TECHNICAL REPORT ON 2015-16
HYDROGEOLOGIC EVALUATION FOR SIERRA VALLEY

Prepared for
Sierra Valley Groundwater Management District
Sierraville, California

By
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July 27, 2017

Ms. Jenny Gant, Secretary
Sierra Valley Groundwater
Management District
P.O. Box 102
Sierra Valley, California 96126

Re: 2015-16 Hydrogeologic Evaluation

Dear Jenny:

Submitted herewith is our report on the 2015-16 groundwater evaluation for Sierra Valley. We appreciate the cooperation of the Groundwater Management District and the Northern District of the California Department of Water Resources in supplying information for this report.

Sincerely yours,

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INTRODUCTION

The California Department of Water Resources (1963 and 1983a and b) described groundwater conditions in Sierra Valley. The California Department of Water Resources (DWR), Northern District, subsequently prepared eight annual updates on groundwater conditions in the Sierra Valley Basin, extending through Spring 1991. Kenneth D. Schmidt and Associates prepared a triennial update extending through Spring 1994, a quadrennial update extending through Spring 1998, a five-year update extending through Spring 2003, a two-year update extending through Spring 2005, a six-year updates extending through Spring 2011, and two two-year updates for Spring 2011-Spring 2015. As of 2016, pumpage from 50 active wells was measured with flowmeters by the Sierra Valley Groundwater Management District. As of 2016, water levels were measured in 51 wells in the main part of Sierra Valley and in eight wells in the Chilcoot sub-basin, in the northeast part of the valley, by the DWR. This update covers the period from Spring 2015 to Spring 2017.

WATER-LEVEL ELEVATION CONTOURS

Appendix A contains water-level data for Spring 2015 through Spring 2017 from the DWR CASGEM website. These data are for

wells in Sierra Valley that are measured twice a year by DWR. Figure 1 shows water-level elevation contours and the direction of groundwater flow for Spring 2015. Water-level elevations at that time were greater then 4,980 feet above mean sea level southeast of Loyalton in Sierra Brooks, about 5,000 feet near Sierraville, and about 5,050 feet east of Chilcoot. Water-level elevations were less than 4,880 feet in a large pumping depression located north of Loyalton and west and southwest of Vinton. In Spring 2015, there appeared to be little groundwater outflow from Sierra Valley in the primary pumped zone because of this depression. This map represents conditions after two years of high pumpage in 2013-2014.

Figure 2 shows water-level elevations and the direction of groundwater flow in Spring 2016. This map is similar to the map for Spring 2015, except water-level elevations were lower in the large cone of depression in Spring 2016 than in Spring 2015. Also, a northwesterly direction of groundwater flow was present in the Calpine-Sierraville Area. This map shows conditions after three years of relatively high pumpage (2013, 2014, and 2015).

Figure 3 shows water-level elevation contours and the direction of groundwater flow for Spring 2017. Water-level elevation at that time were greater than 4,975 feet above mean sea level southeast of Loyalton in Sierra Brooks, about 5,000 feet near Sierraville, and about 5,040 feet east of Chilcoot. Water-level elevations were less

