission on Environmental Quality; and

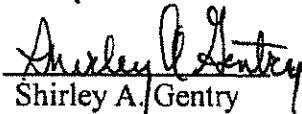
WHEREAS, revisions to the City's Water Conservation Code include changes to the drought response triggers and corresponding water use reduction goals; **NOW, THEREFORE**,

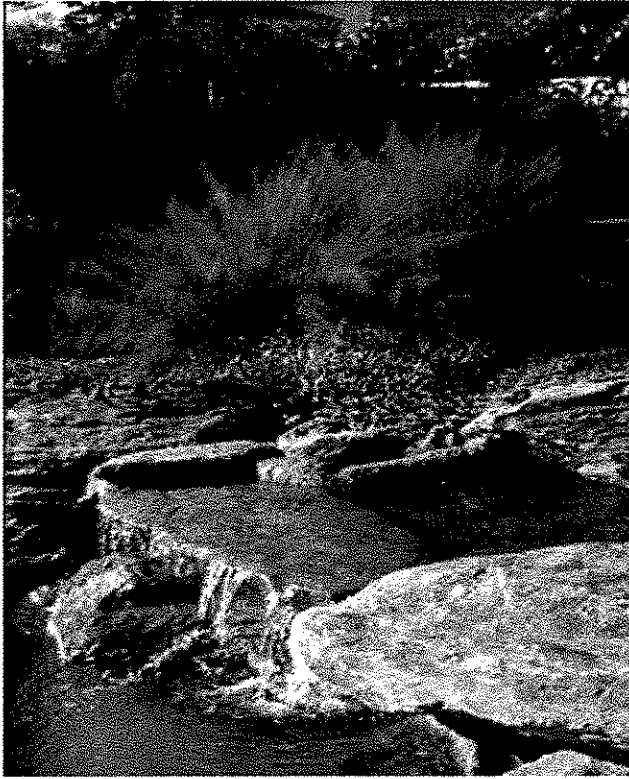
BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

The Council repeals Resolution No. 20090423-002 and adopts a new plan entitled "The City of Austin Drought Contingency Plan", incorporating applicable revisions to the City's Water Conservation Code, as shown in Exhibit A.

ADOPTED: August 16, 2012

ATTEST:


Shirley A. Gentry
City Clerk



City of Austin

**Drought
Contingency
Plan**

August 2012

*Developed to Meet Requirements
Outlined in 30 TAC § 288.20 and § 288.22*

**Austin Water Utility
Water Conservation Division
City of Austin, Texas
PWS # 2270001**

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DROUGHT CONTINGENCY PLAN

City of Austin, Texas

August 2012

Section I: Declaration of Policy, Purpose and Intent

The City of Austin (the City) adopted this Drought Contingency Plan (the Plan) to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage during drought or other emergency water supply conditions. This Plan is designed to meet Section 11.1272 of the Texas Water Code and Chapter 288 of Title 30 of the Texas Administrative Code. These regulations require all Texas wholesale public water suppliers and all retail public water suppliers providing water service to 3,300 or more connections to update Drought Contingency Plans by May 1, 2009 and every five years thereafter. If revisions to the Plan are needed before the scheduled five-year update, they must be submitted to TCEQ within 90 days of adoption. Additionally, as part of its water agreements with the Lower Colorado River Authority (LCRA), the City is required to have a Drought Contingency Plan that reflects consideration of the targets and goals set forth in the LCRA Drought Contingency Plan.

The Plan specifies how the City will respond to and manage the water system during demand and infrastructure constraints as well as during drought, including a repetition of the critical drought of record. The City will coordinate with LCRA and the policies set forth in its Water Management Plan, if and when a drought or other shortage of water supply should occur.

Water management actions are codified in the City of Austin's Municipal Code, Title VI Environmental Control and Conservation, Chapter 6-4 Water Conservation, Article II Water Use Management, last revised in June 2012. This Drought Contingency Plan reflects revisions to that code and clarifies the applicability of the Plan to the City of Austin's wholesale water customers. The amended Water Conservation Code is included in Appendix A.

Section II: Background

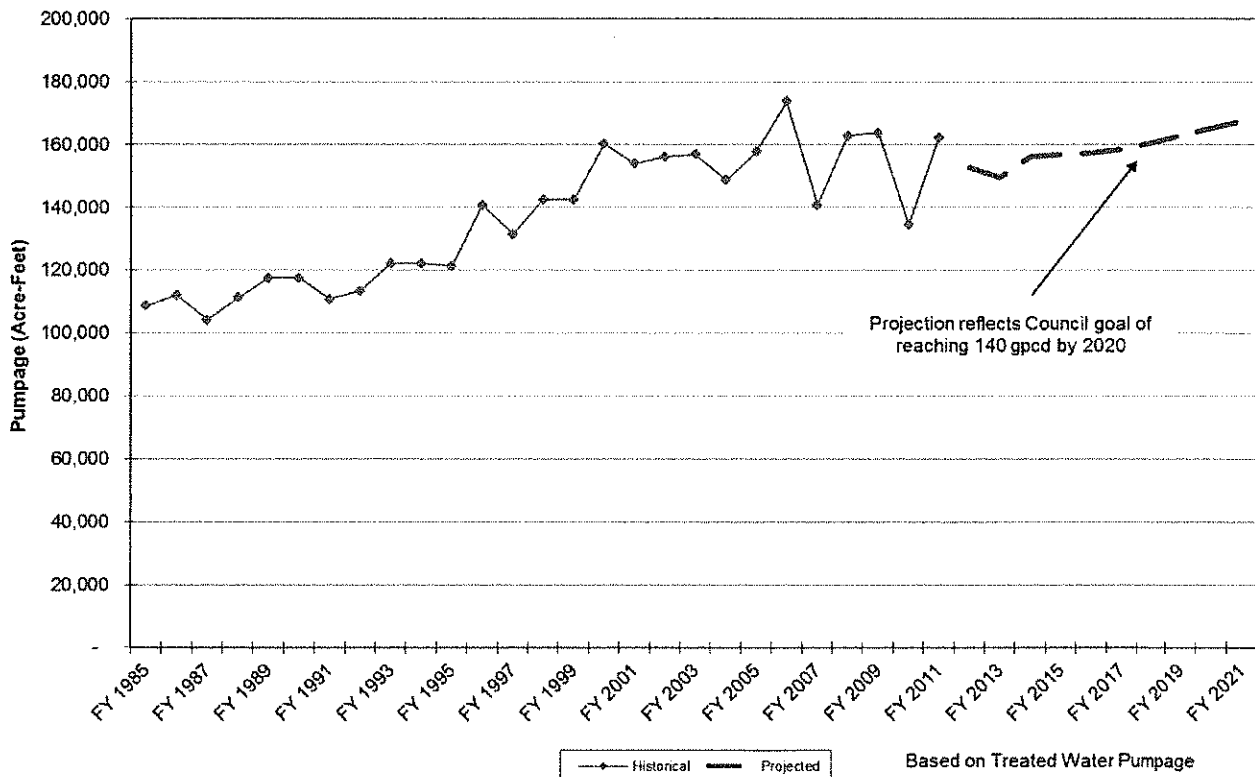
A. City of Austin Water Supply, Projected Demand, and Water Supply Contracts

The City holds permitted municipal water rights granted by the State of Texas to divert a maximum of 292,703 acre-feet per year (AF/yr) from the Colorado River for municipal use. These water rights are run-of-river rights in the State's priority water rights system. This means that the City is permitted to divert water under these rights if the water is available for diversion after other more senior water rights are first fulfilled. While Austin's water rights include some of the most senior water rights in the river basin, there are various conditions, typically during dry weather, under which this run-of-river water would not reliably be available to the City of Austin's

water rights. Therefore, Austin has entered into water supply contract agreements with LCRA to further ensure water availability under a wide range of hydrologic conditions, including droughts.

