CITY OF BASTROP

REVISED
FIVE – YEAR
WATER AND WASTEWATER CAPITAL IMPROVEMENTS PROGRAM
FY-13 THROUGH FY-18
MARCH 24, 2014

WATER PROJECTS

I.	WATER SUPPLY PROJECTS: FY-13:	AMOUNT
1.	Water System Rehabilitation: Installation of new groundwater In-line membrane filtration system for the Willow Park Well Fields.	$500,000.00
2.	Development of Additional Water Supply.	$550,000.00
3.	Water Line Projects: **a.** Partial Funding for the construction of the transmission water-line from new water supply location.	$324,308.00
4.	HMG Fund Match for new Generators at the Loop 150 Tank Yard & Willow Street Water Plant	$150,000.00
	Sub-Total:	$1,524, 308.00*

II.	WATER SUPPLY PROJECTS: FY-14:	AMOUNT
1.	Water System Rehabilitation:	
	a. Replacement of water-main in Farm Street from to Fayette Street to Water Street. (8-inch water-main)	$182,000.00
	b. Replacement of water-main on Water Street from Pine Street to Austin Street. (6-inch	

	water-main)	$80,375.00	
	c. Replacement of water-main on Jefferson Street from Chestnut Street to Emile Street. (6-inch Water-main)	$166,625.00	
	d. Contingency	$71,000.00	
		Sub-Total:	$500,000.00
2.	AMI Project:		$850,000.00
3.	Cost of Purchasing Additional Water Supply for the City of Bastrop.		$_____
4.	Infrastructure Cost associated with delivery of the new water supply to the City.		$_____
		Sub-Total	$_____

III. **WATER SUPPLY PROJECTS: FY-15:** **AMOUNT**

1. Water System Rehabilitation:

a.	Replacement of water-main on Pine Street from to Main Street to Haysel Street. (8-inch water-main)	$200,000.00
b.	Replacement of water-main on Walnut Street from Haysel Street to MLK Street. (8-inch water-main)	$90,000.00
c.	Replacement of water-main on Wilson Street from Cedar Street to Buttonwood Street. (6-inch Water-main)	$125,000.00
d.	Replacement of water-main in Alley A from Chestnut Street to Spring Street.	$60,000.00

e. Contingency: $25,000.00

Sub-Total **$500,000.00**

IV.	**WATER SUPPLY PROJECTS: FY-16:**	**AMOUNT**
	1. Water System Rehabilitation:	$500,000.00
	Sub-Total	$500,000.00

V.	**WATER SUPPLY PROJECTS: FY-17:**	**AMOUNT**
	1. Water System Rehabilitation:	$500,000.00
	2. Elevated Water Storage Tank on the west side of the City of Bastrop.	$2,200,000.00
	Sub-Total	$2,700,000.00

VI.	**WATER SUPPLY PROJECTS: FY-18:**	**AMOUNT**
	1. Water System Rehabilitation:	$500,000.00
	2. Replacement of the water infrastructure in the Riverwood Addition:	$760,000.00
	Sub-Total	$1,260,000.00

TOTAL WATER SUPPLY PROJECTS: $_____

WASTEWATER PROJECTS

I.	**WASTEWATER PROJECTS FY-13:**		**AMOUNT**
1.	Gills Branch Lift Station Rehabilitation/Upgrade.		$985,000.00
2.	A new wastewater force main from the Gills Branch Lift Station to the Wastewater Treatment Plant. Includes a new divert box at the Wastewater Plant.		$617,964.00
3.	New Vactor Truck (Multi-Department use)		$150,000.00
4.	Wastewater Main Replacement:		
	a. Replace the wastewater main in Walnut Street from Pecan Street to Hill Street.	$85,505.00	
	b. Replace the wastewater main in Walnut Street from the Rail Road Tracks to MLK Street.	$52,800.00	
	c. Replace the wastewater main In Haysel Street from Farm Street to Spring Street.	$54,000.00	
		SUB-TOTAL	$192,305.00
		Sub-Total	$1,945,269.00*

II.	**WASTEWATER PROJECTS FY-14:**		**AMOUNT**
1.	Upgrade the Mauna Lift Station.		$127,500.00
2.	Upgrade of the River Lift Station.		$50,000.00
3.	Wastewater Main Replacement:		
	a. Replace the wastewater main in Pine Street from Main Street to Pecan Street.	$80,125.00	
	d. Replace the wastewater main in Spring Street from the Alley to Haysel Street	$247,625.00	
			$322,500.00

4. Phase I Wastewater Treatment Plant –Study [Expand existing Wastewater Plant or build new Wastewater Plant] $100,000.00

Sub-Total $600,000.00

III. WASTEWATER PROJECTS FY-15:

1. Wastewater Replacement and Rehabilitation Projects:

   a. Replace the wastewater main in Farm Street from Fayette Street to Water Street. $270,000.00

   b. Replace the wastewater main in Pine Street from the Pecan Street to Hill Street. $87,500.00

   c. Replace the wastewater main In Jefferson Street from Spring Street to Farm Street. $47,000.00

   d. Contingency $ 95,500.00

Sub-total $500,000.00

IV. WASTEWATER PROJECTS FY-16 AMOUNT

1. Wastewater Replacement and Rehabilitation Projects:

   a. Replace the wastewater main in Jefferson Street from Chestnut Street to Walnut Street. $116,750.00

   b. Replace the wastewater main in MLK Street from Chestnut Street to Walnut Street. $112,000.00

   c. Replace the wastewater main In Pine Street from the intersection of Pine Street & S.H. Hwy 95 westward to Gills Branch and north to Chestnut Street. $150,250.00

   d. Replace the wastewater main in MLK Street from Austin Street to College Street. $121,000.00

		Sub-Total	$500,000.00
V.	**WASTEWATER PROJECTS FY-17:**		**AMOUNT**
	1. Wastewater Replacement and Rehabilitation Projects:		
	a. Replace wastewater main in Emile Street from Water Street to Pine Street.	$87,745.00	
	b. Replace wastewater main in Water Street from Pine Street to College Street.	$155,000.00	
	c. Contingency	$257,255.00	
		Sub-Total	$500,000.00
	2. Phase II -- Wastewater Treatment Plant.		$100,000.00
		Sub-Total	$600,000.00
VI.	**WASTEWATER PROJECTS FY-18:**		**AMOUNT**
	1. Wastewater Replacement and Rehabilitation Projects:		$500,000.00
	2. Phase III Wastewater Treatment Plant.		$400,000.00
	3. Construction of a Force Main from Hunters Crossing Lift Station to Central Lift Station.		$750,000.00
		Sub-Total	$1,650,000.00

TOTAL WASTEWATER WATER PROJECTS: $5,795,289.00

*FY-13 Bonds Issued in October 2013

WATER SUPPLY OPTIONS – 5 YEAR PLAN

OPTION I – XS RANCH

A. Purchase of water rights:

Purchase 6,000 Acre Feet of water:	$ 3,000,000
(Down payment – Cash on hand)	-2,000,000
BALANCE:	$ 1,000,000

