APPENDIX-8

Data on Hydraulic Analysis

Appendix 8-3: Output of Hydraulic Analysis

1. Maximum Change in Operation

    Table 1: Valve Open, Close, Throttling

    Table 2: Pump On/off, Unit in Operation

    Table 3: Pipe in Use/no

    Figure of Flow Diagram

    Case-1 to Case-8

2. Realistic Change in Operation

    Table 1: Valve Open, Close Only

    Table 2: Pump On/off Only

    Figure of Flow Diagram

    Case-1 to Case-8

Valve Open, Close, Throttling

Label	Discharge (m3/day) by Valve On, Off , Throttling								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
FCV-BPT076-In	103,326	97,679	67,578	0	72,621	114,126	130,510	114,126	103,326
FCV-BS018-In	55,000	55,000	79,710	0	172,743	55,000	55,000	55,000	55,000
FCV-BS114-In	33,600	33,600	33,600	29,981	31,027	33,600	31,251	33,600	30,113
FCV-CT065-Out	12,960	12,960	12,960	12,960	12,960	12,960	12,960	12,960	12,960
FCV-CT066-Out	43,200	43,200	43,188	43,149	43,200	43,200	43,200	43,200	43,200
FCV-CT096-Out	63,300	63,300	63,300	63,300	63,068	63,300	63,300	63,300	63,300
FCV-CWT092-Out	30,800	0	30,800	0	29,707	33,600	24,882	33,600	27,578
FCV-CWT093-Out	0	0	0	0	0	48,342	57,097	48,342	68,549
FCV-ET033-In	3,800	3,378	2,375	2,352	3,295	3,800	3,800	3,800	3,800
FCV-ET112-In	13,200	11,735	8,250	8,171	11,444	13,200	13,200	13,200	13,200
FCV-ET113-In	9,936	8,833	6,210	0	8,615	9,936	9,936	9,936	9,936
FCV-J-522-In-2	4,000	6,669	4,000	0	4,000	4,000	14,120	4,000	4,000
FCV-J271-Out-1	246,500	213,374	0	164,541	218,645	281,969	246,500	281,969	298,435
FCV-J271-Out-2	63,750	56,674	34,248	39,461	55,271	63,750	63,750	63,750	63,750
FCV-J462-Out	0	0	0	48,833	0	0	0	0	0
FCV-J490-Out	29110	24,832	79,710	0	0	55,000	78,468	55,000	38,534
FCV-J522-In-1	6,000	6,000	6,000	0	6,000	6,000	23,712	6,000	6,000
FCV-J554-Out	70,000	120,000	50,000	0	47,365	70,000	55,502	70,000	70,000
FCV-Res001-In-1	30,800	34,560	33,600	0	25,132	33,804	30,800	33,804	30,800
FCV-Res001-In-2	119,875	107,311	20,864	100,555	127,142	20,864	119,877	20,864	58,515
FCV-Res001-Out-1	76,800	76,800	39,302	51,800	76,800	28,748	76,800	28,748	53,891
FCV-Res001-Out-2	47,955	42,028	0	32,711	53,002	0	47,957	0	9,504
FCV-Res002-In-1	55,669	0	0	89,394	129,055	33,600	150,326	33,600	55,669
FCV-Res002-In-2	94,657	132,574	90,354	0	0	83,857	0	83,857	94,657
FCV-Res003-In	3,880	0	0	0	0	0	3,880	0	5,848
FCV-Res003-Out	77,390	73,510	44,914	42,218	39,563	68,835	77,390	68,835	79,358
FCV-Res004-In	44,015	0	18,646	18,230	31,259	48,259	44,015	48,259	45,979
FCV-Res004-Out	65,135	21,120	39,766	39,350	52,379	69,379	65,135	69,379	67,099
FCV-Res005-In	67,180	0	32,826	32,270	52,664	80,462	67,180	80,462	71,371
FCV-Res005-Out	89,980	22,800	55,626	55,070	75,464	103,262	89,980	103,262	94,171
FCV-Res006-In-1	90,485	0	61,149	60,242	83,538	71,035	85,301	71,035	82,363
FCV-Res006-In-2	7,353	116,224	0	0	0	0	12,537	0	7,352
FCV-Res006-Out	97,838	116,224	61,149	60,242	83,538	71,035	97,838	71,035	89,715
FCV-Res007-In-2	7,632	0	536	0	0	7,632	7,632	7,632	7,632
FCV-Res007-Out	0	0	21,772	0	0	0	0	0	0
FCV-Res008-In	127,865	112,562	12,736	77,923	109,529	12,736	127,865	12,736	127,865
FCV-Res008-Out	1,980	650	0	0	387	0	1,980	0	1,980
FCV-Res009-In	43,891	39,019	25,874	27,169	38,053	19,244	43,891	19,244	43,891
FCV-Res010-In	48,470	43,090	30,294	30,003	42,023	15,601	48,470	15,601	48,470
FCV-Res011-In	80,159	61,288	72,916	0	0	69,359	0	69,359	80,159
FCV-Res012-In	20,000	17,780	12,500	0	17,340	20,000	20,000	20,000	20,000
FCV-Res013-In	0	0	0	0	0	396	0	396	0
FCV-Res013-Out	19,763	60,858	-14,169	0	0	75,456	19,763	75,456	19,763
FCV-Res013-Out-1	55,297	14,202	89,229	60,295	62,244	0	55,297	0	55,297
FCV-Res014-Out-1	20,599	20,599	0	13,151	32,748	0	20,599	0	0
FCV-Res014-Out-2	40,760	40,760	0	30,892	40,760	0	40,760	0	0
FCV-Res015-Out	64,697	67,220	48,228	35,768	100,502	26,837	64,697	26,837	64,697
FCV-Res016-In	80,362	40,408	0	48,932	59,616	0	0	0	80,362
FCV-Res016-Out	178,207	149,053	81,714	80,743	143,265	108,645	128,043	108,645	178,207
FCV-Res018-In	10,000	10,000	7,488	7,416	10,000	0	10,000	0	10,000
FCV-Res019-In	116,808	95,193	62,471	0	180,922	116,808	116,808	116,808	116,808
FCV-Res019-In-2	0	0	0	61,179	0	0	0	0	0
FCV-Res019-Out	0	0	0	0	88,501	0	0	0	0
FCV-Res020-In	102,810	91,398	64,256	63,640	89,136	102,810	102,810	102,810	102,810
FCV-Res021-In-1	5,577	105	0	9,751	-157,691	5,577	5,577	5,577	5,577
FCV-Res021-In-2	4,500	0	0	10,000	-71,081	4,500	4,500	4,500	4,500
FCV-Res021-In-4	25,890	30,169	0	0	172,743	0	-23,468	0	16,466