In 1999, the City of Austin secured a firm water supply of 325,000 AF/yr through a contract with LCRA using stored water in the Highland Lakes and other sources to back up Austin's senior water rights. This amount of water supply is projected to be sufficient to meet Austin's needs at least through the year 2050 to 2060 timeframe. This contract is renewable by the City of Austin through the year 2100. In 2007, Austin entered into a supplemental water supply agreement with LCRA to provide Austin with an additional 250,000 AF/yr of firm water to be jointly planned incrementally for future needs beyond the 1999 contract's 325,000 AF/yr level. The 325,000 AF/yr component of the City's firm municipal water supply described above (from Austin's senior water rights backed by contract with LCRA) is roughly double the peak annual diversion level of 170,122 AF/yr, which occurred in 2008. Figure 1 illustrates the amount of the City of Austin's municipal firm supply and the current and projected municipal demand for that water through 2021.

Figure 1
Municipal Water Pumpage



According to its 2010 Water Management Plan for the Lower Colorado Basin, LCRA plans to manage water supplies in the Colorado River to ensure that there is no shortage of stored water for firm demands during a repeat of the Drought of Record (DOR). When LCRA's Board declares that conditions are worse than the Drought of Record, also known as declaration of a Drought Worse than the Drought of Record (DWDOR), then LCRA requires mandatory curtailment of firm water demand. A declaration of a DWDOR includes evaluation of hydrologic and water supply conditions based on set criteria. LCRA may require mandatory curtailments of firm water demand under some other water emergency that drastically reduces the available firm water supply. If a DWDOR declaration is made, LCRA may, after notification and pro-rata curtailment plan approval, impose mandatory curtailment of firm customers. The City has adopted a Water Conservation Code (Appendix A) authorizing the City to consider and implement emergency conservation measures if the City were required to curtail water use during a DWDOR declaration.

B. Drought Conditions and Management Actions

LCRA manages the Highland Lakes, including its water supply reservoirs lakes Travis and Buchanan, as a system, resulting in a maximum combined storage capacity of just over 2.0 million acre-feet. LCRA uses combined storage levels in lakes Travis and Buchanan as an indicator of water supply conditions, including possible severe, long-term drought conditions, and to trigger drought contingency plan stage implementation. The drought of record for the Colorado River basin region, which includes the City of Austin, is the one which occurred during the years 1947-1957, when the combined water storage levels of lakes Travis and Buchanan fell to a low of 621,221 acre-feet.

In order to minimize negative effects from periods of severe water shortages, the Water Conservation Code (Section 6-4) outlines the City's stages for taking action in its retail service area during such periods caused by drought, water supply contamination, system outage due to failure or damage of water system, or other emergency conditions. In addition, if the available supply is less than the anticipated demand, the City will consider and implement additional emergency demand management measures, as outlined in the Water Conservation Code (Appendix A). All measures promulgated in the Water Conservation Code are considered part of this Plan.

C. Water System Capacity

Austin Water currently serves approximately 212,000 connections with over 3,500 miles of water mains. In 2011, Austin Water served an approximate retail service area population of 840,000 and a wholesale customer population of 52,000, for a total service population of approximately 892,000. Water is drawn from the Colorado River (on Lake Austin) into two water treatment plants (WTP) with a combined capacity to treat and distribute 285 million gallons per day (MGD). The next increment of capacity that will be added is 50 MGD with the City of Austin's Water Treatment Plant #4 project, which will draw from Lake Travis. Water Treatment Plant #4

is projected to increase the system capacity to approximately 335 MGD upon completion of Phase 1. Table 1 has a summary of the current plant capacities.

Table 1. Existing City of Austin Water Treatment Plants and Capacity

Plant Name	Year Constructed	Treatment Capacity (million gallons/day)
Davis	1954	118 ^a
Ullrich	1969	167 ^b
<i>Total</i>		285

a) Expanded in 1963, 1977, 1987, and 1999.

b) Modernized in 1993 to meet the higher standards of the Safe Drinking Water Act and expanded in 1987 and 2000. Capacity expansion from 100 to 167 MGD was completed in 2008.

Section III: Trigger Conditions and Goals

The City of Austin has established a Conservation Stage containing year-round water conservation measures that apply to its retail water customers. Residential and commercial facilities may use spray irrigation either before 10:00 a.m. or after 7:00 p.m. only on a designated outdoor water use day. Commercial patio misters may operate only between 4:00 p.m. and midnight. All customers are limited to no more than two designated outdoor water use days per week, which allows up to thirty hours of irrigation.

The City Manager or his/her designee monitors water supply, water system capacity and demand conditions to determine when to consider implementing additional conservation actions for the City's retail water customers as outlined in the demand, supply, and emergency triggers listed in Table 2.

Table 2. Demand, Supply and Emergency Triggers

	Trigger	Goal	Action^a	Irrigation Restriction^a	End Condition
Demand Triggers	260 million gallons per day (MGD) for 3 consecutive days	Reduce water use by 15% of 260 MGD	City Manager may order Drought Response Stage Two Regulations	1x/week (10-15 hours)	City Manager ends based on daily supply and demand of water
	270 MGD for one day	Reduce current water use by 15% of 270 MGD	City Manager may order Drought Response Stage Two Regulations	1x/week (10-15 hours)	City Manager ends based on daily supply and demand of water
Supply Triggers	Combined lake storage falls below 1.4 million acre-feet (MAF)	Reduce current water use by 5%	City Manager may order Drought Response Stage One Regulations	2x/week (20-30 hours)	Considered when combined storage reaches 1.4 MAF and expected to remain above 1.4 MAF for four months
	Combined lake storage falls below 900,000 acre-feet (AF)	Reduce current water use by 10 to 20%	City Manager may order Drought Response Stage Two Regulations	1x/week (10-15 hours)	Considered when combined storage reaches 1.1 MAF and projected to stay above 900,000 AF for four months ^b
	Combined lake storage falls below 600,000 AF or a drought worse than the drought of record is declared	Reduce water use by a minimum of 20% from a baseline approved by LCRA, which may account for City's conservation measures	City Manager may order Drought Response Stage Three Regulations or Additional Restrictions as necessary to meet pro rata curtailment requirements	1x/week (6 hours)	City Manager determines that condition is no longer required to meet mandatory curtailment targets; combined storage expected to remain above 600,000 AF for four months
Emergency Triggers	As determined by City Manager, system outage, equipment failure, contamination of water source or other emergencies	Reduce water use to levels deemed necessary	City Manager may order Emergency Stage Four Regulations or Additional Restrictions	Prohibited	City Manager ends based on daily water demand or the end of supply constraints

^a Detailed information about the watering schedule and additional conservation measures for each stage can be found in Appendix A

^b The City Manager may also base a determination to end regulations on other conditions and an assessment of all relevant circumstances which in the judgment of the City Manager merit such action.

Procedures for the granting of variances to the watering regulations are contained in the City of Austin Water Conservation Code and may be authorized if necessary to protect the public health and safety. Violations are subject to criminal and administrative penalties as provided in the Code.

Section IV: Wholesale Contract Provisions

New wholesale contracts include standard language requiring that the customer adhere to the City's peak water management ordinance. Generally, wholesale customers in a new contract are also required to establish a water conservation program similar to the one administered by the City. Customers with older contracts not requiring water conservation provisions are requested to voluntarily implement water conservation measures similar to those imposed by the City.

Pro rata curtailment shall be done in accordance with Texas Water Code §11.039. All new, renewed, or extended wholesale supply contracts will also include a provision that water shall be distributed on a pro rata basis in the event of a water shortage resulting from drought.

Enforcement actions for non-compliance with either the peak water management ordinance or pro rata water reductions by wholesale customers will vary according to the specifics of each wholesale customer's contract.