B. Infrastructure improvements to deliver Water from XS Ranch to the City of Bastrop:

1) WATER WELL 1,500 GPM Well	$ 850,000
2) PLANT Ground Storage, Piping, Booster Pumps, Fencing, Electrical Controls, SCADA, etc.	$ 1,067,500
3) TRANSMISSION LINE 12,400 – 18" line, Bore and Unbored Crossings Gate Valves, Fire Hydrants, Tie-Ins, etc.	$ 1,026,250
4) MISCELLANEOUS Engineering, Surveying, Hydrologist, Contingency	$ 885,250
SUB-TOTAL:	$ 3,784,000
TOTAL:	$4,784,000

(Rounded) Amount of bonds to be issued:	**$ 4,785,000**

WATER SUPPLY OPTIONS – 5 YEAR PLAN

OPTION II – INGRAM/XS RANCH

A. Acquisition of Property to drill well	$ 1,200,000
B. Infrastructure improvements to deliver Water from Ingram Site to the City of Bastrop:	
1) WATER WELL 1,000 and 300 GPM Well	$ 1,500,000
2) PLANT Ground Storage, Piping, Booster Pumps, Fencing, Electrical Controls, SCADA, etc.	$ 210,000
3) TRANSMISSION LINE 12,400 – 18" line, Bore and Unbored Crossings Gate Valves, Fire Hydrants, Tie-Ins, etc.	$ 410,000
4) MISCELLANEOUS Engineering, Surveying, Hydrologist, Contingency	$ 480,000
Infrastructure SUB-TOTAL:	$ 2,600,000
C. Purchase 3,000 Acre Feet of water rights from XS Ranch	$ 2,000,000
OPTION II SUB-TOTAL:	$ 5,800,000
Less Cash on Hand	- 2,000,000
TOTAL:	$ 3,800,000

(Rounded) Amount of bonds to be issued:	**$ 3,800,000**

WATER SUPPLY OPTIONS – 5 YEAR PLAN

OPTION III – INGRAM - XS RANCH - LCRA

A. Ingram: Infrastructure Elements (See Option II)	$ 2,600,000
B. Purchase of Ingram Site	$ 1,200,000
C. Purchase 3,000 Acre Feet of water rights from XS Ranch	$ 2,000,000
OPTION III SUB-TOTAL:	$ 5,800,000
Less Cash on Hand	- 2,000,000
SUB TOTAL:	$ 3,800,000

(Rounded) Amount of bonds to be issued:	**$ 3,800,000**

D. (O&M) Reserve 1,000 Acre Feet of water from LCRA
At $75 per acre foot x 1,000 $ 75,000*

* At the current LCRA System Rate it will cost the City $75,000 per year to reserve 1,000 acre feet of water. If the City decides to start using the reserved water, LCRA will start to charge the City the CURRENT system rate of $151.00 per acre foot or $151,000 per year plus the capital cost of transporting the water from the LCRA well head to city

MEMORANDUM

To: Mike Talbot
Cc: Curtis Hancock
From: Trey Job Director of Public works and Utilities
Date: March 31, 2014
Re: Recommendation of Water Source

Mike:

Now that the City Council decision concerning our future water needs is coming to fruition, I thought it was a good idea to provide you with a "staff recommendation," from an operational viewpoint.

Once I reviewed the data provided to the Council at the last council meeting, I have a few thoughts I would like to share with you:

Option 1 XS Ranch: The XS Ranch well field is the option I feel is the best one according to the data for the following reasons: 1. The water quality is good, 2- The ownership of the water rights would be solely with the City, 3. We would have the ability to provide the City with water for 30 to 50 years, 4. If we decided to take the Fisherman's Well Field offline, for any reason, we would still have the ability to meet the City's entire water needs, and 5. By minimizing the number of locations, we will extend the timeframe during which the City will need to hire additional operational staff.

Concerning Option 2, which is the Ingram/XS Ranch combination: The chloride in the Ingram Simsboro well exceeds the Texas drinking water standard. And, even when blended, the TDS and PH levels are near the maximum contaminant levels allowed by Texas for the drinking water standards. If the concerns Mr. Rose raised at the last utility meeting about the Fisherman's Park well field being offline were to materialize for any reason, then we could not provide water from zone 2, and in such a case, the Ingram well would be useless to the City, if it exceeded the TDS (MCL), and in order to make Ingram function under such a case, the XS Ranch portion of Option 2 would have to be online immediately, or if all three water facilities continued to run as follows: 50% at Fisherman's, 100% at Ingram and 100% XS Ranch, and 100% at Bob Bryant, then there is an additional operational cost that will have to be taken into account, which is adding two (2) additional personnel ($100,000.00 at minimum) to maintain the pumps, change CL2 cylinders, pull samples, and perform all of the other operational requirements needed to maintain such a complex amulet-source water system.

I would also like to point out that the Water/Waste Water Operations division maintains the waste water treatment facilities, too; therefore any additional wastewater needs (i.e., "WWTP and service to the West") would add an increased workload for the City's limited crews, as well.

Finally, as to Option 3 LCRA/XS Ranch/ Ingram: the LCRA portion concerns me because of the lack of 'local control' and because of the unknown cost of the water. I have been in water provider contracts at prior communities that I have worked for, and there is undeniably a 'pecking order' as to which community gets water first –when supplies are limited...., a detail I am sure you are well aware of due to the years you have been in city government. I would be concerned that, without any local control, Bastrop, as a small community, might not be "near the top "of rationing priorities, if it ever came to that. The Ingram portion concerns me for the reason that the quality of the water and possible operational cost necessary to treat the water i.e. more chemicals and the need to have LCRA or XS Ranch operational immediately. Etc... So echoing my earlier statement; Because of the increased amount of facilities, the unknown cost of the water, and the need for personnel, Bastrop could find itself in an unfavorable situation.

Thank You

Trey Job

WATER SUPPLY OPTIONS

DRAFT FOR DISCUSSION PURPOSES ONLY

[Presented to Council March 18, 2014 – no changes requested]

CITY OF BASTROP'S

WATER SUPPLY FUNDAMENTALS AND AGREED ASSUMPTIONS

1. The Council and Management began the search for an additional public water supply, which work encompassed a water planning process with a stated goal of securing long-term water rights for the City, e.g., water supply for 50 years.

2. It is important that the Council and Manager develop a long-term (i.e., 30–50 year+), water supply for the City of Bastrop's citizens' health, safety and welfare, for the growth of the City's business community, and to enable a potential for extending the City's corporate limits, in the future, as demands require. [This report focuses on the long-term water supply issues for the City and specifically does not address the City's short-term water needs.]

3. The City must be ever mindful of the urgency it faces in obtaining water production permits from the Lost Pines Groundwater Conservation District (LPGCD), with permits in sufficient production amounts to meet the City's future water supply needs. (CH2MHill suggests ±6000 ac/ft.) The City currently has two (2) permits pending with the LPGCD, pursuant to the two MOUs that it entered into with XS and Ingram, and the staff anticipates the LPGCD holding hearings on these permits in the very near future, (e.g., *April or May*). The City must be prepared to present information and address the Board's questions, related to these permits, at that time, including the preparation of materials supporting both the City's present and anticipated future long-term water needs. Much of the work in this report will be useful in that preparation.

4. It is understood that there are *no guarantees* for future water production permits from LPGCD (or its successor) and that the City does not need the entire 6,000 acre feet at this moment in time. The City will develop and submit to LPGCD, a "phasing plan" to demonstrate how the City will utilize the 6,000 acre feet, envisioned in its long-range water usage plan.