Label	Discharge (m3/day) by Valve On, Off , Throttling								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
FCV-Res021-In-5	3327	3,326	20,059	0	88,501	3,326	3,326	3,326	3,326
FCV-Res021-Out-1	0	0	0	0	157,691	0	0	0	0
FCV-Res021-Out-2	0	0	0	0	71,081	0	0	0	0
FCV-Res022-In-1	6,526	1,735	0	6,526	6,526	41,995	6,526	41,995	43,161
FCV-Res022-In-2	20,000	20,000	0	20,191	12,252	0	16,768	0	0
FCV-Res022-In-3	31,935	31,935	55,626	0	27,846	16,466	84,525	16,466	0
FCV-Res022-Out-1	21,581	19,185	13,488	13,359	18,711	21,081	21,581	21,081	21,581
FCV-Res022-Out-2	21,580	19,185	13,488	13,358	18,710	22,080	21,581	22,080	21,580
FCV-Res022-Out-3	15,300	15,300	28,650	0	9,203	15,300	15,300	15,300	0
FCV-Res023-In	98,064	87,179	61,290	60,702	85,021	98,064	98,064	98,064	98,064
FCV-Res025-In	28,800	25,603	18,000	17,827	24,970	28,800	28,800	28,800	28,800
FCV-Res026-In	41,384	36,790	25,865	25,617	35,880	41,384	41,384	41,384	41,384
FCV-Res027-In	28,800	25,603	18,000	17,827	24,970	28,800	28,800	28,800	28,800
FCV-Res028-In	10,971	9,753	6,857	6,791	9,512	10,971	10,971	10,971	10,971
FCV-Res029-In	4,879	4,337	3,049	3,020	4,230	4,879	4,879	4,879	4,879
FCV-Res030-In	4,657	4,140	2,911	2,883	4,038	4,657	4,657	4,657	4,657
FCV-Res031-In	132,653	85,430	27,732	76,271	103,198	0	0	0	132,653
FCV-Res032-In	28,905	25,696	18,066	17,893	25,061	28,905	28,906	28,905	28,905
FCV-Res034-In	12,787	11,368	7,992	7,915	11,086	12,787	12,787	12,787	12,787
FCV-Res036-In	92,896	78,963	45,821	45,068	76,201	60,432	23,334	60,432	92,896
FCV-Res037-In	99228	86,516	0	70,893	90,092	99,228	99,228	99,228	114,528
FCV-Res040-Out-1	3,327	3,326	20,059	12,346	0	3,326	3,326	3,326	3,326
FCV-Res040-Out-2	0	0	0	0	5,165	0	0	0	0
FCV-Res041-In	16,330	14,517	10,206	10,108	14,158	16,330	16,330	16,330	16,330
FCV-Res043-In	30,000	26,670	18,750	0	26,010	30,000	30,000	30,000	30,000
FCV-Res051-In	10,800	0	0	76,834	24,996	0	0	0	10,800
FCV-Res051-In-1	10,000	12,669	10,000	0	10,000	10,000	37,832	10,000	10,000
FCV-Res051-In-2	103,326	97,679	67,578	0	72,621	114,126	130,510	114,126	103,326
FCV-Res051-Out	124,126	110,348	77,578	76,834	107,617	140,090	151,980	140,090	124,126
FCV-Res053-Out	73,125	73,125	69,904	69,070	73,125	73,125	73,125	73,125	73,125
FCV-Res055-In	22,896	20,355	0	14,173	19,851	22,896	22,896	22,896	22,896
FCV-Res056-In	66,000	60,940	0	0	0	0	0	0	0
FCV-Res058-In	159,236	135,796	0	110,524	142,987	194,705	159,236	194,705	211,171
FCV-Res058-Out	105,754	88,251	0	77,419	96,618	141,223	105,754	141,223	157,689
FCV-Res063-In	44,354	39,432	27,722	27,456	38,456	11,890	0	11,890	44,354
FCV-Res063-Out	44,354	39,432	27,722	27,456	38,456	11,890	0	11,890	44,354
FCV-Res064-In	16,500	14,669	10,313	10,214	14,306	0	0	0	16,500
FCV-Res071-In	65,492	58,222	40,933	0	56,782	65,492	65,492	65,492	65,492
FCV-Res072-In	51,449	44,040	0	41,318	48,668	51,449	51,449	51,449	66,749
FCV-Res072-Out	30,540	25,452	0	28,375	30,540	30,540	30,540	30,540	45,840
FCV-Res074-In-1	23,819	21,176	14,887	14,744	0	23,819	23,819	23,819	23,819
FCV-Res074-In-2	0	0	0	0	20,652	0	0	0	0
FCV-Res075-In	14,680	13,051	9,175	9,087	12,728	14,680	14,680	14,680	14,680
FCV-Res080-In	56,843	50,534	29,931	35,186	49,283	56,843	56,843	56,843	56,843
FCV-Res081-In	34,590	30,751	16,023	21,411	29,990	34,590	34,590	34,590	34,590
FCV-Res082-In	11,971	10,642	7,482	7,410	10,379	11,971	11,971	11,971	11,971
FCV-Res091-In	9,677	8,603	6,048	5,990	8,390	9,677	9,677	9,677	9,677
FCV-Res094-In	28,414	25,260	17,759	0	24,635	28,414	28,414	28,414	28,414