Section V: Public Involvement

The revisions to the Water Conservation Code, including those relating to drought management, were presented at four public meetings, as well as at meetings of the City advisory boards (Water and Wastewater Commission, Resource Management Commission). The opportunities for Austin Water's retail and wholesale water customers to offer input into the development of the Plan included:

- A series of public workshops to gather citizen, wholesale customer, and stakeholder feedback on the current Water Conservation Code (Chapter 6-4 of City Code) and drought response measures, and how to better regulate water use during future droughts. Input received during these workshops was used in revising the Water Conservation Code and developing the Plan.
- A forum at SpeakUpAustin.org for interested parties to get information and leave feedback on revisions to the Water Conservation Code.
- Presentations at meetings of the Water and Wastewater Commission and the Resource Management Commission. Their resolutions supporting the Plan are in Appendix C.

Section VI: Public Notification and Education

The City will provide its wholesale and retail water customers with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of press releases, newspaper advertisements, web page updates, presentations to community organizations and neighborhood groups, meetings with

wholesale customers, and other outreach methods as appropriate. The City will also make water conservation-related public information materials, including brochures and program information, available to its wholesale water customers for distribution to their retail customers.

Section VII: Coordination with Regional Planning Groups (RPG)

The City of Austin has provided a copy of this Plan to the Lower Colorado Regional Planning Group (Region K). A copy of the transmittal letter to the planning group is provided in Appendix D.

Section VIII: TCEQ Notification

The City shall notify the executive director of the Texas Commission on Environmental Quality within five (5) business days of the implementation of any mandatory provisions of the Drought Contingency Plan.

Section IX: Plan Review and Updates

This Plan was developed to meet the requirements in 30 TAC § 288.20 and § 288.22 to submit a Drought Contingency Plan and provide the community and water customers with essential drought contingency response information, regulations, and services. The Plan will be reviewed at minimum every five (5) years and updated as needed based on major developments in Austin's water service area. The next scheduled plan review and update will occur in 2014.

APPENDIX A: Water Conservation Code

ARTICLE I. GENERAL PROVISIONS.

§ 6-4-1 WATER USE MANAGEMENT PLAN.

This chapter establishes a Water Use Management Plan.

§ 6-4-2 DEFINITIONS.

Unless a different definition is expressly provided, in this chapter:

- (1) ACTION of THE UTILITY means an action taken by Austin Water Utility pursuant to this chapter.
- (2) AQUATIC LIFE means a vertebrate organism dependent upon an aquatic environment to sustain its life.
- (3) AUXILIARY WATER means a water supply from a source other than Austin Water Utility's potable water supply.
- (4) AWU AUTHORIZED IRRIGATION INSPECTOR means an Irrigation Inspector licensed by the Texas Commission on Environmental Quality who has in addition both passed a director-approved class in landscape irrigation and has been awarded Austin Water Utility (AWU) Authorized Irrigation Inspector status in accordance with rules adopted pursuant to this chapter.
- (5) COMMERCIAL FACILITY means a site with five or more dwelling units, or a municipal, business, or industrial building and the associated landscaping, but does not include the fairways, greens, or tees of a golf course.
- (6) COMMERCIAL NURSERY means a facility where plant nursery stock, trees, seedlings, turf, shrubs, flowers, herbs, crops or other plant materials are cultivated, grown, stored, or maintained prior to retail consumer, installer, or reseller purchase, use, consumption, or installation of the materials at any location other than the commercial nursery.
- (7) COMMON AREA means an area held, designed, or designated for the common use of the owners or occupants of a townhouse project, planned unit development, apartment, condominium, mobile home park, or subdivision.
- (8) COSMETIC POWER WASHING means treatment or cleaning of a surface with specialized equipment that uses a spray of or directed water for the cosmetic cleaning of buildings, vehicles or other mobile equipment, or outdoor surfaces. It does not include industrial cleaning, cleaning associated with manufacturing activities, hazardous or toxic waste cleaning, or cleaning necessary to remove graffiti.
- (9) DESIGNATED OUTDOOR WATER USE DAY means the day prescribed by rule on which a person is permitted to irrigate outdoors.
- (10) DIRECTOR means the Director of the Austin Water Utility and includes a person the Director has designated to administer or perform any task, duty, function, role, or action related to this Chapter or on behalf of the Director.

- (11) DRIP IRRIGATION means a method of irrigation which is typically installed below ground and consists of porous piping that allows the application of water at a slow and constant rate.
- (12) DROUGHT CONTINGENCY PLAN means a strategy or combination of strategies for temporary supply management and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies required by Texas Administrative Code Title 30, Chapter 288, Subchapter B.
- (13) FOUNDATION WATERING means an application of water to the soils directly abutting the foundation of a building, structure, or improvement on land.
- (14) HOSE-END SPRINKLER means an above-ground water distribution device that may be attached to a garden hose.
- (15) MULTI-FAMILY PROPERTY means property containing five or more dwelling units.
- (16) GOVERNMENT PROPERTY means property owned or operated by a federal, state, or local governmental unit, entity, agency, or subdivision for a public purpose.
- (17) NEW LANDSCAPE means vegetation:
 - (a) installed at the time of the construction of a residential or commercial facility;
 - (b) installed as part of a governmental entity's capital improvement project;
 - (c) installed to stabilize an area disturbed by construction; or
 - (d) that alters more than 500 contiguous square feet of an existing landscape.
- (18) ORNAMENTAL FOUNTAIN means an artificially created structure from which a jet, stream, or flow of water emanates and is not utilized for the preservation of aquatic life.
- (19) PERMANENTLY INSTALLED IRRIGATION SYSTEM means a custom-made, site-specific system of delivering water generally for landscape irrigation via a system of pipes or other conduits installed below ground. These systems may integrate or utilize PVC pipe for water distribution.
- (20) PERSON means any natural person or legal entity such as an individual, business, partnership, association, firm, corporation, governmental, or other natural, business, or legal entity that receives, requests, manages, uses, maintains, or is responsible for water utility service at a service address, whether or not the person or entity is a customer or account holder of the Austin Water Utility.
- (21) PREMISE means the outdoor area of property not enclosed by fencing or walls or containing living areas, or areas for storing vehicles or other motorized equipment.
- (22) RECLAIMED WATER means reclaimed municipal wastewater that is under the direct control of the City treatment plants, satellite facilities, or a treatment plant with which the City contracts, and that has been treated to

a quality that meets or exceeds the minimum standards of the 30 Texas Administrative Code, Chapter 210.

- (23) RESIDENTIAL FACILITY means a site with four or fewer dwelling units.
- (24) SOAKER HOSE means a perforated or permeable garden-type hose or pipe that is laid above ground that provides irrigation at a slow and constant rate.
- (25) TEMPORARILY INSTALLED IRRIGATION SYSTEM means a universally-applicable above ground irrigation system that commonly uses a flexible hose or hardened pipe to deliver water to a moveable water distribution device.
- (26) THE UTILITY means the Austin Water Utility.
- (27) VEHICLE WASH FACILITY means a permanently-located business that washes vehicles or other mobile equipment with water or water-based products, including but not limited to self-service car washes, full service car washes, roll-over/in-bay style car washes, and facilities managing vehicle fleets or vehicle inventory.
- (28) XERISCAPE means a landscape which employs certain principles of design and installation which conserve water and energy and where the plant material, at mature growth, will provide, minimally, 50% of the new landscape's areal coverage. The plant material must consist of plants taken from a plant list provided by Austin Water Utility and identified as very low water usage and low water usage plants. The plant list may be amended as needed.

§ 6-4-3 APPLICABILITY OF REGULATIONS; AFFIRMATIVE DEFENSES.