5. The LPGCD issues its groundwater production permits for period of only 5 years and they must be renewed each 5-year period. The LPGCD will monitor and update the Desired Future Conditions (DFCs) process commencing in 2016 and may make adjustment to its permittees' withdrawal amounts, such as the City, as required to manage the resources available and be in compliance with the revised DFC.

6. CH2MHill's recommendation is that a municipality should have water supplies available to meet the projected demand that is ten years in the future. So, for example, in 2025, the City should have, on hand, a water supply sufficient to meet the 2035 projected demand. (See CH2MHill's Report) This 'cushion' provides for coverage of "what if"

scenarios, such as having a new industry locate in town, experiencing a more severe drought, or the failure of a well and/or well field, etc. [Currently several central Texas municipalities are 'rationing water' because their current supply isn't sufficient to handle drought demands.]

7. There is Council, Management and staff concurrence that for purposes of long-term planning and this report, the City will assume that the City's existing Willow Plant Well Field ("Willow Plant") will remain productive at fifty percent (50%) of its current level (which will be ±1027 ac/ft annually), for a period of 50 years, and that the City's water plan should assume replacement of that quantity at that time, i.e., 2055. At that time, however, the City will do a detailed analysis of the City's existing Willow Plant to determine its ongoing viability, if any, and whether continued use of the Willow Plant is possible/advisable, and if so, at what level.

8. There is Council, Management and staff concurrence that for purposes of long-term planning and this report, the City will assume that the City's existing Bob Bryant Well Field ("Bob Bryant Plant") will remain productive at one-hundred (100%) of the 2011 historical production for a 75 year period, as long as there is no significant reduction in the flows in the Colorado River (as compared to 2011 flows) or implementation of a substantial well field in the alluvial aquifer within a quarter mile of the nearest City well. Note: It is the view of CH2MHill that the Colorado River flows could be substantially reduced from 2011 rates if the City of Austin increases reuse of its wastewater or if LCRA continues to withhold irrigation water to the lower basin, as they are currently doing. Accordingly, the City's water plan should assume replacement of that quantity at that time, i.e., 2055. CH2MHill notes also that the Bob Bryant wells appear to have an 'approximate 40 year life', based on their apparent construction. In the future, e.g., 2045 to 2055, the City will do a detailed analysis of the City's existing Bob Bryant Plant to determine its ongoing viability, if any, and whether continued use of the Bob Bryant Plant is possible/advisable, and if so, at what level. Reliable and efficient production from the wells will require periodic disinfection and redevelopment of the wells and periodic maintenance of the well pumps and motors.

9. There is Council, Management and staff concurrence that for purposes of long-term planning and this report, that a combination of the Willow Plant capacity noted above in paragraph 7, and the Bob Bryant Plant capacity, noted in paragraph 8, will provide the City with a total long-term capacity (from the two existing City well fields) of 1887 ac/ft annually, until approximately 2055. This capacity is reflected on the charts and graphs contained in this report.

10. There is Council, Management and staff acceptance of CH2MHILL "City of Bastrop, Water Projections dated March 10, 2014 "Scenario Two Additional Conservation (acre feet/year). The City of Bastrop is committed to aggressive water conservation program.

11. It is the consensus of the Council and Management that the City can only afford to install infrastructure 'in one direction' (i.e., either to the east, via the Ingram/LCRA Route, or to the north, via the XS Ranch Well Field).

CITY OF BASTROP
Water Supply

	2015	2017	2018	2019	2020	2021	TOTAL	Acre Feet	PHASE 2
Option 1									
XS Ranch	$ 3,000,000						$ 6,784,000	6,000	$2.7 M
XS Ranch	$ 3,784,000								Second Well
Option 2									
Ingram	$ 2,600,000						$ 5,800,000	4,400	$3.9 M
Ingram	$ 1,200,000								XS Ranch
XS Ranch	$ 2,000,000								
Option 3									
Ingram	$ 2,600,000						$ 6,250,000	5,400	$3.9 M
Ingram	$ 1,200,000							*1,000 Reserved	XS Ranch
XS Ranch	$ 2,000,000								or
LCRA	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000			$4.5 M
									LCRA

** Reserved, but no facilities available to store or transport water into the City of Bastrop.*

March 31,2014

F:\MSOFFICE\EXCEL\Bastrop, City of\Bastrop Water Supply033114dc

CITY OF BASTROP

WATER SUPPLY OPTIONS

SUMMARIZED INFRASTURCTURE COST ESTIMATES

XS RANCH

•	WATER WELL 1,500 GPM Well	$ 805,000
•	PLANT Ground Storage, Piping, Booster Pumps, Fencing, Electrical Controls, SCADA, etc.	$1,067,500
•	TRANSMISSION LINE 12,400' – 18" line, Bore and Unbored crossings, Gate Valves, Fire Hydrants, Tie-Ins, etc.	$1,026,250
•	MISCELLANEOUS Engineering, Surveying, Hydrologist, Contingency	$ 885,250
	TOTAL	**$3,784,000**

INGRAM

•	WATER WELLS 1,000 GPM AND 300 GPM WELLS	$1,500,000
•	PLANT Piping, SCADA, Electrical, Fencing,Chlorine, Tie-In, etc.	$ 210,000
•	TRANSMISSION LINE 6,200' – 12" line, Bored/Cased crossings, Gate Valves, etc.	$ 410,000
•	MISCELLANEOUS Engineering, Surveying, Hydrologist, Contingency	$ 480,000
	TOTAL	**$2,600,000**

LCRA

- PLANT $ 977,500
  Ground Storage, Piping, Booster Pumps, Fencing, Electrical Controls, SCADA, etc.

- TRANSMISSION LINE $1,807,500
  22,300' – 18" line, Bore and Unbored crossings, Gate Valves, Fire Hydrants, Tie-Ins, etc.

- MISCELLANEOUS $ 806,000
  Engineering, Surveying, Hydrologist, Contingency

SUBTOTAL **$3,591,000**

- TRANSMISSION LINE WITHIN SIM GIDEON PLANT **$ 830,100**
  7,000' – 18" line, Bored and Uncased crossings, Piping, Gate Valves, SCADA, Tie-Ins, etc.

TOTAL **$4,421,100**

C:\Users\Gene\Documents\BASTROP WATER SUPPLY OPTION COSTS.doc

CITY OF BASTROP
Operational Cost
Summary Sheet

	2015 - 2025	2015 - 2035	2015 - 2045
XS Ranch	$525,934	$1,739,327	$3,434,380
Ingram/XS Ranch	$415,211	$1,384,431	$2,828,505
Ingram/LCRA/XS Ranch	$1,044,458	$2,548,366	$4,135,596