Pump On, Off, Unit in Operation

Label	Control Status of Pmps: On, Off									Discharge (m3/day): Running Unit and Operation Hour								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*	*Base*	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
BS-017	On	On	On	Off	On	On	On	On	On	55,000	55,000	79,710	0	172,743	55,000	55,000	55,000	55,000
BS-104	On	On	On	On	On	Off	On	Off	On	10,000	10,000	7,488	7416	10,000	0	10,000	0	10,000
BS-105	Off	Off	Off	Off	Off	Off	Off	Off	Off	0	0	0	0	0	0	0	0	0
BS-114	On	On	On	On	On	On	On	On	On	33,600	33,600	33,600	29981	31,027	33,600	31,251	33,600	30,113
PMP-001-1	On	On	On	On	On	On	On	On	On	76,800	76,800	39,302	51800	76,800	28,748	76,800	28,748	53,891
PMP-001-2	On	On	Off	On	On	On	On	On	On	47,955	42,028	0	32711	53,002	0	47,957	0	9,504
PMP-002	On	On	On	On	On	On	On	On	On	48,470	43,090	30,294	30003	42,023	15,601	48,470	15,601	48,470
PMP-008	On	On	Off	Off	On	Off	On	Off	On	1,980	650	0	0	387	0	1,980	0	1,980
PMP-013	On	On	On	On	On	Off	On	Off	On	55,297	14,202	89,229	60295	62,244	0	55,297	0	55,297
PMP-014-1	On	On	Off	On	On	Off	On	Off	Off	20,599	20,599	0	13151	32,748	0	20,599	0	0
PMP-014-2	On	On	Off	On	On	Off	On	Off	Off	40,760	40,760	0	30892	40,760	0	40,760	0	0
PMP-015	On	On	On	On	On	On	On	On	On	64,697	67,220	48,228	35768	100,502	26,837	64,697	26,837	64,697
PMP-016-2	On	Off	Off	On	On	Off	Off	Off	On	10,800	0	0	76834	24,996	0	0	0	10,800
PMP-019	Off	Off	Off	Off	On	Off	Off	Off	Off	0	0	0	0	88,501	0	0	0	0
PMP-020	On	On	On	On	On	On	On	On	On	41,384	36,790	25,865	25617	35,880	41,384	41,384	41,384	41,384
PMP-021-1	Off	Off	Off	Off	On	Off	Off	Off	Off	0	0	0	0	157,691	0	0	0	0
PMP-021-2	Off	Off	Off	Off	On	Off	Off	Off	Off	0	0	0	0	71,081	0	0	0	0
PMP-022-1	On	On	On	On	On	On	On	On	On	21,581	19,185	13,488	13359	18,711	21,081	21,581	21,081	21,581
PMP-022-2	On	On	On	On	On	On	On	On	On	21,580	19,185	13,488	13358	18,710	22,080	21,581	22,080	21,580
PMP-022-3	On	On	On	On	On	On	On	On	Off	15,300	15,300	28,650	0	9,203	15,300	15,300	15,300	0
PMP-024	On	On	On	On	On	On	On	On	On	28,905	25,696	18,066	17893	25,061	28,905	28,906	28,905	28,905
PMP-025	On	On	On	On	On	On	On	On	On	28,800	25,603	18,000	17827	24,970	28,800	28,800	28,800	28,800
PMP-026	On	On	On	On	On	On	On	On	On	10,971	9,753	6,857	6791	9,512	10,971	10,971	10,971	10,971
PMP-027	On	On	On	On	On	On	On	On	On	4,879	4,337	3,049	3020	4,230	4,879	4,879	4,879	4,879
PMP-028	On	On	On	On	On	On	On	On	On	3,800	3,378	2,375	2352	3,295	3,800	3,800	3,800	3,800
PMP-032	On	On	On	On	On	On	On	On	On	9,677	8,603	6,048	5990	8,390	9,677	9,677	9,677	9,677
PMP-036	On	On	On	On	On	On	Off	On	On	44,354	39,432	27,722	27456	38,456	11,890	0	11,890	44,354
PMP-037	On	On	Off	On	On	On	On	On	On	51,449	44,040	0	41318	48,668	51,449	51,449	51,449	66,749
PMP-038	On	On	On	On	On	On	On	On	On	11,971	10,642	7,482	7410	10,379	11,971	11,971	11,971	11,971
PMP-040	Off	Off	Off	Off	On	Off	Off	Off	Off	0	0	0	0	5,165	0	0	0	0
PMP-043	On	On	On	Off	On	On	On	On	On	20,000	17,780	12,500	0	17,340	20,000	20,000	20,000	20,000
PMP-056-1	On	On	On	On	On	On	On	On	On	246,500	213,374	0	164541	218,645	281,969	246,500	281,969	298,435
PMP-056-2	On	On	On	On	On	On	On	On	On	63,750	56,674	34,248	39461	55,271	63,750	63,750	63,750	63,750
PMP-057	On	On	Off	On	On	On	On	On	On	159,236	135,796	0	110524	142,987	194,705	159,236	194,705	211,171
PMP-058	On	On	Off	On	On	On	On	On	On	105,754	88,251	0	77419	96,618	141,223	105,754	141,223	157,689
PMP-059	On	On	On	On	On	On	On	On	On	56,843	50,534	29,931	35186	49,283	56,843	56,843	56,843	56,843
PMP-066	On	On	On	On	On	On	On	On	On	43,200	43,200	43,188	43149	43,200	43,200	43,200	43,200	43,200
PMP-069	On	On	On	On	On	On	On	On	On	13,200	11,735	8,250	8171	11,444	13,200	13,200	13,200	13,200
PMP-071	On	On	On	On	On	On	On	On	On	28,414	25,260	17,759	0	24,635	28,414	28,414	28,414	28,414
PMP-072	On	On	Off	On	On	On	On	On	On	30,540	25,452	0	28375	30,540	30,540	30,540	30,540	45,840
PMP-074	On	On	On	On	On	On	On	On	On	14,680	13,051	9,175	9087	12,728	14,680	14,680	14,680	14,680
PMP-080	On	On	On	On	On	On	On	On	On	34,590	30,751	16,023	21411	29,990	34,590	34,590	34,590	34,590
PMP-092-1	On	On	On	Off	On	On	On	On	On	30,800	34,560	33,600	0	25,132	33,804	30,800	33,804	30,800
PMP-092-2	On	Off	On	Off	On	On	On	On	On	30,800	0	30,800	0	29,707	33,600	24,882	33,600	27,578
PMP-093	On	On	On	On	On	On	On	On	On	12,787	11,368	7,992	7915	11,086	12,787	12,787	12,787	12,787
PMP-095	On	On	On	Off	On	On	On	On	On	9,936	8,833	6,210	0	8,615	9,936	9,936	9,936	9,936
PMP-096	On	On	On	On	On	On	On	On	On	63,300	63,300	63,300	63300	63,068	63,300	63,300	63,300	63,300

