

PEDERNALES NEAR JOHNSON CITY

SUMMARY OF RESULTS FOR BBEST APPLICATION OF ASR PROJECT

D:\COL BBASC\WAM FROM TCEQ 03172011\STAGE2-04152011\FRAT V3.4\TASK2\PRnrJC\ASR SUMMARY-07212011.xls\ASR DETAILS

7/21/2011

5:45 AM

INPUT PARAMETERS		SCENARIO			
		1-NO EFLOWS	2-FULL BBEST EFLOWS	3-BBEST BUT NO HFP'S	4-BBEST WITH SEASONAL PULSES ONLY
(1)	RIVER PUMP RATE INTO TREATMENT RESERVOIR (OCR)	1,000 CFS (60,330 AC-FT/MONTH)			
(2)	SIZE OF TREATMENT RESERVOIR	10,000 ACRE-FEET			
(3)	PUMP RATE FROM TREATMENT RESERVOIR (used to meet project demand then inject the balance)	50 CFS (3,016 AC-FT/MONTH or 36,198 AC-FT/YR)			
(4)	AVAILABLE SPACE IN AQUIFER TO STORE WATER	100,000 ACRE-FEET			
SIMULATION RESULTS		SCENARIO			
		1-NO EFLOWS	2-FULL BBEST EFLOWS	3-BBEST BUT NO HFP'S	4-BBEST WITH SEASONAL PULSES ONLY
(5)	Beginning Storage in Aquifer	35,000	52,000	42,000	46,600
Diversions from River into OCR (1000 cfs diversion trying to keep the treatment reservoir full)					
(6)	Maximum Annual Diversion (ac-ft/yr)	31,292	30,268	30,268	30,268
(7)	Average Annual Diversion (ac-ft/yr)	9,223	8,289	8,650	8,382
(8)	Minimum Annual Diversion (ac-ft/yr)	0	0	0	0
Diversions from OCR to Meet Demand then Inject Balance into ASR (50 cfs diversion from treatment reservoir to be used or injected)					
(9)	Annual Demand from OCR (ac-ft/yr)	36,198	36,198	36,198	36,198
(10)	Percent of Years Full Demand Met	1.7%	0.0%	0.0%	0.0%
(11)	Percent of Years at least 75% of Full Annual Demand Met	10.2%	8.5%	8.5%	8.5%
(12)	Percent of Months Full Monthly Demand Met	23.4%	20.5%	21.3%	20.8%
(13)	Percent of Months any Water Pumped	28.2%	25.8%	26.8%	26.1%
(14)	Maximum Annual Diversion (ac-ft/yr)	36,198	34,306	35,507	34,306
(15)	Average Annual Diversion (ac-ft/yr)	9,232	8,318	8,670	8,409
(16)	Minimum Annual Diversion (ac-ft/yr)	0	0	0	0
(17)	Firm Yield of ASR Project (af-ft/yr)	9,420	8,770	8,960	8,770
(18)	Firm Yield of ASR Project (cfs)	13.0	12.1	12.4	12.1
(19)	Maximum Rate Water Injected into ASR (cfs)	37.0	37.9	37.6	37.9
(18)	Minimum Storage in ASR (ac-ft)	277	502	399	502
(20)	Maximum Storage in ASR (ac-ft)	97,635	98,172	97,716	98,173

OCR = Off-Channel Reservoir

ASR = Aquifer Storage and Recovery

ac-ft = acre-feet

SUMMARY OF COMPLIANCE RESULTS WITH CL BBEST EFLOW RECOMMENDATIONS

PEDERNALES NEAR JOHNSON CITY SITE FOR VARIOUS BBASC ANALYSES

PEDERNALES ASR PROJECT (SUBSISTENCE CHANGED TO Q95)

7/21/2011

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	FIRM YIELD (AF/Y)	NA	NA	NA	9,420	8,770	8,960	8,770
(2)	PROJECT IN / OUT	NO PROJECT			WITH PROJECT IN PLACE (RUN NUMBER - SEE BELOW)			
(3)	EFLOW COMPONENT	HISTORICAL	WAM RUN3 USED FOR BBEST REPORT	WAM RUN3 USED FOR PROJECT	RUN 1	RUN 2	RUN 3	RUN 4
(4)	NON-PULSE FLOWS (PERCENT OF TIME FLOW EQUALS OR EXCEEDS BBEST RECOMMENDATIONS.							
(5)	SUBSISTENCE	92%	na (3)	93%	92%	93%	93%	93%
(6)	BASE LOW	72%	71%	71%	69%	71%	71%	71%
(7)	BASE MEDIUM	55%	54%	54%	51%	54%	54%	54%
(8)	BASE HIGH	37%	37%	37%	34%	36%	35%	36%
(9)	PULSE FLOWS (NUMBER OF QUALIFYING PULSE EVENTS PASSED.							
(10)	2PER SEASON (HFP1)	92	93	93	88	90	87	91
(11)	1PER SEASON (HFP2)	46	46	45	44	45	44	45
(12)	1 PER YEAR (HFP3)	46	46	46	46	46	46	46
(13)	1 PER 2 YEARS (HFP4)	27	27	24	24	24	24	24
(14)	1 PER 5 YEARS (HFP5)	11	10	10	10	10	10	10

RUN NUMBER	DESCRIPTION OF EFLOW REQUIREMENTS IMPOSED ON PROJECT
1	NO EFLOW REQUIREMENTS.
2	CL BBEST RECOMMENDATIONS.
3	CL BBEST RECOMMENDATIONS BUT NONE OF THE HIGH FLOW PULSE RECOMMENDATIONS IMPOSED.
4	CL BBEST RECOMMENDATIONS BUT ONLY SEASONAL PULSES IMPOSED.

NOTE 1: ATTAINMENT FREQUENCIES FOR SEASONAL RECOMMENDATIONS (ALL NON-PULSE RECOMMENDATIONS AND FIRST 2 PULSE RECOMMENDATIONS) SUMMARIZED BY AVERAGING RESULTS FOR ALL FOUR SEASONS INTO SINGLE VALUE FOR ALL COMPARISONS.

NOTE 2: INFORMATION IN COLUMNS 2 AND 3 ARE REPORTED IN BBEST REPORT (PAGES 5-6 AND 5-10). NOTE THAT SUBSISTENCE COMPLIANCE FROM BBEST REPORT NOT STATED BECAUSE BBEST REPORT STATISTICS WERE NOT BASED ON Q95 VALUE. INFORMATION IN COLUMN 4 WAS DETERMINED USING A MORE RECENT VERSION OF THE TCEQ RUN3 WAM MODEL AND WITH LCRA'S PERMIT 5731 INCLUDED.

NOTE 3: ALL BBEST SCENARIOS (COLUMNS 6,7,8) USE HIGHLAND LAKES SYSTEM STORAGE AND BBEST PROPOSED IMPLEMENTATION PLAN AS SIGNAL TO DESIGNATE WHICH NON-PULSE LEVEL OF FLOW IS REQUIRED TO BE PASSING PROJECT LOCATION BEFORE DIVERSION CAN OCCUR. PULSE RECOMMENDATIONS ARE APPLIED AT TIMESFOR ALL CONDITIONS.

DAILY SIMULATED STORAGE IN PEDERNALES ASR USING FRAT BASED MODEL FOR VARIOUS EFLOW CONDITIONS