March 31,2014

CITY OF BASTROP
Operational Costs Summary
Cost / 1,000 Gallons

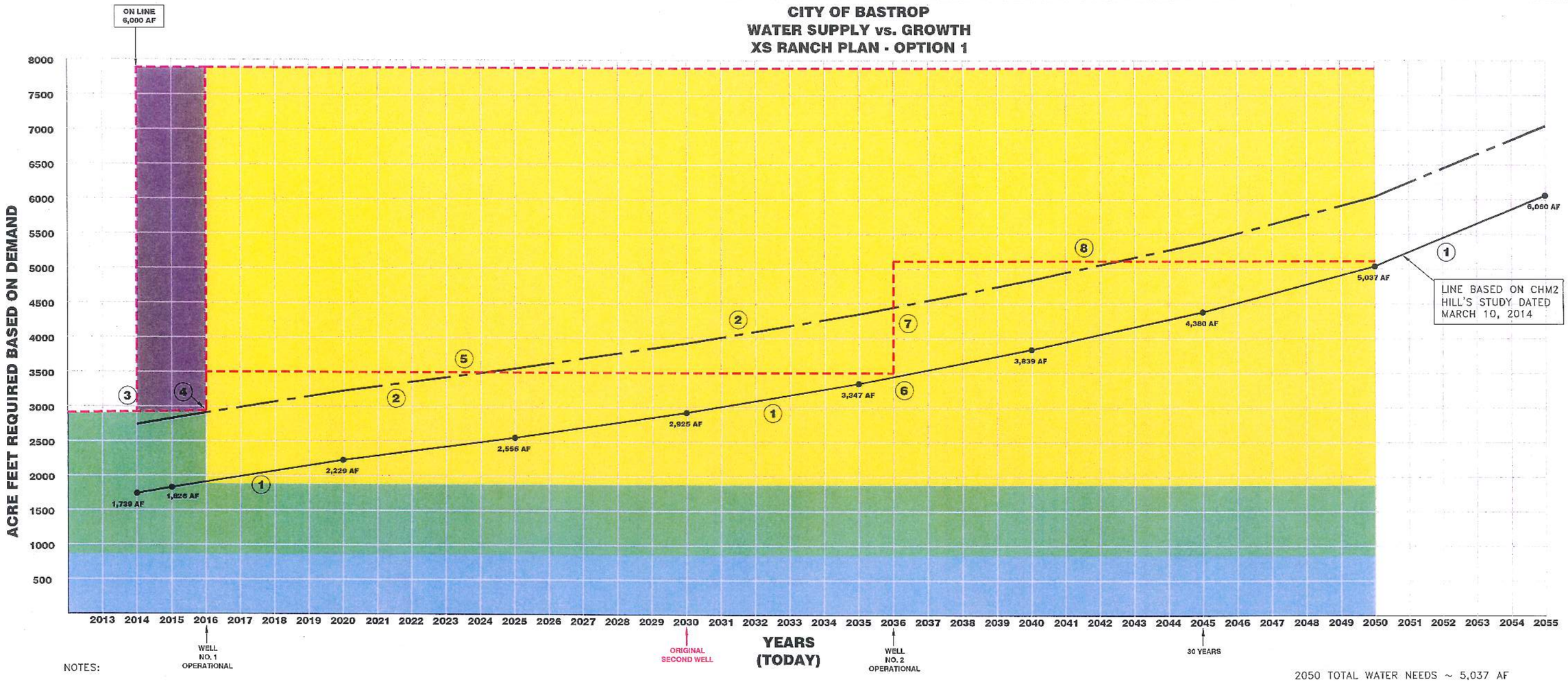
	LCRA	INGRAM	XS RANCH
* Electricity to wellhead	** —None—	$0.37	$0.28
Electricity to City Plant	$0.16	None	$0.21
Chlorine	$0.05	$0.05	$0.05
Lost Pines GWCD	—None—	$0.03	$0.03
TOTAL	**$0.21**	**$0.45**	**$0.57**

** Electricity is only calculated for pumping water to surface at wellhead and to City facilities.*
*** LCRA to pay for electricty to bring water to surface at wellhead.*

All costs to deliver water at wellhead is included in system rate.
XS Ranch electric to wellhead based on 1,500 gpm.

REVISED - 1,500 gpm
3/24/14

CITY OF BASTROP
WATER SUPPLY vs. GROWTH
XS RANCH PLAN - OPTION 1



NOTES:

1 GRAPH BASED ON CHM2 HILL'S STUDY DATED MARCH 10, 2014 – TABLE 6–SCENARIO TWO, ADDITIONAL CONSERVATION.

2 DASHED–DOT GRAPH LINE IS 1,000 ACRE FEET (AF) ABOVE THE CHM2 HILL GRAPH LINE

3 COMBINED PRODUCTION OF WILLOW PLANT (2,054 AF) PLUS BOB BRYANT (860 AF) EQUALS 2,914 AF

4 IN 2016, WILLOW PLANT DROPS TO 50% PRODUCTION (1,027 AF) FOR 30 YEARS. WELL NO. 1 (1,500 gpm) COMES ON LINE TO INCREASE THE WATER SUPPLY TO 3,500 AF (1,613 AF + 1,027 AF + 860 AF)

5 PRODUCTION TO MAINTAIN AT 3,500 AF

6 IN 2036, WELL NO. 2 (1,500 gpm) COMES ON LINE TO INCREASE THE WATER SUPPLY TO 5,113 AF (1,613 AF + 1,613 AF + 1,027 AF + 860 AF)

7 PRODUCTION TO MAINTAIN AT 5,113 AF

8 PRODUCTION TO MAINTAIN AT 5,113 AF

9 TOTAL WATER RIGHTS PURCHASED IN IS 6,000 ACRE FEET FROM XS RANCH IN 2014

EXISTING WELL PRODUCTION

C –	375 gpm	
D >	300 gpm	Willow Plant
E		
F –	850 gpm	
G –	385 gpm	
H –	400 gpm	
I –	400 gpm	Bob Bryant
Total	2,710 gpm	

* D & E only pumps one at a time

2 YR TIME TABLE FOR NEGOTIATIONS, DESIGN, PERMITS, FUNDING, ENVIRONMENTAL, CONSTRUCTION

XS RANCH

WILLOW PLANT

BOB BRYANT

2050 TOTAL WATER NEEDS ~ 5,037 AF

*NOTE: CITY OF BASTROP GENERALLY OPERATES IT WATER WELLS FOR A MAXIMUM OF 16 HOURS PER DAY. ALL SUPPLIER WELLS REFLECT THIS ASSUMPTION FOR CONVERSION FROM ACRE FEET TO GPM.

*NOTE: THIS SCENARIO UTILIZES 2 WELLS AT 1,500 gpm EACH.