Pipe in Use/No

Label	Control Status of Pipelines								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
Bypass-PMP-21-1	Open	Open	Closed	Open	Closed	Open	Open	Open	Open
Bypass-PMP-21-2	Open	Open	Closed	Open	Closed	Open	Open	Open	Open
P-2	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-3	Open	Open	Open	Open	Open	Open	Open	Open	Open
P-4	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-6	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-10	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-12	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-16	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-18	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-19	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-20	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-22	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-23	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-26	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-27	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-38	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-40	Open	Open	Open	Open	Open	Open	Open	Open	Closed
P-41	Open	Open	Open	Open	Open	Open	Open	Open	Closed
P-44	Open	Open	Closed	Open	Open	Open	Open	Open	Closed
P-45	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-48	Open	Open	Open	Open	Closed	Open	Open	Open	Open
P-49	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-54	Closed	Closed	Closed	Open	Open	Closed	Closed	Closed	Closed
P-55	Closed	Closed	Closed	Open	Open	Closed	Closed	Closed	Closed
P-57	Open	Open	Closed	Closed	Closed	Closed	Closed	Closed	Closed
P-58	Open	Open	Closed	Closed	Closed	Closed	Closed	Closed	Closed
P-62	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-67	Open	Open	Open	Closed	Closed	Open	Closed	Open	Open
P-68	Open	Open	Open	Closed	Closed	Open	Closed	Open	Open
P-81	Open	Open	Open	Open	Closed	Open	Open	Open	Open
P-88	Open	Open	Open	Open	Closed	Open	Open	Open	Open
P-90	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-93	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-95	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-96	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-122	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-123	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-124	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-127	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-128	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-129	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-130	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-154	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-155	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-157	Open	Closed	Closed	Open	Open	Closed	Closed	Closed	Open
P-165	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-166	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-174	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-179	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-184	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-193	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-194	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-195	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-200	Open	Open	Open	Closed	Open	Open	Open	Open	Closed
P-201	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-202	Open	Closed	Open	Open	Open	Open	Open	Open	Open