- (A) This chapter applies to a person who uses, directs, manages, or allows the use of potable water supplied by Austin Water Utility. The chapter does not apply to a person who uses, directs, manages, or allows the use of auxiliary water or reclaimed water unless the auxiliary water or reclaimed water is mixed with potable water supplied by Austin Water Utility.
- (B) It is an affirmative defense to a violation of this chapter that the use of water that gave rise to the violation was consistent with the agreed upon terms and conditions of a water service contract with a wholesale water customer and that the use did not constitute water waste.
- (C) It is an affirmative defense to a violation of this chapter that the use of water that gave rise to the violation properly utilized solely reclaimed water, did not endanger public health, safety, or property, and did not constitute water waste.
- (D) It is an affirmative defense to a violation of this chapter that the act or omission that gave rise to the violation occurred solely because a documented emergency that prevented strict compliance, and that the act or omission did not disrupt the availability of adequate water for other public emergency response or fire fighting or fire suppression purposes.

§ 6-4-4 COMPLIANCE REQUIRED.

A person may not use or permit the use of water in a manner that conflicts with the requirements of this chapter or in an amount greater than permitted by this chapter.

§ 6-4-5 FEES AND CHARGES.

- (A) Fees and charges assessed pursuant to this chapter shall be set by City Council under a separate ordinance or, where permitted, by the director by rule.
- (B) Fees and charges associated with enforcement of this chapter shall be clearly identified on the customer's utility billing invoice or on the order assessing the fee or charge, except as where otherwise provided by local ordinance or adopted rule.

§ 6-4-6 INSPECTIONS AND RIGHT OF ENTRY.

- (A) The Director or director's designee may:
 - (1) conduct an inspection of any property, equipment or improvement to determine compliance with this chapter; and
 - (2) require an owner, occupant, operator, manager, or user of a property, equipment, or improvement to correct a violation of this chapter.
- (B) The Director or director's designee may enter a commercial facility or premise to inspect the facility upon probable cause that a violation of this chapter may have occurred at the location, provided the Director or designee:
 - (1) presents official identification to an employee of the facility and expressly requests entry to inspect; and
 - (2) informs the employee of the facility of this section; or
 - (3) makes a reasonable effort to locate the owner of unoccupied property to request entry; or
 - (4) limits the inspection of commercial properties not opened for business at the time of inspection to areas accessible by the public during periods of business closure.
- (C) An inspection of a residential property shall be conducted from:
 - (1) areas accessible to the general public; or
 - (2) a restricted access area only after the Director or director's designee has presented official identification to the property manager, owner, occupant, or other representative, and obtained consent to enter a restricted access area.
- (D) If consent for entry necessary to conduct an inspection to determine compliance with this chapter is required but denied, withdrawn, limited, or impaired, the Director or designee may seek any recourse available under applicable law to obtain entry and inspection.
- (E) An employee may enter onto a privately owned common area for the purposes of conducting inspections. The designee may seek recourse to available law to obtain entry into areas with restricted access.
- (F) A person seeking a variance pursuant to Article II, Division 3 (*Variances: Alternative Compliance*) or participation in an Austin Water Utility Conservation Program provides a designee of the director the right to enter the subject premise to

conduct inspections and investigations necessary to determine compliance with this chapter.

- (G) Conducting or failing to conduct an onsite inspection does not impose liability on the City, a City officer or employee, or a City representative for damage to a person or property.

§ 6-4-7 ADMINISTRATIVE RULES.

- (A) The director shall adopt administrative rules for the implementation of this chapter.
- (B) Before the director may adopt or amend a nonemergency rule, the director shall present for consideration the proposed rule to the Water and Wastewater Commission and the Resource Management Commission. In cases of emergency rule adoption, the director shall present the rule to the Water and Wastewater Commission and the Resource Management Commission as soon as practicable following emergency rule adoption.
- (C) The rules shall provide for designated outdoor water use days.
- (D) The rules shall provide for a commercial facility irrigation evaluation program and will include provisions for the assessment and the collection of any associated fees.
- (E) The rules shall provide water efficiency standards for vehicle washing equipment.
- (F) The rules shall be available for inspection at the Austin Water Utility administrative offices during normal business hours.
- (G) Austin Water Utility shall maintain records of Irrigation Inspectors holding AWU Authorized Irrigation Inspector status in accordance with rules adopted pursuant to this chapter.

ARTICLE II: WATER USE MANAGEMENT

Division 1: Regulated Activities

§ 6-4-10 FACILITIES REGULATED.

- (A) Effective January 1, 2013, the owner of a commercial, multi-family residential or City municipal facility situated on property equal to or greater than 1.0 acre in size shall obtain an evaluation of any permanently installed irrigation system conducted at a frequency prescribed by rules adopted pursuant to this chapter. The irrigation evaluation shall, at a minimum:
 - (1) be conducted by an AWU Authorized Irrigation Inspector;
 - (2) be documented on forms provided by Austin Water Utility; and
 - (3) verify that the irrigation system operating on the property is a properly permitted system that complies with all applicable requirements of this chapter, rules adopted pursuant to this chapter, and other applicable technical codes.
- (B) Effective January 1, 2013, the operators of vehicle washing facilities shall provide an evaluation of all vehicle washing equipment conducted at a frequency prescribed by

rules adopted pursuant to this chapter. The vehicle washing facility evaluation shall, at a minimum:

- (1) be conducted by a licensed plumber of the vehicle washing facility's choice;
- (2) be documented on forms provided by Austin Water Utility; and
- (3) establish that the equipment is operating in compliance with equipment standards prescribed by rules adopted pursuant to this chapter.

- (C) Restaurants, bars, and other commercial food or beverage establishments may not provide drinking water to customers unless a specific request is made by the customer for drinking water.
- (D) Effective January 1, 2013, the owner or operator of a hotel, motel short term rental or other establishment that offers or provides lodging or rental accommodations for compensation shall offer a towel and linen reuse water conservation option to its lodgers, renters, or customers and maintain in each applicable guest room, suite, or property informational signage to communicate information relating to this requirement and to offer the opportunity for guest participation.

§ 6-4-11 GENERAL REGULATIONS.

- (A) A person may not conduct a charity car wash unless it occurs at an authorized vehicle washing facility meeting the requirements of Section 6-4-10(B) (*Facilities Regulated*) utilizing only the equipment of the facility that complies with this chapter and any associated rules.
- (B) A person may not use commercially operated cosmetic power/pressure washing equipment unless it is fitted with a water recycling unit and a spray nozzle using no more than 3.5 gallons of water per minute and employing a working trigger shut-off with a protective weep mechanism.
- (C) A person may not operate an ornamental fountain unless the fountain utilizes recirculated water.
- (D) A person may not engage in foundation watering unless the watering occurs on a designated outdoor water use day for the property during the irrigation time period prescribed by this chapter or by rule.
- (E) Except for municipal uses associated with law enforcement or public health and safety, all new commercial developments or redevelopments located within 250 feet of a reclaimed water distribution line are required to obtain and utilize permitted connections to reclaimed water for irrigation, cooling, and other significant non-potable water uses.
- (F) A person may not use potable water for roadway base preparation or dust abatement work, applications, or other activity on any project or at any location where reclaimed water is available within one mile of the location or project site if the use of nonpotable or reclaimed water will not jeopardize public or environmental health or safety, including the safety of the location or health and safety of the project workers or residents. A person using reclaimed or nonpotable water must do so in accordance with all applicable health, safety, and environmental regulations, and the rules adopted pursuant to this chapter.

§ 6-4-12 WATER WASTE PROHIBITED.