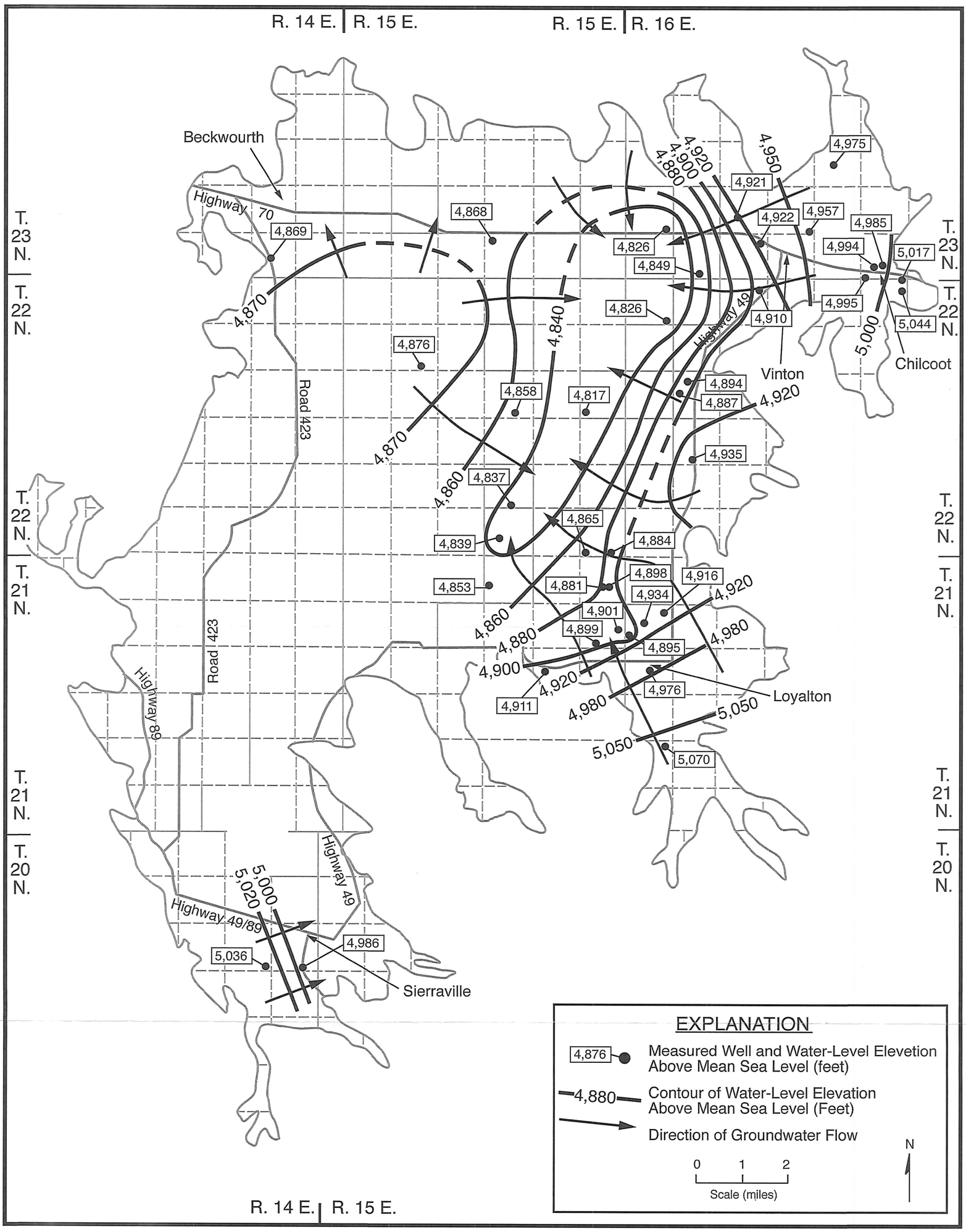