Pipe in Use/No

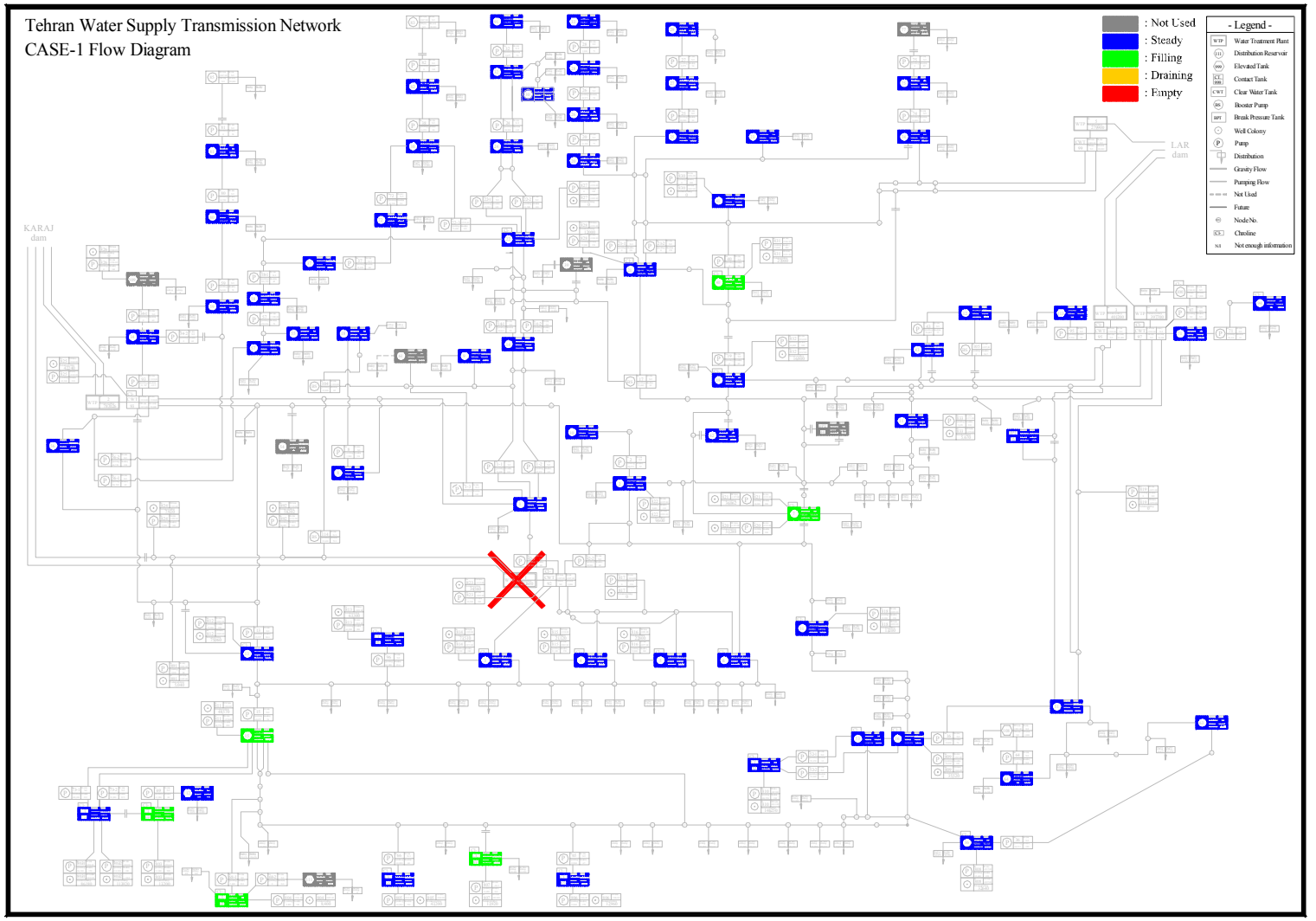
Label	Control Status of Pipelines								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
P-203	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-204	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-205	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-206	Open	Open	Open	Closed	Open	Open	Open	Open	Closed
P-207	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-211	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-212	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-214	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-215	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-218	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-221	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-224	Open	Open	Closed	Closed	Open	Closed	Open	Closed	Open
P-231	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-235	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-250	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-251	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-252	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-255	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-263	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-264	Open	Open	Open	Open	Open	Open	Open	Open	Open
P-265	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-266	Open	Open	Open	Closed	Open	Closed	Open	Closed	Open
P-267	Open	Open	Closed	Closed	Open	Closed	Open	Closed	Open
P-269	Open	Open	Open	Closed	Open	Open	Open	Open	Closed
P-271	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-272	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-273	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-274	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-276	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-277	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-280	Open	Closed	Open	Closed	Open	Closed	Open	Closed	Open
P-281	Open	Closed	Open	Closed	Open	Closed	Open	Closed	Open
P-284	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-287	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-290	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-299	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-300	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-303	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-304	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-306	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-307	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-308	Open	Open	Closed	Open	Open	Closed	Open	Closed	Closed
P-310	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-312	Open	Closed	Open	Open	Open	Open	Open	Open	Closed
P-313	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-314	Open	Closed	Open	Closed	Open	Open	Open	Open	Open
P-315	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-317	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-318	Open	Open	Closed	Closed	Open	Open	Open	Open	Open
P-328	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-329	Open	Open	Open	Open	Open	Open	Open	Open	Open
P-330	Open	Open	Open	Open	Open	Open	Open	Open	Open
P-331	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-333	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-334	Open	Open	Open	Open	Open	Closed	Closed	Closed	Open
P-335	Open	Open	Open	Open	Open	Closed	Closed	Closed	Open
P-336	Open	Open	Open	Open	Closed	Closed	Open	Closed	Open