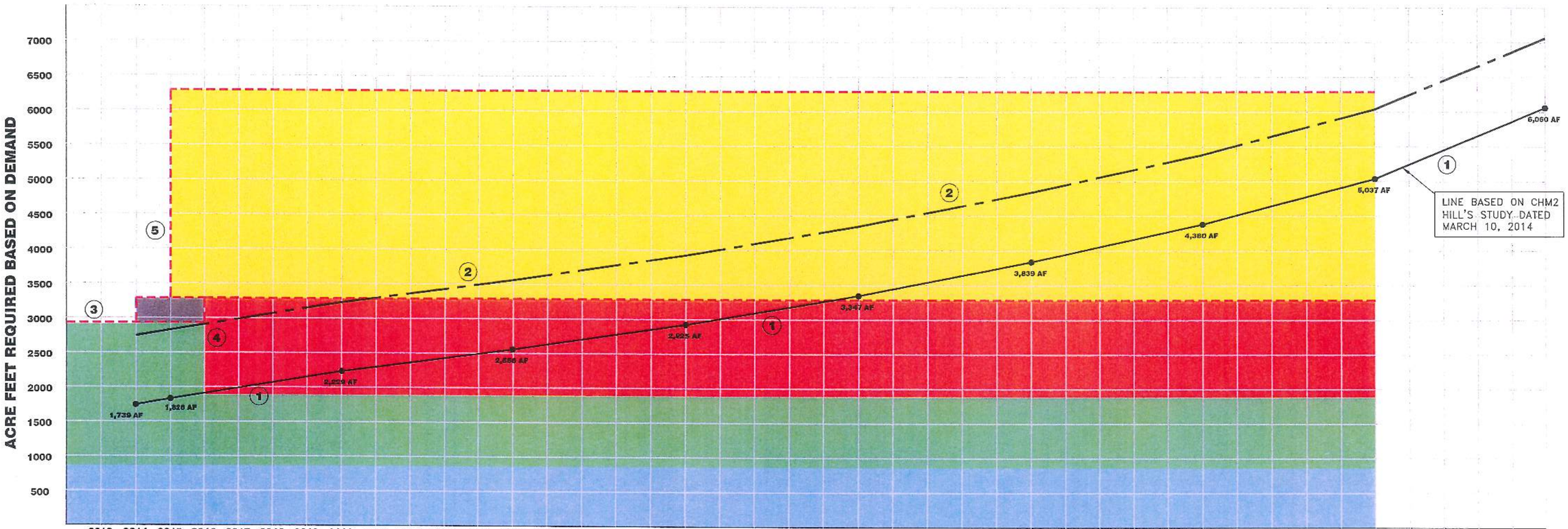
REVISED 03/20/14

XS RANCH
A-2R

BEFCO ENGINEERING, INC.
P. O. Box 615
LaGrange, Texas 78945
(979) 968-6474
F-2011

F:\JULIANA\LAND PROJECTS_3\BASTROP\DWG\2013-BASTROP METER -WELL GROWTH CHART.DWG

CITY OF BASTROP
WATER SUPPLY vs. GROWTH
INGRAM/XS RANCH PLAN - OPTION 2



NOTES:

1 GRAPH BASED ON CHM2 HILL'S STUDY DATED MARCH 10, 2014 – TABLE 6–SCENARIO TWO, ADDITIONAL CONSERVATION.

2 DASHED–DOT GRAPH LINE IS 1,000 ACRE FEET (AF) ABOVE THE CHM2 HILL GRAPH LINE

3 COMBOMED PRODUCTION OF WILLOW PLANT (2,054 AF) PLUS BOB BRYANT (860 AF) EQUALS 2,914 AF

4 IN 2016, WILLOW PLANT DROPS TO 50% PRODUCTION (1,027 AF) FOR 30 YEARS, INGRAM WELLS COME ONLINE TO INCREASE THE WATER SUPPLY TO 3,287 AF.

5 IN 2015, CONTRACT WITH XS RANCH FOR 3,000 AF

6 IN 2034, XS RANCH MUST SUPPLY ADDITIONAL WATER AND ASSUME XS RANCH TO BE UTILIZED

TOTAL – 4,400 ACRE FEET OF WATER (PURCHASED)
*INGRAM – 1,400 AF
*XS RANCH – 3,000 AF

EXISTING WELL PRODUCTION

C –	375 gpm	
D >	300 gpm	Willow Plant
E		
F –	850 gpm	
G –	385 gpm	
H –	400 gpm	Bob Bryant
I –	400 gpm	

Total 2,710 gpm

* D & E only pumps one at a time

2 YR TIME TABLE FOR NEGOTIATIONS, DESIGN, PERMITS, FUNDING, ENVIRONMENTAL, CONSTRUCTION

XS RANCH

INGRAM

WILLOW PLANT

BOB BRYANT

*NOTE: CITY OF BASTROP GENERALLY OPERATES IT WATER WELLS FOR A MAXIMUM OF 16 HOURS PER DAY. ALL SUPPLIER WELLS REFLECT THIS ASSUMPTION FOR CONVERSION FROM ACRE FEET TO GPM.

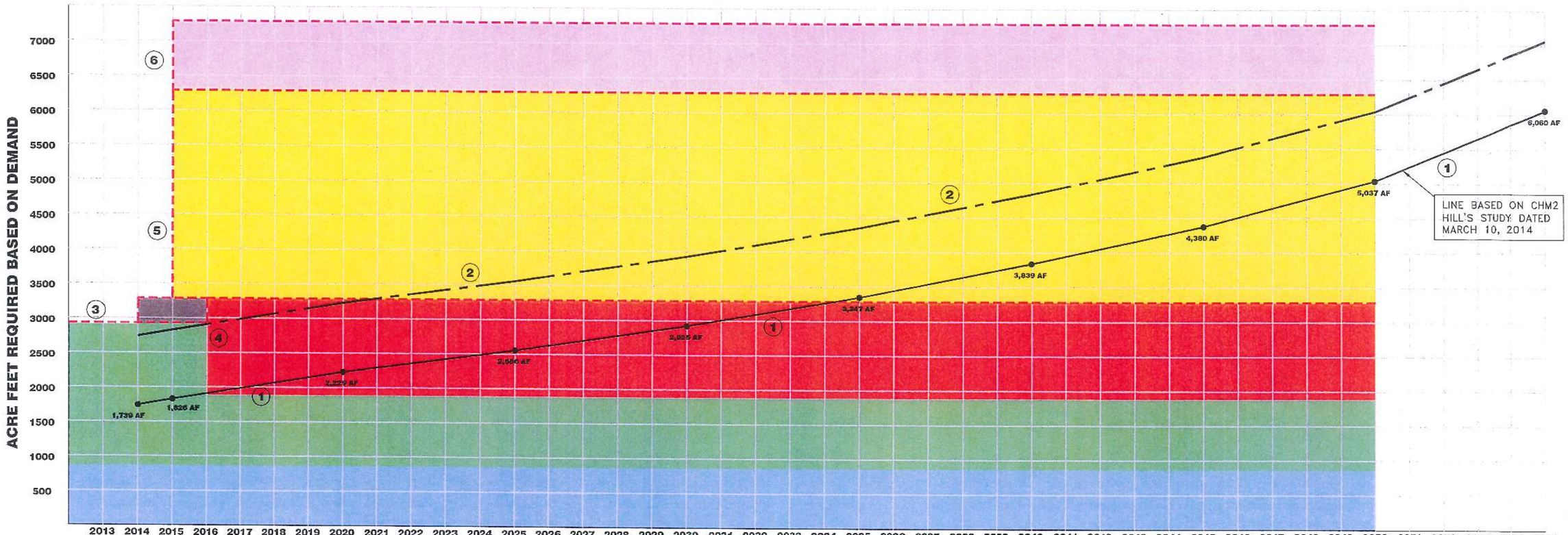
INGRAM/ XS RANCH D-2

REVISED 03/27/14

F:\JULIANA\LAND PROJECTS 3\BASTROP\DWG\2013–BASTROP METER –WELL GROWTH CHART.DWG

BEFCO ENGINEERING, INC.
P. O. Box 615
LaGrange, Texas 78945
(979) 968–6474
F-2011

CITY OF BASTROP
WATER SUPPLY vs. GROWTH
INGRAM/LCRA/XS RANCH PLAN - OPTION 3



NOTES:

1 GRAPH BASED ON CHM2 HILL'S STUDY DATED MARCH 10, 2014 – TABLE 6–SCENARIO TWO, ADDITIONAL CONSERVATION.

2 DASHED–DOT GRAPH LINE IS 1,000 ACRE FEET (AF) ABOVE THE CHM2 HILL GRAPH LINE

3 COMBOMED PRODUCTION OF WILLOW PLANT (2,054 AF) PLUS BOB BRYANT (860 AF) EQUALS 2,914 AF

4 IN 2016, WILLOW PLANT DROPS TO 50% PRODUCTION (1,027 AF) FOR 30 YEARS, INGRAM WELLS COME ONLINE TO INCREASE THE WATER SUPPLY TO 3,287 AF.