- (A) The section prohibits the waste of water.
- (B) A person may not:
 - (1) fail to repair a controllable leak, including but not limited to a broken sprinkler head, a broken pipe or a leaking valve; or
 - (2) operate an irrigation system with:
 - (a) a broken head; or
 - (b) a head that is out of adjustment and the arc of the spray head is over a street, parking area, or other impervious surface; or
 - (c) a head that is misting because of high water pressure; or
 - (3) allow water flow during irrigation that:
 - (a) runs, flows, or streams in a way that extends into a street, parking area, or other impervious surface for a distance of 50 feet or greater; or
 - (b) allows water to pond to a depth greater than 0.25 inch in a street, parking area, or on other impervious surfaces.
- (C) It is an affirmative defense to a charge of a violation of Subsection (B) that the act or omission charged in the complaint occurred during necessary repair, testing, or calibration of a new or existing irrigation or plumbing system, that the person performing the system testing, repair, or calibration was present at the site at the time of the act or omission charged in the complaint, and that the irrigation or plumbing system and its testing, repair, or calibration work at issue complied at the time with all applicable regulations, permit and development approval requirements.
- (D) It is an affirmative defense to a charge of a violation of Subsection (B)(1) that the property where the leak occurred has been officially accepted into a government-assisted housing repair program, the condition is within the scope of repairs the government has agreed to fund or repair, and the person charged with the violation or the property where the violation occurs is not in default of any obligation of the government-assistance housing repair program at the time of the violation charged.

§ 6-4-13 WATER CONSERVATION GUIDELINES.

- (A) The director shall recommend and the city manager shall adopt water conservation guidelines that include:
 - (1) policies for compliance by city or other governmental departments; and
 - (2) the criteria for determining when a conservation stage takes effect or terminates.
- (B) The city manager shall update the guidelines if the city manager determines that changed conditions of the city's water supply system, regulatory obligations, or other environmental or situational factors warrant or necessitate guideline adjustment.
- (C) The city manager may order that the water use restrictions of *Drought Response Stage One Regulations, Drought Response Stage Two Regulations, Drought Response Stage Three Regulations, or Emergency Stage Four Regulations* take effect after determining that the order is necessary to protect the public health, safety, or welfare. The City Manager may base a conservation, drought, or

emergency stage declaration or termination on any condition, occurrence, factor, or an assessment of all relevant circumstances that in the judgment of the City Manager support such action for any lawful purpose. The order is effective immediately following official public notice.

- (D) Water use regulations of the Water Conservation Stage (Section 6-4-15) remain in effect until such time as the city manager orders termination of the stage in accordance with section 6-4-13(C), (*Water Use Guidelines*). Unless a drought or emergency stage is expressly declared by order of the City Manager, water use regulations of the Water Conservation Stage (section 6-4-15) automatically resume by default immediately upon any ordered termination of any drought or emergency stage.
- (E) Any outdoor water use subject to the provisions of this Chapter shall occur only on a day designated for the applicable water use activity, property/facility type, and street number address classification indicated in the following table. A person may not conduct, authorize, or permit outdoor water use except in accordance with the designation schedule set out in the following table. In the following table, “EVEN” or “ODD” correspond to the street number of the physical property address where the outdoor water use occurs. The table below shall be referred to as “the Outdoor Water Use Schedule”.

Conservation Stage and Drought Response Stage 1 Watering Schedule		
Commercial/ Multifamily	Residential EVEN	Residential ODD
Tuesday and/or Friday	Sunday and/or Thursday	Wednesday and/or Saturday
Drought Response Stage 2 and Drought Response Stage 3 Watering Schedule		
Property Type		Watering Day
Residential - Hose- End EVEN		Sunday
Public Schools		Monday
Commercial/Multi Family -Automatic EVEN		Tuesday
Residential - Automatic ODD		Wednesday
Residential - Automatic EVEN		Thursday
Commercial/Multi Family - Automatic ODD		Friday

Residential Property – Hose-end ODD	Saturday
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- (F) The director may order temporary modification or adjustment to the Outdoor Water Use Schedule in the event of an unusual water system operational event, catastrophic occurrence, severe weather event, or other emergency, disaster situation, or occurrence necessitating the adjustment. A temporary modification or adjustment to the Outdoor Water Use Schedule shall be effective immediately upon official public notice and shall continue in effect for a period not to exceed fifteen (15) consecutive days. The director shall provide official public notice of the date upon which any temporary modification or adjustment to the Outdoor Water Use Schedule expires and the standard Outdoor Water Use Schedule resumes.
- (G) The director shall monitor the daily supply and demand for water and make recommendations to the city manager about whether or when to implement or terminate water use restrictions in accordance with the Drought Contingency Plan in effect and kept on file with Austin Water Utility or when relevant to any other circumstances effecting continuity of service or public health, safety, or welfare.

§ 6-4-14 EXEMPTIONS.

- (A) Exemptions under this subsection apply to Section 6-4-15 (*Water Conservation Stage*), Section 6-4-16 (*Drought Response Stage One Regulations*), Section 6-4-17 (*Drought Response Stage Two Regulations*), Section 6-4-18 (*Drought Response Stage Three Regulations*), and Section 6-4-19 (*Emergency Stage Four Regulations*) and are:
- (1) The use of water necessary to protect the health, safety, or welfare of the public;
 - (2) The use of reclaimed or auxiliary water that is not supplemented by or mixed with potable water supplied by Austin Water Utility;
 - (3) Necessary use of water for lawful repair of a water distribution facility, flushing of utility lines or residential or commercial plumbing lines;
 - (4) Necessary use of water, other than for landscape irrigation, for a governmental entity performing a governmental function, including a capital improvement construction project;
 - (5) Use of water, other than for landscape irrigation, necessary to meet express requirements of federal, state, or local permits related to land development that include but are not limited to roadway base preparation, dust control, maintenance of trees subject to preservation restrictions or requirements, concrete or asphalt work, or modification or construction of improvements;
 - (6) Necessary washing or sanitizing to prevent public health or disease transmission risk associated with liquid, solid, or particulate residue in or on vehicles, containers, or equipment lawfully used to maintain, process, or transport food, perishables, garbage, liquid or solid waste, organic materials, or recyclables; or
 - (7) Water use immediately necessary for or related to fire fighting, fire prevention, or fire suppression activity or operations conducted because of actual risk to public

or environmental health, safety, or welfare, life, or property associated with the presence of an uncontrolled fire on or approaching any person or property.

- (B) The following activities shall be exempt from the application of Section 6-4-15 (*Water Conservation Stage*), Section 6-4-16 (*Drought Response Stage One Regulations*), Section 6-4-17 (*Drought Response Two Regulations*), and Section 6-4-18 (*Drought Response Stage Three Regulations*):

(1) Outdoor irrigation:

- (a) using a hand-held hose or refillable watering vessel;
- (b) using drip irrigation;
- (c) of trees using an automatic bubbler system or soaker hose placed within the drip-line of the tree canopy;
- (d) of vegetable gardens using a soaker hose;
- (e) of athletic fields used for organized sports practice, competition, or exhibition events when the irrigation is necessary to protect the health and safety of the players, staff, or officials present for the athletic event;
- (f) immediately following a commercial lawn treatment application by an applicator who possesses required licensure as applicable for use of such substances including but not limited to fertilizer, pesticides, and herbicides, provided receipts documenting such application and the applicator's credentials are provided upon request to a designee of the director; or
- (g) of plant material at a commercial nursery.

(2) Water use:

- (a) necessary for repair or installation of a permanently installed landscape irrigation system when the person performing the irrigation work is present in the area of irrigation; or
- (b) necessary for the repair, testing, or installation of an ornamental fountain when the person performing the testing, repair or installation is present.

- (C) The following activities shall be exempt from the application of Section 6-4-15 (*Water Conservation Stage*), Section 6-4-16 (*Drought Response Stage One Regulations*) requirements:

1. Water use necessary to comply with federal, state, or local land development permits requiring the establishment of new landscaping; and
2. Irrigation of areas documented on a City approved and released site plan as golf course fairways, greens, or tees.

§ 6-4-15 WATER CONSERVATION STAGE.

- (A) This section prescribes water conservation regulations and applies during the periods prescribed by Section 6-4-13(D) (*Water Conservation Guidelines*).