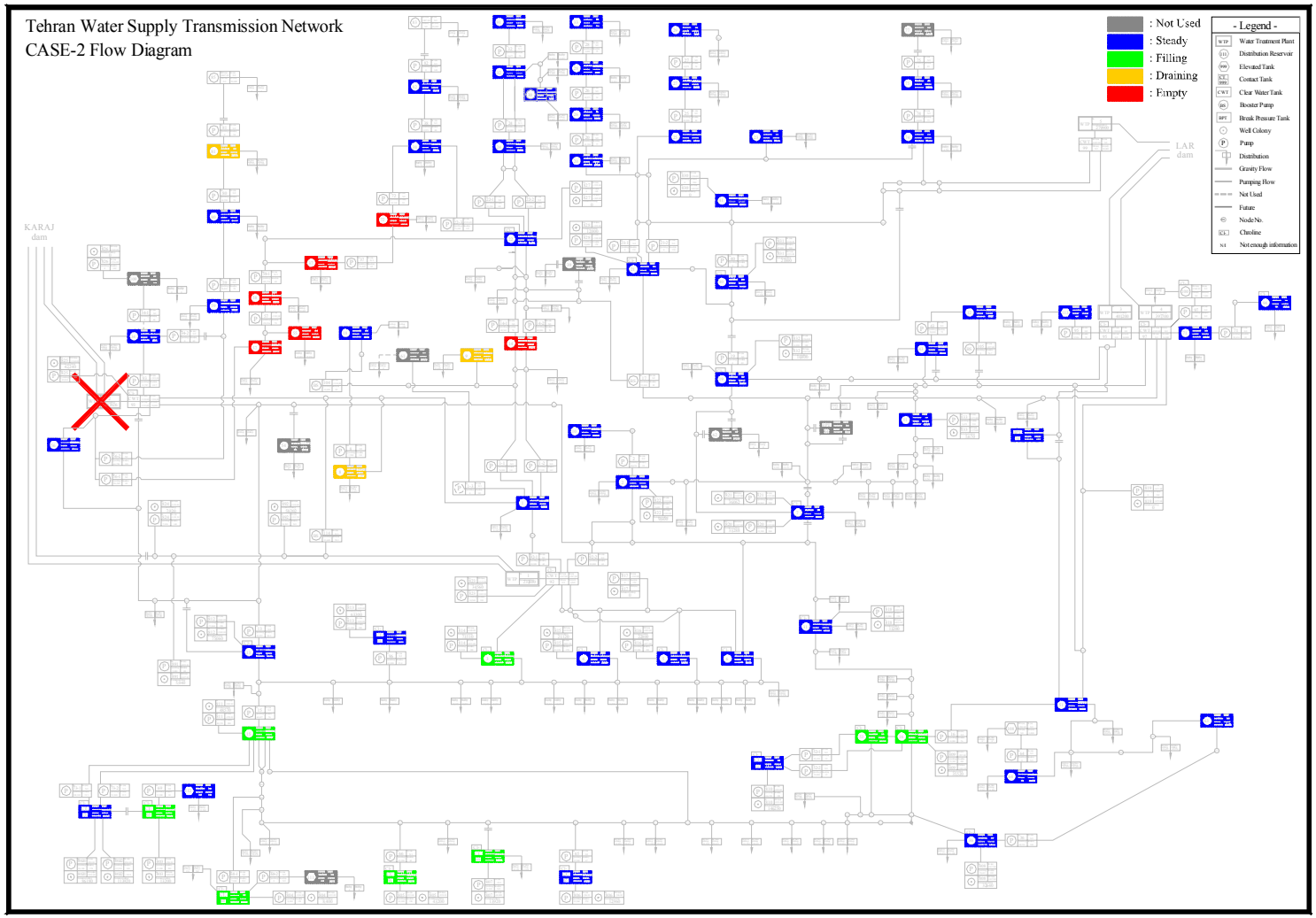
Pipe in Use/No

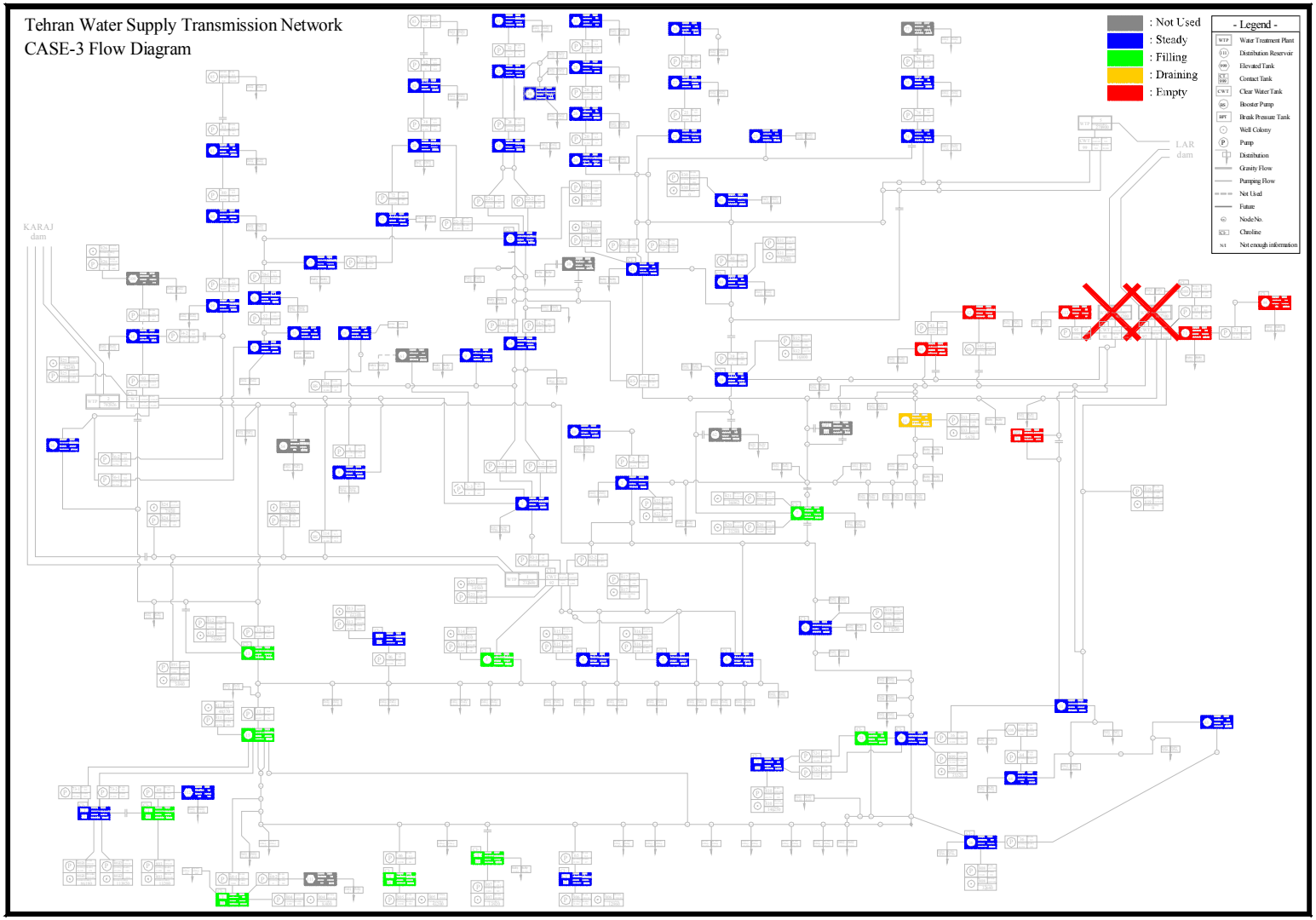
Label	Control Status of Pipelines								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
P-338	Open	Open	Open	Open	Closed	Closed	Open	Closed	Open
P-351	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-352	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-353	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed	Closed
P-356	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed	Closed
P-358	Open	Open	Open	Open	Open	Closed	Closed	Closed	Open
P-359	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-361	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-371	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-385	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-386	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-404	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-405	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-408	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-411	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-413	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-414	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-415	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-416	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-417	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-419	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-420	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-422	Open	Open	Closed	Open	Open	Open	Open	Open	Closed
P-432	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-433	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-434	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-435	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-436	Open	Open	Open	Open	Open	Closed	Closed	Closed	Open
P-438	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-439	Open	Closed	Open	Closed	Open	Open	Open	Open	Open
P-441	Open	Open	Open	Closed	Closed	Closed	Closed	Closed	Closed
P-447	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-448	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-449	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-450	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-451	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-453	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-454	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-455	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-456	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-457	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-458	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-459	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-462	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-463	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-464	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-465	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-466	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
P-477	Open	Open	Open	Closed	Closed	Open	Open	Open	Open
P-478	Open	Open	Open	Closed	Closed	Open	Open	Open	Open
P-482	Open	Open	Open	Open	Closed	Open	Open	Open	Open
P-486	Open	Open	Open	Open	Closed	Open	Open	Open	Open
P-487	Open	Closed	Closed	Open	Open	Closed	Closed	Closed	Open
P-488	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-489	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-490	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-495	Open	Closed	Closed	Open	Open	Closed	Closed	Closed	Open