5 IN 2015, CONTRACT WITH XS RANCH FOR 3,000 AF

6 IN 2015, CONTRACT WITH LCRA FOR 1,000 AF IN RESERVE

7 IN 2034, LCRA OR XS RANCH MUST SUPPLY ADDITIONAL WATER AND ASSUME XS RANCH TO BE UTILIZED

TOTAL – 5,400 ACRE FEET OF WATER (PURCHASED)
* INGRAM – 1,400 AF
* XS RANCH – 3,000 AF
* LCRA – 1,000 AF
LCRA TO PROVIDE 1,000 ACRE FEET OF RESERVED WATER WITH NO INFRASTRUCTURE AND NO MEANS OF USAGE.

EXISTING WELL PRODUCTION

C –	375 gpm	
D >	300 gpm	Willow Plant
E		
F –	850 gpm	
G –	385 gpm	
H –	400 gpm	Bob Bryant
I –	400 gpm	
Total	2,710 gpm	

* D & E only pumps one at a time

2 YR TIME TABLE FOR NEGOTIATIONS, DESIGN, PERMITS, FUNDING, ENVIRONMENTAL, CONSTRUCTION

LCRA/RESERVE

XS RANCH

INGRAM

WILLOW PLANT

BOB BRYANT

*NOTE: CITY OF BASTROP GENERALLY OPERATES IT WATER WELLS FOR A MAXIMUM OF 16 HOURS PER DAY. ALL SUPPLIER WELLS REFLECT THIS ASSUMPTION FOR CONVERSION FROM ACRE FEET TO GPM.

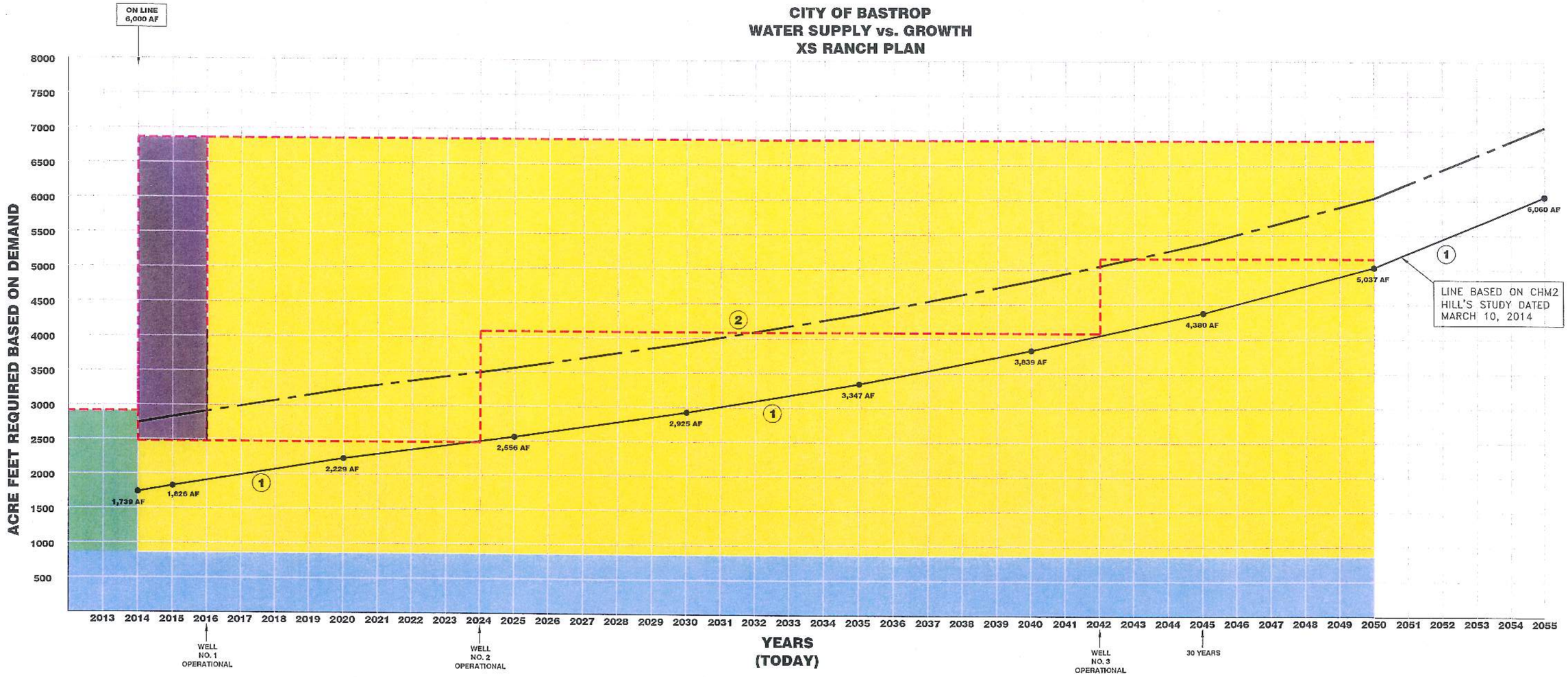
INGRAM/LCRA/ XS RANCH D-1

REVISED 03/27/14

BEFCO ENGINEERING, INC.
P. O. Box 615
LaGrange, Texas 78945
(979) 968-6474
F-2011

F:\JULIANA\LAND PROJECTS 3\BASTROP\DWG\2013-BASTROP METER -WELL GROWTH CHART.DWG

CITY OF BASTROP
WATER SUPPLY vs. GROWTH
XS RANCH PLAN



*NOTE: CITY OF BASTROP GENERALLY OPERATES IT WATER WELLS FOR A MAXIMUM OF 16 HOURS PER DAY. ALL SUPPLIER WELLS REFLECT THIS ASSUMPTION FOR CONVERSION FROM ACRE FEET TO GPM.