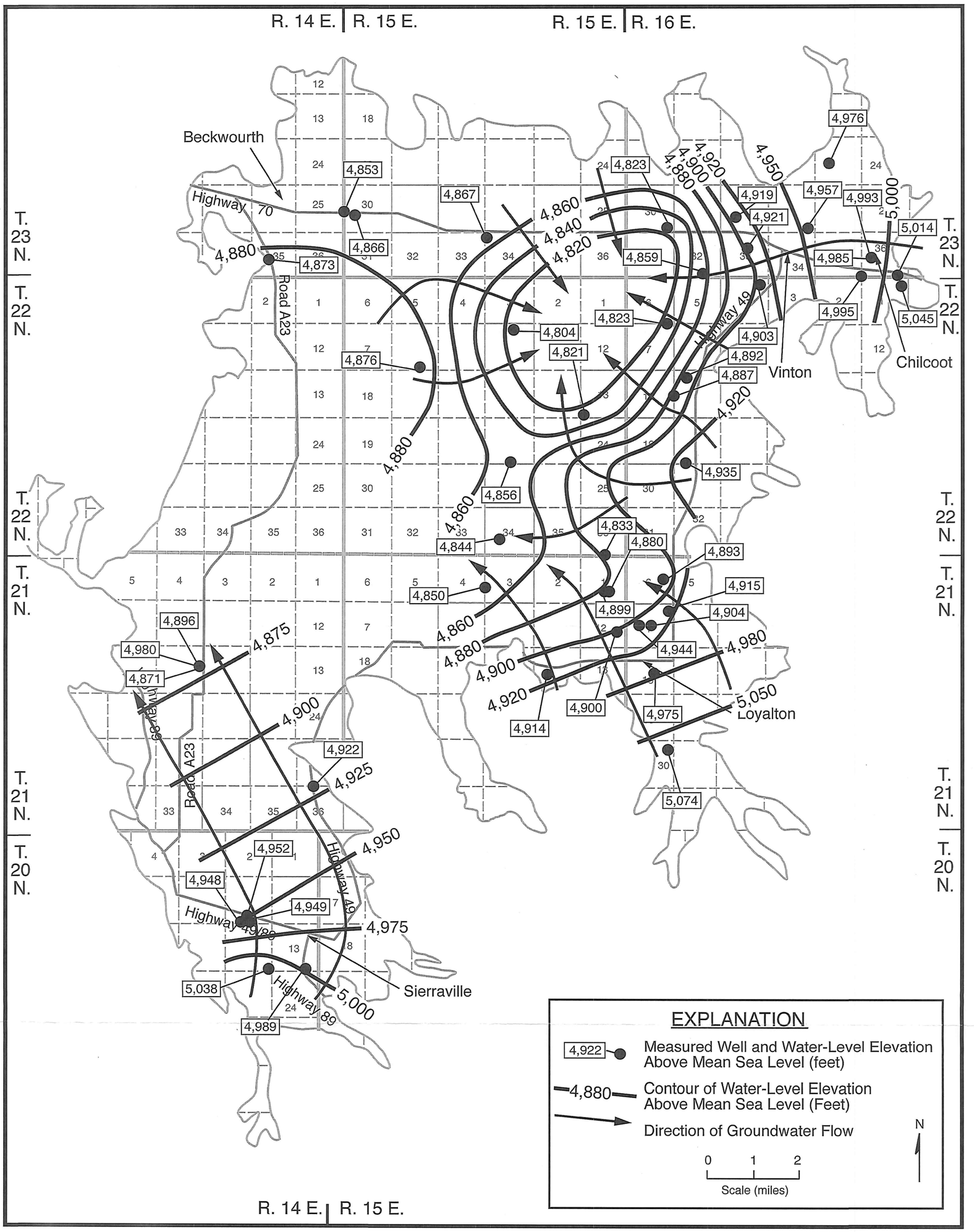