- (B) A person may not irrigate outdoors at a residential facility or a commercial facility except on a designated outdoor water use day for the location as set forth in Section 6-4-13 (E) .
- (C) A person may not irrigate outdoors at a residential facility or a commercial facility between the hours of 10:00 a.m. and 7:00 p.m., even if the irrigation occurs on a day designated by rules as the outdoor water use day for the location.
- (D) A person may not operate a patio mister at a commercial facility except between the hours of 4:00 p.m. and midnight.

§ 6-4-16 DROUGHT RESPONSE STAGE ONE REGULATIONS.

- (A) This section prescribes Drought Response Stage One regulations and applies during the periods prescribed by Section 6-4-13(C) (*Water Conservation Guidelines*).
- (B) A person may not irrigate outdoors at a residential facility or a commercial facility except on a designated outdoor water use day for the location as set forth in Section 6-4-13 (E).
- (C) A person may not irrigate outdoors at a residential facility or a commercial facility with an automatic irrigation system between the hours of 5:00 a.m. and 7:00 p.m., even if the irrigation occurs on a day designated by rule as the outdoor water use day for the location.
- (D) A person may not irrigate outdoors at a residential facility or a commercial facility with a hose-end sprinkler system between the hours of 10:00 a.m. and 7:00 p.m., even if the irrigation occurs on a day designated by rule as the outdoor water use day for the location.
- (E) A person may not operate a patio mister at a commercial facility except between the hours of 4:00 p.m. and midnight.
- (F) A person may not use or allow the use of water to wash or rinse an automobile, truck, trailer, boat, airplane, motorcycle, or other mobile equipment or vehicle. A person commits a separate offense for each vehicle or piece of equipment washed in violation of the terms and conditions of this Subsection. It is an affirmative defense to a violation of this subsection that the water use occurred at a vehicle wash facility for the water use charged in the complaint.

§ 6-4-17 DROUGHT RESPONSE STAGE TWO REGULATIONS.

- (A) This section prescribes Drought Response Stage Two Regulations and applies during any Stage Two period ordered by the city manager in accordance with Section 6-4-13(C) (*Water Conservation Guidelines*).
- (B) A person may not irrigate outdoors at a residential facility or a commercial facility except on the designated outdoor water use day for the location as set forth in Section 6-4-13 (E).
- (C) A person may not irrigate outdoors at a residential facility or a commercial facility with an automatic irrigation system between the hours of 5:00 a.m. and 7:00 p.m. even if the irrigation occurs on a day designated by rule as the outdoor water use day for the location.

- (D) A person may not irrigate outdoors at a residential facility or a commercial facility with a hose-end sprinkler system between the hours of 10:00 a.m. and 7:00 p.m. even if the irrigation occurs on a day designated by rule as the outdoor water use day for the location.
- (E) Operation of a charity car wash is prohibited. It is not a defense to a violation of this section that the charity car wash occurred on the designated outdoor water use day for the location as prescribed by rule.
- (F) A person may not use or allow the use of water to wash or rinse an automobile, truck, trailer, boat, airplane, motorcycle, or other mobile equipment or vehicle. A person commits a separate offense for each vehicle or piece of equipment washed in violation of the terms and conditions of this Subsection. It is an affirmative defense to a violation of this subsection that the water use occurred at a vehicle wash facility for the water use charged in the complaint.
- (G) A person may not irrigate a golf fairway unless the irrigation occurs between the hours of midnight and 5:00 a.m. or between the hours of 7:00 p.m. and midnight on the designated outdoor water use day applicable to the property. A person may irrigate a golf course green or tee every other day only if the irrigation of the location is consistent with a noticed exception establishing the schedule for the property submitted on forms required by Austin Water Utility and approved by the director.
- (H) A person may not operate an ornamental fountain with an aerial emission of water or aerial fall of water greater than four inches other than for aeration necessary to preserve habitat for aquatic life.
- (I) A person may not operate a patio mister at a commercial facility except between the hours of 4:00 p.m. until midnight.

§ 6-4-18 DROUGHT RESPONSE STAGE THREE REGULATIONS.

- (A) This section prescribes Drought Response Stage Three Regulations and applies during a period ordered by the city manager in accordance with Section 6-4-13(C) (*Water Conservation Guidelines*).
- (B) A person may not irrigate outdoors at a residential facility or a commercial facility except on a designated outdoor water use day for the location as set forth in Section 6-4-13 (E).
- (C) A person may not irrigate outdoors at a residential facility or a commercial facility with an automatic irrigation system between the hours of 6:00 a.m. and midnight even if the irrigation occurs on a day designated by rule as the outdoor water use day for the location.
- (D) A person may not irrigate outdoors at a residential facility or a commercial facility with a hose-end sprinkler system except between the hours of 7:00 a.m. and 10:00 a.m. or between the hours of 7:00 p.m. and 10:00 p.m. even if the irrigation occurs on a day designated by rule as the outdoor water use day for the location.
- (E) Operation of a charity car wash is prohibited. It is not a defense to a violation of this section that the charity car wash occurred on a designated outdoor water use day for the location as prescribed by rule.
- (F) A person may not use or allow the use of water to wash or rinse an automobile, truck, trailer, boat, airplane, motorcycle, or other mobile equipment or vehicle. A

person commits a separate offense for each vehicle or piece of equipment washed in violation of the terms and conditions of this Subsection. It is an affirmative defense to a violation of this subsection that the water use occurred at a vehicle wash facility for the water use charged in the complaint.

- (G) A person may not irrigate a golf fairway unless the irrigation occurs between the hours of midnight and 5:00 a.m. or between the hours of 7:00 p.m. and midnight on the designated outdoor water use day applicable to the property. A person may irrigate a golf course green or tee every other day only if the irrigation of the location is consistent with a noticed exception establishing the schedule for the property submitted on forms required by the Utility and approved by the director.
- (H) The filling of spas is prohibited.
- (I) A person may not operate a splash pad except during the hours and subject to the restrictions set forth in a rule adopted pursuant this chapter.
- (J) A person may not operate a patio mister at a commercial facility except between the hours of 4:00 p.m. and 8:00 p.m.
- (K) A person may not operate an ornamental fountain with an aerial emission of water or aerial fall of water greater than four inches in distance other than for aeration necessary to preserve habitat for aquatic life.

§ 6-4-19 EMERGENCY STAGE FOUR REGULATIONS

This section prescribes Emergency Stage Four Regulations and applies during a time period ordered by the city manager in accordance with Section 6-4-13(C) (*Water Conservation Guidelines*).

- (A) A person may not use or allow the use of water to irrigate vegetation outdoors.
- (B) A person may not use or allow the use of water to test or repair a permanently installed irrigation system or drip irrigation system.
- (C) A person may not use or allow the use of water to wash or rinse an automobile, truck, trailer, boat, airplane, or other mobile equipment.
- (D) A person may not use or allow the use of water to operate an ornamental fountain or structure making similar use of water, other than the aeration necessary to preserve habitat for aquatic life.
- (E) A person may not use or allow the use of water to fill, clean, rinse, supplement, operate or maintain a tub, spa, fountain, pond, pool, or other container, feature, or improvement used, designed, maintained, or intended for aesthetic, athletic, or recreational purpose. This does not apply to the filling of non-aerating birdbaths or animal watering containers.
- (F) A person may not operate a splash pad or other similar aesthetic or recreational use of water.
- (G) A person may not use or allow the use of water to wash, rinse, or treat any outdoor surface including but not limited to a sidewalk, driveway, parking area, street, tennis court, patio, or other paved area or outdoor building surface.
- (H) A person may not use or allow the use of water to operate a patio mister.
- (I) A person may not use or allow the use of water in or related to a chemical lawn treatment unless specifically authorized in accordance with Section 6-4-30(G)(2) (*Variance*).