- 2 YR TIME TABLE FOR NEGOTIATIONS, DESIGN, PERMITS, FUNDING, ENVIRONMENTAL, CONSTRUCTION
- XS RANCH
- WILLOW PLANT
- BOB BRYANT

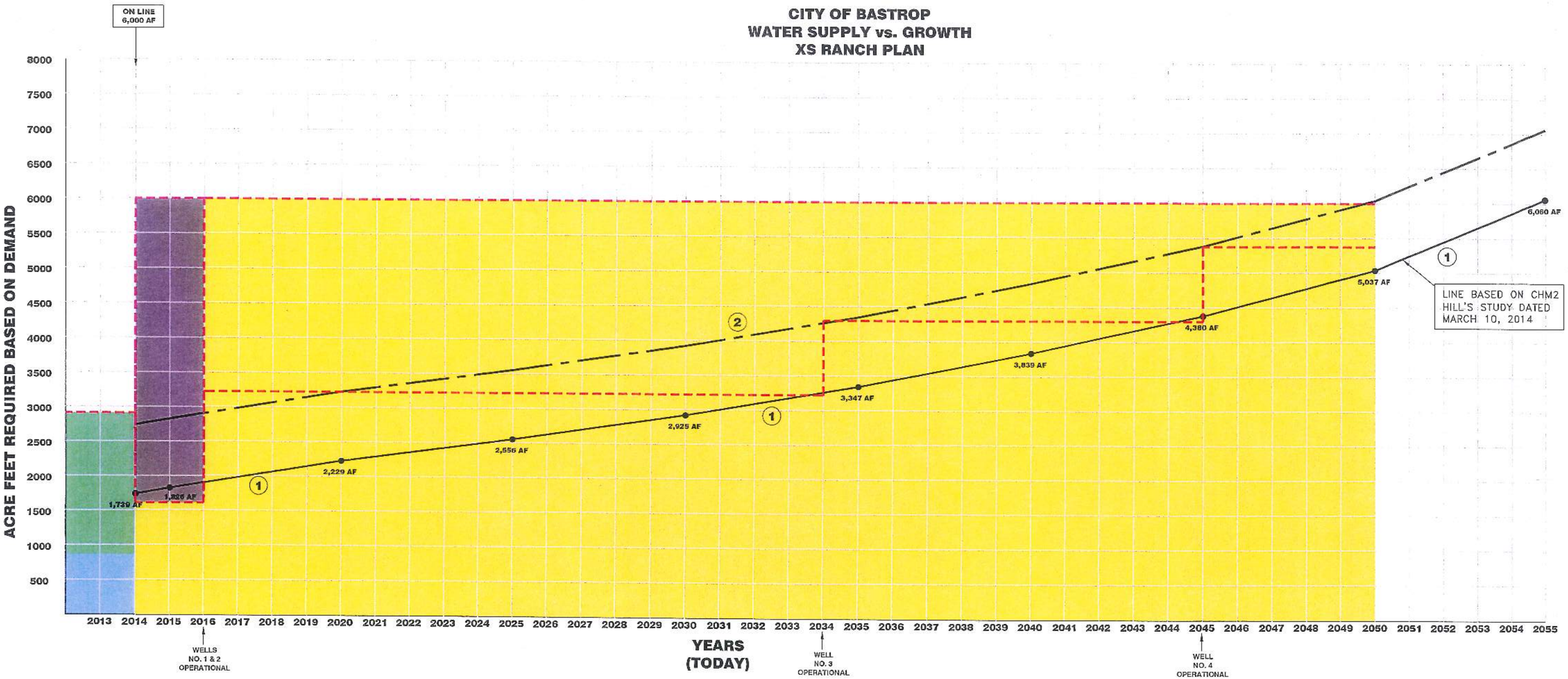
XS RANCH
A-2R

BEFCO ENGINEERING, INC.
P. O. Box 615
LaGrange, Texas 78945
F-2011 (979) 968-6474

F:\JULIANA\LAND PROJECTS 3\BASTROP\DWG\2013-BASTROP METER -WELL GROWTH CHART.DWG

REVISED 03/20/14

CITY OF BASTROP
WATER SUPPLY vs. GROWTH
XS RANCH PLAN



*NOTE: CITY OF BASTROP GENERALLY OPERATES IT WATER WELLS FOR A MAXIMUM OF 16 HOURS PER DAY. ALL SUPPLIER WELLS REFLECT THIS ASSUMPTION FOR CONVERSION FROM ACRE FEET TO GPM.

- 2 YR TIME TABLE FOR NEGOTIATIONS, DESIGN, PERMITS, FUNDING, ENVIRONMENTAL, CONSTRUCTION
- XS RANCH
- WILLOW PLANT
- BOB BRYANT

XS RANCH
A-2R

BEFCO ENGINEERING, INC.
P. O. Box 615
LaGrange, Texas 78945
F-2011 (979) 968-6474

F:\JULIANA\LAND PROJECTS 3\BASTROP\DWG\2013-BASTROP METER -WELL GROWTH CHART.DWG

REVISED 03/20/14

XS RANCH *NEW* OPTION 1	
PROS	**CONS**
1. INVESTMENT FACILITATE DEVELOPMENT OF XS RANCH COMMUNITY: • TAX BASE ENLARGED • INCREASES SALES TAXES IN CITY • FOSTERS A PARTNERSHIP WITH LARGE NEIGHBORING COMMUNITY.	1. COST OF SECOND TEST WELL ON CITY, [$115 K]
2. CITY WILL HAVE OWNERSHIP RIGHTS TO WATER (UP TO 6,000 AC FT)	2. FARTHER FROM TOWN THAN INGRAM
3. HAVING ALL WELLS IN A SINGLE AREA WILL REDUCE FUTURE OPERATIONAL COSTS	3. FUTURE/ADDITIONAL WATER WELLS GET FARTHER, STILL, FROM CITY.
4. NO THIRD PARTY INVOLVEMENT – ALL IN CITY CONTROL	
5. NO HOUSTON TOAD HABITAT ISSUE	
6. JOINT PERMIT PENDING AT LPGWD (APPROXIMATE - MAY HEARING)	
7. NO RESERVATION FEE FOR WATER (AT 6,000 AC FT)	
8. ABILITY TO DRILL LARGER WELL, THEREBY PUSHING OFF FURTHER INTO THE FUTURE, THE NEED TO SPEND MONEY ON ADDITIONAL INFRASTRUCTURE.	
9. MEETS ALL CITY WATER NEEDS – SHORT AND LONG TERM , I.E., 30-50 YEARS	
10. WATER QUALITY SUPERIOR TO INGRAM IN THE FIRST TEST WELL	
11. AREAS TO THE NORTH AND WEST OF BASTROP ARE CURRENTY MORE CONDUCIVE TO GROWTH, AND ARE NEARER THE XS WELLS.	