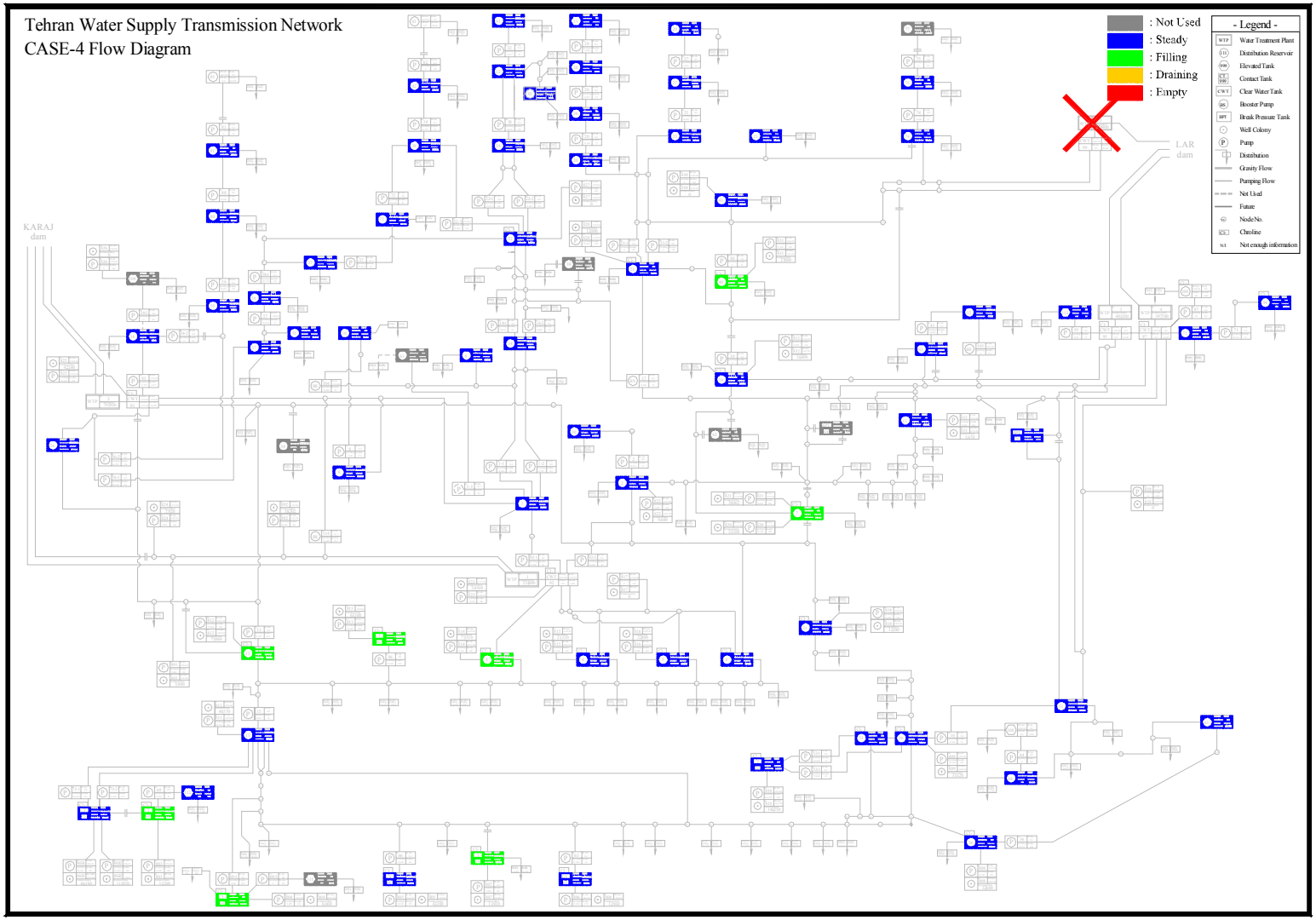
Pipe in Use/No

Label	Control Status of Pipelines								
	Base	*Case-1*	*Case-2*	*Case-3*	*Case-4*	*Case-5*	*Case-6*	*Case-7*	*Case-8*
P-508	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
P-509	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
P-510	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
P-511	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
P-526	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-527	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-532	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-533	Open	Open	Open	Closed	Closed	Open	Open	Open	Open
P-534	Open	Open	Open	Closed	Closed	Open	Open	Open	Open
P-535	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-536	Closed	Closed	Closed	Closed	Closed	Open	Closed	Open	Closed
P-537	Closed	Closed	Closed	Closed	Closed	Open	Closed	Open	Closed
P-540	Closed	Closed	Closed	Closed	Closed	Open	Open	Open	Open
P-541	Closed	Closed	Closed	Closed	Closed	Open	Open	Open	Open
P-542	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-543	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-544	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
P-566	Open	Open	Open	Closed	Closed	Open	Open	Open	Open
P-567	Open	Closed	Open	Closed	Closed	Open	Open	Open	Open
P-570	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-571	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-574	Open	Open	Open	Open	Open	Closed	Closed	Closed	Open
P-575	Open	Open	Open	Open	Open	Closed	Closed	Closed	Open
P-576	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-577	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-578	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-579	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-580	Open	Open	Open	Closed	Closed	Open	Closed	Open	Open
P-581	Open	Open	Open	Open	Closed	Open	Closed	Open	Open
P-607	Open	Open	Closed	Open	Open	Closed	Open	Closed	Open
P-608	Open	Open	Open	Open	Open	Open	Open	Open	Open
P-609	Open	Open	Open	Open	Open	Closed	Open	Closed	Open
P-612	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-619	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-620	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-621	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-622	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-629	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-636	Open	Closed	Closed	Open	Open	Closed	Closed	Closed	Open
P-638	Open	Open	Open	Open	Open	Open	Open	Open	Closed
P-640	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-641	Open	Open	Open	Closed	Open	Open	Open	Open	Open
P-R5	Open	Closed	Open	Open	Open	Open	Open	Open	Open
P-Well-817	Closed	Open	Open	Open	Open	Open	Open	Open	Open
P-Well-818	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-Well-819	Closed	Open	Open	Open	Closed	Open	Open	Open	Closed
P-Well-820	Open	Closed	Closed	Open	Open	Closed	Open	Closed	Open
P-Well-821	Open	Open	Open	Open	Closed	Open	Closed	Open	Closed
P-Well-822	Open	Closed	Open	Open	Open	Closed	Open	Closed	Open
P-Well-823	Open	Open	Open	Open	Open	Open	Closed	Open	Open
P-Well-827	Closed	Open	Open	Open	Open	Open	Open	Open	Open
P-Well-828	Open	Open	Closed	Open	Open	Open	Open	Open	Open
P-Well-830	Closed	Open	Open	Open	Closed	Open	Open	Open	Closed
P-Well-831	Open	Closed	Closed	Open	Open	Closed	Open	Closed	Open
P-Well-832	Open	Open	Open	Open	Closed	Open	Closed	Open	Closed
P-Well-833	Open	Closed	Open	Open	Open	Closed	Open	Closed	Open
P-Well-891	Open	Open	Open	Open	Open	Open	Closed	Open	Open


Tehran Water Supply Transmission Network
CASE-1 Flow Diagram
: Not Used
: Steady
: Filling
: Draining
: Empty
- Legend -
Water Treatment Plant
Distribution Reservoir
Elevated Tank
Contact Tank
Clear Water Tank
Booster Pump
Break Pressure Tank
Well Colony
Pump
Distribution
Gravity Flow
Pumping Flow
Not Used
Future
Node No.
Choline
Not enough information
KARAJ
dam
LAR
dam


Tehran Water Supply Transmission Network
CASE-2 Flow Diagram
: Not Used
: Steady
: Filling
: Draining
: Empty
- Legend -
Water Treatment Plant
Distribution Reservoir
Elevated Tank
Contact Tank
Clear Water Tank
Booster Pump
Break Pressure Tank
Well Colony
Pump
Distribution
Gravity Flow
Pumping Flow
Not Used
Future
Node No.
Choline
Not enough information
KARAJ
dam
LAR
dam


Tehran Water Supply Transmission Network
CASE-3 Flow Diagram
: Not Used
: Steady
: Filling
: Draining
: Empty
- Legend -
Water Treatment Plant
Distribution Reservoir
Elevated Tank
Contact Tank
Clear Water Tank
Booster Pump
Break Pressure Tank
Well Colony
Pump
Distribution
Gravity Flow
Pumping Flow
Not Used
Future
Node No.
Chroline
Not enough information
KARAJ
dam
LAR
dam


Tehran Water Supply Transmission Network
CASE-4 Flow Diagram
: Not Used
: Steady
: Filling
: Draining
: Empty
- Legend -
Water Treatment Plant
Distribution Reservoir
Elevated Tank
Contact Tank
Clear Water Tank
Booster Pump
Break Pressure Tank
Well Colony
Pump
Distribution
Gravity Flow
Pumping Flow
Not Used
Future
Node No.
Chroline
Not enough information
KARAJ
dam
LAR
dam