- (J) A person may not use or allow the use of water for watering the ground around a building foundation to prevent or address foundation cracking except as specifically authorized in accordance with Section 6-4-30(G)(1) (*Variance*).

Division 2. Additional Restrictions

§ 6-4-20 DIRECTOR'S AUTHORITY TO IMPOSE ADDITIONAL RESTRICTIONS.

- (A) The director may implement mandatory water restrictions in addition to those prescribed by Article II, Division 1 (*Regulated Activities*) to protect public health, safety, welfare, infrastructure or available resources in the event of an unusual water system operational event, catastrophic occurrence, severe weather event, or other emergency, disaster situation, or occurrence necessitating additional restrictions.
- (B) The director may require municipal wholesale customers to curtail water use on a pro rata basis, in accordance with Section 11.039 (*Distribution of Water During Shortage*) of the Texas Water Code and as determined by any rules or plans adopted pursuant to this chapter.
- (C) The director may implement additional mandatory water use restriction effective immediately upon official public notice.

Division 3. Variances; Alternative Compliance.

§ 6-4-30 VARIANCE.

- (A) The director may grant a variance from a requirement of this chapter if the director determines that special circumstances exist and that:
- (1) strict compliance with the provisions at issue adversely affects the health, safety, welfare or sanitation of the public, the applicant, or the environment; or
 - (2) strict compliance with the provisions at issue substantially threatens the applicant's primary source of income, the applicant is employing all reasonable water conservation measures, and approval of the variance will not result in water waste.
- (B) The director may not grant a variance from a requirement of this chapter based on an alleged adverse impact to the environment unless the applicant submits an environmental impact study, hydrological analysis, and additional data or documentation as required by the director to establish that the specific variance requested is necessary to avoid or mitigate a significant adverse impact on an endangered or listed protected plant, animal, or aquatic species or critical environmental feature present on the property or to maintain the traditional and natural character of a critical environmental feature.
- (C) The director may grant a variance from a requirement of Section 6-4-15 (*Water Conservation Stage*), Section 6-4-16 (*Drought Response Stage One Regulations*), Section 6-4-17 (*Drought Response Stage Two Regulations*), or Section 6-4-18 (*Drought*

Response Stage Three Regulations) only if the applicant establishes at least one of the following:

- (1) an AWU Authorized Irrigation Inspector has determined that, due to its site-specific conditions, a site cannot be watered with an average coverage of 0.5 inches within the time limits prescribed by this chapter; and as applicable, a current irrigation system evaluation required pursuant to Section 6-4-10(A) (*Facilities Regulated*) is on file with Austin Water Utility; or
- (2) the property owner or operator has a documented medical hardship or qualifying disability that prevents the person's strict adherence to a requirement of this chapter; or
- (3) watering in a manner or at a time inconsistent with a requirement of this chapter is necessary for treatment of tree diseases or for pest control prescribed by a licensed arborist or pest control professional.

(D) The director may grant a variance from a requirement of Section 6-4-15 (*Water Conservation Stage*), Section 6-4-16 (*Drought Response Stage One Regulations*), for a newly installed landscape. If the landscape installation is required in order to obtain a certificate of occupancy for a newly constructed single family home, the applicant shall provide a completed notice to the director on the form provided by Austin Water at least one full business day before the landscape is installed.

(E) A variance granted under Subsection 6-4-30(D) (*Variance*) is subject to and shall include the following conditions:

- (1) the applicant may water a newly installed landscape no more than 0.5 inches in one day; and
- (2) watering of the newly installed landscape must comply with the following schedule:
 - (a) for the first 10 days after installation, watering is permitted daily;
 - (b) for the 11th through 20th day after installation, watering is permitted every other day before 10:00 a.m. and after 7:00 p.m.; and
 - (c) for the 21st through 30th day after installation, watering is permitted every third day before 10:00 a.m. and after 7:00 p.m.

(F) The director may grant a variance from a requirement of Section 6-4-15 (*Water Conservation Stage*), Section 6-4-16 (*Drought Response Stage One Regulations*), Section 6-4-17 (*Drought Response Stage Two Regulations*) or Section 6-4-18 (*Drought Response Stage Three Regulations*) for a newly installed landscape if

- (1) the new landscaping is classified as Xeriscaping in accordance with this chapter; and
- (2) irrigation for the establishment of the Xeriscaping complies with the following:
 - (a) for the first 10 days following installation, irrigation is permitted daily before 10:00 a.m. and after 7:00 p.m.; and
 - (b) for the 11th through the 40th day following installation, irrigation is permitted twice per week before 10:00 a.m. and after 7:00 p.m.; and
 - (c) if the landscape installation is required in order to obtain a certificate of occupancy for a newly constructed single family home, the applicant shall provide a completed notice of irrigation

variance to the director on the form provided by Austin Water at least one full business day before the landscape is installed.

- (3) A one-time extension of the approved variance may be granted by the director only upon the submittal by the applicant of a written request which demonstrates a clear need for the extension to establish the new landscaping.

(G) The director may grant a variance to Section 6-4-19 (*Emergency Stage Four Regulations*) when:

- (1) Watering is required to prevent or address foundation cracking. A variance approved pursuant to this subsection will specify a designated day for foundation watering and shall require the foundation watering to occur before 7:00 a.m. or after 7:00 p.m.
- (2) Watering is necessary for the prescribed treatment of tree diseases or for pest control.
- (3) Irrigation of athletic fields when irrigation is necessary to protect the health and safety of players and game officials.

(H) The director may grant a variance from Section 6-4-11(E) if site conditions are such that compliance would present a significant financial hardship or health risk to the applicant or the public.

(I) A person may seek a variance by filing an application with the director and paying the associated fees established by separate rule. The director may require the applicant to provide information the director determines is necessary to evaluate the variance request. If the director approves a variance, the applicant shall keep a copy of the approval provided in a location on the subject property that is accessible and visible to the public.

(J) A variance approved by the director must comply with Section 6-4-12 (*Water Waste Prohibited*).

(K) A variance following its approval by the director may be immediately suspended or revoked by Austin Water Utility if the director or director's designee determines any of the following:

- (1) a violation of the terms of the variance occurs at the location during the effective period of the variance;
- (2) the application submitted to the director upon which the variance approval was based included false, misleading, incomplete, or inaccurate information or attachments or
- (3) the director declares an emergency recall of variances to control use or preserve supply based on protracted drought, unusual operational event, or other public necessity.

§ 6-4-31 EXPIRATION OF VARIANCE.

A variance from a requirement of this chapter expires immediately upon the termination, completion, or resolution of the event, occurrence, condition, or activity for which the variance is granted or at a time specified by the director or director's designee.

§ 6-4-32 ALTERNATIVE COMPLIANCE.

- (A) The director may permit a person to comply with alternative water use restrictions after determining that:
 - (1) the alternative compliance meets or exceeds the intent of this chapter;
 - (2) the alternative compliance is specifically requested by the applicant in writing and the request demonstrates how compliance will be achieved through the alternative methods; and,
 - (3) the alternative compliance is expressly approved by the director.
- (B) Alternative compliance approved by the director must comply with Section 6-4-12 (*Water Waste Prohibited*).
- (C) If the director approves alternative compliance water use restrictions, the applicant shall keep a copy of the approval in a location on the subject property that is accessible and visible to the public.
- (D) Alternative compliance approved by the director may be suspended or revoked if the director finds any of the following:
 - (1) violation of a term or condition of the approved alternative compliance authorization;
 - (2) false, misleading, incomplete, or inaccurate information or documentation was submitted by the applicant in connection with the alternative compliance request and approval; or
 - (3) emergency conditions or unusual operational event or weather situation requires immediate suspension or revocation of the approved alternative compliance.

ARTICLE 3: ENFORCEMENT.

§ 6-4-40 APPLICABILITY.

This article is applicable to all parts of this chapter

§ 6-4-41 PRESUMPTION OF VIOLATION.