PRELIMINARY DRAFT -- 4.2.14

INGRAM/XS RANCH COMBINED

NEW

OPTION 2

PROS	CONS
1. CITY WILL HAVE OWNERSHIP RIGHTS TO WATER, UP TO **4,400 AC FT** (3,000 FROM XS, 1,400 FROM INGRAM)	1. COST OF INGRAM WELL DEVELOPMENT [$200K] COST OF SECOND XS TEST WELL, [$115 K]
2. MEETS CITY WATER NEEDS – SHORT AND LONG TERM , I.E., 30-50 YEARS	2. INGRAM HAS HIGH TDS (AND SALT) LEVELS – PUBLIC CONSUMPTION AND TASTE ISSUES.
3. NO THIRD PARTY INVOLVEMENT – ALL IN CITY CONTROL	3 . SPREADS INFRASTRUCTURE IN TWO DIRECTIONS AND AT TWO SEPARATE SITES, THUS INCREASING OPERATIONAL COSTS AND STAFFING DEMANDS
4. JOINT PERMITS WITH BOTH XS AND INGRAM ARE PENDING AT LPGWD (APPROXIMATE - MAY HEARING ON XS, LATER ON INGRAM)	4. BLENDING ISSUES TO ACHIEVE ACCEPTABLE WATER AND CONSUMPTION QUALITY (LIKELY TO INCREASE OVER TIME --) MAX. AMOUNT AVAILABLE FOR BLENDING FROM CITY'S SYSTEM IS 750 GPM
5. XS WATER QUALITY IS GOOD	5. TOAD HABITAT RELATED TO INGRAM SITE POTENTIALLY LIMITS CONSTRUCTION PERIOD (JULY 1ST TO DECEMBER 31ST)
6. CITY WILL HAVE THE ABILITY TO DRILL LARGER XS WELL, ONCE TRIGGERED, THEREBY PUSHING OFF FURTHER INTO THE FUTURE, THE NEED TO SPEND MONEY ON ADDITIONAL INFRASTRUCTURE.	6. AS TDS LEVEL RISES, OVER TIME, THIS WILL LIMIT THE PUMPING CAPACITY FRO THE INGRAM WELLS
7. INVESTMENT WILL FACILITATE DEVELOPMENT OF XS RANCH COMMUNITY: • TAX BASE ENLARGED • INCREASES SALES TAXES IN CITY FOSTERS A PARTNERSHIP WITH LARGE NEIGHBORING COMMUNITY.	7. IF WILLOW WATER EVER BECAME UNAVAILABLE FOR USE/MIXING WHEN ONLY INGRAM WAS IN PLACE, THEN INGRAM WELL WATER COULD NOT BE USED, DUE TO THE HIGH TDS LEVELS.

8. INGRAM IS CLOSEST TO TOWN	8. CONCERNS OVER LIMITED SIZE OF INGRAM WELL FIELD (2.18 ACRES) PERCEPTION OF CONFLICT WITH NEIGHBORING WELLS – THOUGH LIKELY INACCURATE
9.	9. DEED RESTRICTIONS ON "STRUCTURES" POSE POTENTIAL CONFLICT WITH ADJACENT RESIDENTIAL PROPERTIES [150 BUFFER EASEMENT REQUIRED AROUND WELLS]
10.	10. FUTURE/ADDITIONAL XS WATER WELLS GET FARTHER, STILL, FROM CITY.
11.	11.

INGRAM / XS / LCRA COMBINED ***NEW*** OPTION 3	
PROS	**CONS**
1. VARIOUS COMBINATIONS OF SUPPLIES MEETS CITY'S SHORT AND LONG TERM NEEDS, I.E., 30- 50 YEAR	1. INGRAM HAS HIGH TDS (AND SALT) LEVELS – PUBLIC CONSUMPTION/TASTE ISSUES.
2. LEAVES MULTIPLE OPTIONS AVAILABLE FOR FUTURE DECISION MAKING	2. BLENDING ISSUES TO ACHIEVE ACCEPTABLE WATER AND CONSUMPTION QUALITY FROM INGRAM (LIKELY TO INCREASE OVER TIME –) MAX. AMOUNT AVAILABLE FOR BLENDING FROM CITY'S SYSTEM IS 750 GPM
3. XS AND INGRAM HAVE/WILL SELL KNOWN WATER RIGHTS IN AMOUNTS ADEQUATE TO MEET CITY'S SHORT AND LONG TERM NEEDS	2. AS TDS LEVEL RISES, OVER TIME, THIS WILL LIMIT THE PUMPING CAPACITY FROM THE INGRAM WELLS LCRA CURRENTLY HAS NO MUNICIPAL WATER RIGHTS
4. CITY WILL OWN AND CONTROL XS AND INGRAM LAND AND RIGHTS	3. IF WILLOW WATER EVER BECAME UNAVAILABLE FOR USE/MIXING, THEN INGRAM WELL WATER COULD NOT BE USED, DUE TO THE HIGH TDS LEVELS
4. INGRAM AND XS HAVE MOU WITH CITY	4. CONCERNS OVER LIMITED SIZE OF INGRAM WELL FIELD (2.18 ACRES)
5. XS AND LCRA WATER QUALITY IS GOOD.	5. DEED RESTRICTIONS ON "STRUCTURES" POSE POTENTIAL CONFLICT WITH ADJACENT RESIDENTIAL PROPERTIES [150 BUFFER EASEMENT REQUIRED AROUND WELLS]TOAD HABITAT WITH
6. CITY WILL HAVE LIMITED OPERATIONAL RESPONSIBILITIES FOR LCRA COMPONENTS OF WATER WELL. WELL OPERATIONS ARE ONE OF THE LARGER "RISKS' IN OPERATING A WATER SYSTEM.	6. LCRA AND INGRAM POTENTIALLY LIMITS CONSTRUCTION PERIOD (JULY 1ST TO DECEMBER 31ST)
7. THREE REDUNDANT SOURCES IN ADDITION TO CITY ALLUVIAL WELL FIELDS, *AFTER* INFRASTRUCTURE IN PLACE. [QUADRUPLE REDUNDANCY IS, UNUSUAL, HOWEVER.]	7. LCRA HAS NOT EXECUTED MOU WITH CITY

8. LCRA ELECTRIC COSTS ARE LESS THAN XS/INGRAM RANCH OPTIONS	8. LCRA CURRENTLY HAS NO MUNICIPAL WATER RIGHTS
	9. LCRA DOES NOT CURRENTLY HAVE AN AMENDMENT TO ITS INDUSTRIAL PERMIT ON FILE OR PENDING WITH LPGD.
	10. LCRA'S FUTURE WATER SUPPLY UNKNOWN.
	11. WITH LCRA, THE CITY OWNS NO SUPPLY ASSETS FOR ITS INVESTMENT
	12. LCRA RATES/COST UNKNOWN AT THIS TIME; HOWEVER, AS PROPOSED BY LCRA, THE CITY WILL PAY APPROXIMATELY **$4.275 M IN RESERVATION FEES** (I.E., APPROXIMATELY $75/AF, PER YEAR, MULTIPLIED BY 3,000 AF, FOR 19 YEARS. – ASSUMING NO INCREASE IN RESERVATION RATE) IF ONLY RESERVING 1,000 AF, THEN CITY'S 19 YEAR RESERVATION RATE, ASSUMING THE CURRENT RESERVATION RATE APPLIES, [WHICH LCRA HAS INDICATED IT WILL NOT] THEN, THE CITY WILL PAY APPROXIMATELY **$1.425M IN RESERVATION FEES.**
	13. CITY WILL HAVE NO CONTROL OVER LCRA SUPPLY AND COSTS – ALL SUBJECT TO THIRD PARTY ENTITY CONTROL
	14. $200,000 REIMBURSEMENT FOR INGRAM'S INITIAL WELL COSTS AND $115,000 FOR SECOND XS TEST WELL
	15. WATER WELLS ON XS SITE WILL BE FARTHER FROM CITY THAN INGRAM, BUT NEARER THAN LCRA
	16. SPLIT AND MULTIPLE LOCATES WILL NECESSITATE LARGER CREW AND STAFF TO MAN VARIOUS FACILITIES.

	17. OPERATIONAL COSTS WILL BE MULTIPLIED BY SEVERAL TIMES, AS MULTIPLE WELL SITES ARE USED BY CITY
	18. SPREAD OF INFRASTRUCTURE ARGUABLY UNNECESSARY AND COSTLY, *VIS-À-VIS* DEVELOPING ONLY A SINGLE OR DOUBLE SOURCE