A person in whose name a water service account is held is presumed to be responsible for a violation of this chapter that occurs at the water service account location.

§ 6-4-42 PENALTY

- (A) A person commits an offense if the person directs, performs, authorizes, requests, allows, assists, facilitates, or permits an act prohibited by this chapter or fails to perform an act required by this chapter. Each instance of a violation of this chapter is a separate offense.

- (B) An offense under this chapter may be enforced as an administrative violation as authorized by Texas Local Government Code Chapter 54 and all penalties related to administrative liability for such violations at the service location automatically added to the water service account pursuant to the approved fee schedule published by the director, or approved pursuant to Section 6-4-44 (*Non-Administrative Enforcement*), unless the account holder opts out of the automatic administrative fee additions to the account on a form provided by the director not later than January 1 of each year or within 30 days of establishing an account with Austin Water Utility, whichever is sooner.
- (C) A person alleged to be in violation of a requirement of this chapter shall receive notice in writing that shall, at a minimum, contain:
 - (1) the name of the responsible person ;
 - (2) the address of the alleged violation;
 - (3) a description of the alleged violation;
 - (4) notice of the administrative penalty assessment to the next monthly utility statement; and
 - (5) information on the appeal process.
- (D) Notice shall be delivered via United States Postal Service first class mail or the customer's email address if the customer consents to service of such administrative assessment notices by email. Notice is presumed valid and received when forwarded to the postal or email address on file with Austin Water Utility for the water service account holder.

§ 6-4-43 ADMINISTRATIVE PROCESS

- (A) A person appealing an enforcement action of Austin Water Utility may request an administrative review conducted by the director. A request for an administrative review must be made in writing to Austin Water Utility on or before the 20th day following the date of the notice of violation. The review shall take place on or before the 10th day following a request for appeal. The person shall be notified of Austin Water Utility's determination including the results of the review and instructions on how to request an administrative hearing.
- (B) A person appealing an administrative review decision may request a hearing conducted by a hearing officer appointed by the city manager.
 - (1) The person must request the administrative hearing in writing to the director on or before the 10th day following notice of the administrative review determination.
 - (2) Not later than the 10th day following a request for an administrative hearing, Austin Water Utility shall provide the person with information as to the time and place of the hearing. If the person fails to appear at the hearing, the person will be considered to admit liability and will be charged accordingly.

- (3) A person who is found by a hearing officer to be liable for a violation of this chapter may appeal the liability finding by filing a petition in municipal court no later than the 31st day after the date of the hearing officer's determination. An appeal does not stay enforcement and collection of the judgment unless the person, before filing the appeal, posts a bond with Austin Water Utility in an amount equal to the amount of the liability assessment plus the appeal fee.
- (4) If upon hearing the appeal from the hearing officer's liability finding the municipal court affirms or substantially affirms the liability finding, the utility will retain the appeal fee and apply the bond to the liability assessment previously determined. If the municipal court reverses the hearing officer's liability finding, the appeal fee and administrative assessment bond will be refunded to the account holder.

§ 6-4-44 NON-ADMINISTRATIVE ENFORCEMENT

- (A) An offense under this chapter may alternatively be prosecuted in the Municipal Court as a Class C Misdemeanor:
 - (1) An offense that does not present a threat to health and safety or that is pled as a strict liability offense is subject to a fine of \$500.00 or less. Proof of a culpable mental state is not required;
 - (2) An offense that presents a threat to the health and safety of a person or the general public that is committed with criminal negligence is subject to a fine not to exceed \$2,000.00.
- (B) Proof of a higher degree of culpability than criminal negligence constitutes proof of criminal negligence.
- (C) Each day that a violation occurs or continues is a separate offense.
- (D) Prosecution of an offense and enforcement of other remedies under this chapter are cumulative.

§6-4-45 SEVERABILITY

It is hereby declared to be the intention of the city that the sections, subsections, paragraphs, sentences, clauses, and phrases of this chapter are severable and, if any phrase, clause, sentence, paragraph, subsection or section of this chapter shall be revoked or declared unconstitutional or unlawful by the valid judgment or decree of any court of competent jurisdiction, such declaration shall not affect any of the remaining phrases, clauses, sentences, paragraphs, subsection and sections of this chapter, since the same would not have been enacted by the city without the incorporation into this chapter of any such phrase, clause, sentence, paragraph, subsection or section declared or determined unconstitutional or unlawful.

APPENDIX B: Water Use Triggers for Water Use Management Ordinance



MEMORANDUM

TO: Greg Meszaros, Director
FROM: Jane Burazer, Assistant Director
Water and Wastewater Treatment
DATE: May 20, 2008
SUBJECT: Conservation Triggers

The purpose of this memo is to recommend water usage triggers for this summer under the Water Conservation Ordinance. The requirements under Stage II Water Use Restrictions have changed from previous years. As Stage I now mandates a twice/week outdoor watering schedule, this year, the Stage II will mandate a one day per week outdoor watering following the prescribed schedule in the rule.

The conservation triggers for Stage II Water Use Restrictions are historically based upon system capacities. To reduce the reliance on the Green WTP which is slated for decommissioning in the fall of 2008, the recommended triggers for Stage II Mandatory Water Use Restrictions for this summer is based on a system capacity of 285 MGD. The recommended triggers are:

3 consecutive days of water usage	260 MGD
1 day of water usage	270 MGD

As in past years, it is recommended that Stage III Mandatory Water Use Restrictions be determined as needed by the Director of the Austin Water Utility.

If you have any questions or need additional information, please call me.

Jane Burazer
Jane Burazer, Assistant Director
Water and Wastewater Treatment
Austin Water Utility

Concurrence:

Greg Meszaros

Greg Meszaros, Director

5/21/08

Date

**APPENDIX C: Resolutions in Support of Adoption of the Drought
Contingency Plan**

- (1) *Water and Wastewater Commission Resolution*

**WATER AND WASTEWATER COMMISSION
REGULAR MEETING
RECOMMENDATION
June 13, 2012**

Item No. 061312 - M

TITLE: RESOLUTION 20090423-002 - REVISED DROUGHT CONTINGENCY PLAN

	Motion	Motion	COMMISSIONER'S VOTE				
	Made By	Seconded By	Consenting	Dissenting	Abstaining	Recusal	Absent
Gwendolyn Webb Chair	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Date Gray Vice Chair	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sarah Faust	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mickey Fishbeck	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aaron Googins	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chien Lee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
William Moriarty	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUBJECT:

The Water and Wastewater Commission recommends approval of a resolution repealing Resolution No. 20090423-002 and adopting the Revised 2009 Drought Contingency Plan for Retail & Wholesale Public Water Suppliers.

- Recommended by the Water and Wastewater Commission
- Not Recommended by the Water and Wastewater Commission
- No Recommendation Motion Failed - Did not receive 4 affirmative votes Motion Failed - Lack of a second


Gwendolyn Webb, Chair
Water & Wastewater Commission

6/13/2012
Date

APPENDIX D: Transmittal Letter to Regional Planning Group



City of Austin

John Burke, Chair
Lower Colorado River Authority (LCRA)
Attn: Region K
Mailstop R325
P.O. Box 220
Austin, TX 78767-0220

August 22, 2012

Dear Mr. Burke:

The enclosed Drought Contingency Plan, which updates the previously adopted 2009 Drought Contingency Plan, was developed by the City of Austin to fulfill Texas Commission on Environmental Quality (TCEQ) requirements for retail and wholesale water providers as outlined in Texas Administrative Code Title 30, Chapter 288. This plan was approved by the Austin City Council on August 16, 2012, and is being forwarded to TCEQ.

If you have any questions on the enclosed plan please contact me at 512-974-2787.

Sincerely,

A handwritten signature in cursive script, appearing to read "Drema Gross".

Drema Gross
Austin Water
Water Conservation Division Manager