FIGURE 1 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW IN SPRING 2015



EXPLANATION

4,922 — Measured Well and Water-Level Elevation Above Mean Sea Level (feet)

4,880 — Contour of Water-Level Elevation Above Mean Sea Level (Feet)

Direction of Groundwater Flow

N

0 1 2
Scale (miles)

FIGURE 2 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW IN SPRING 2016

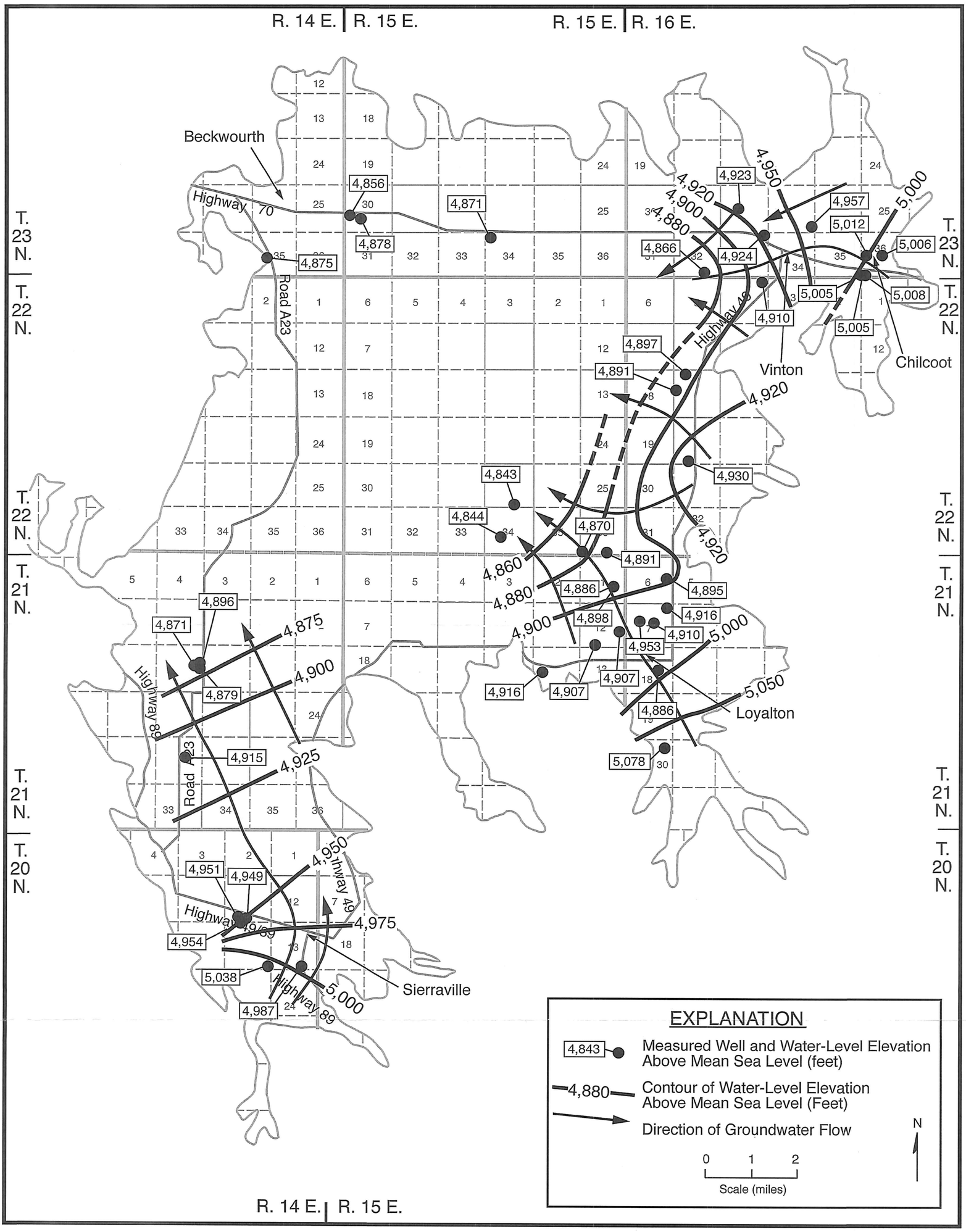


FIGURE 3 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW IN SPRING 2017

than 4,830 feet in a large pumping depression located north of Loyalton and west and southwest of Vinton. However, due to a lack of measurements, the western part of this depression wasn't defined. A northwesterly direction of groundwater flow was indicated in the Sierraville-Calpine area. In Spring 2017, there appeared to be little groundwater outflow from Sierra Valley in the primary pumped zone because of this depression. This map represents conditions after four consecutive years of the highest historical pumpage in the valley (2013, 2014, 2015, and 2016).

WATER-LEVEL CHANGES

Figure 4 shows changes in water levels between Spring 2005 and Spring 2016. 2016 was used instead of 2017 because of the lack of measurements in 2017 in the west part of the Vinton cone of depression. Water levels were lower in all of the wells measured in the valley in Spring 2016 than in Spring 2005, except for two wells near Sierraville. Water levels in six wells in and west of the Vinton area fell from 8 to 28 feet during this period. In the Chilcoot subarea, water levels in the measured wells were two to six feet deeper in Spring 2016 than in Spring 2005. Water levels in eight wells in the Loyalton subarea were 6 to 18 feet deeper in Spring 2016 than in Spring 2005. The water levels in several wells near Sierraville were about the same in Spring 2016 as in Spring 2005.

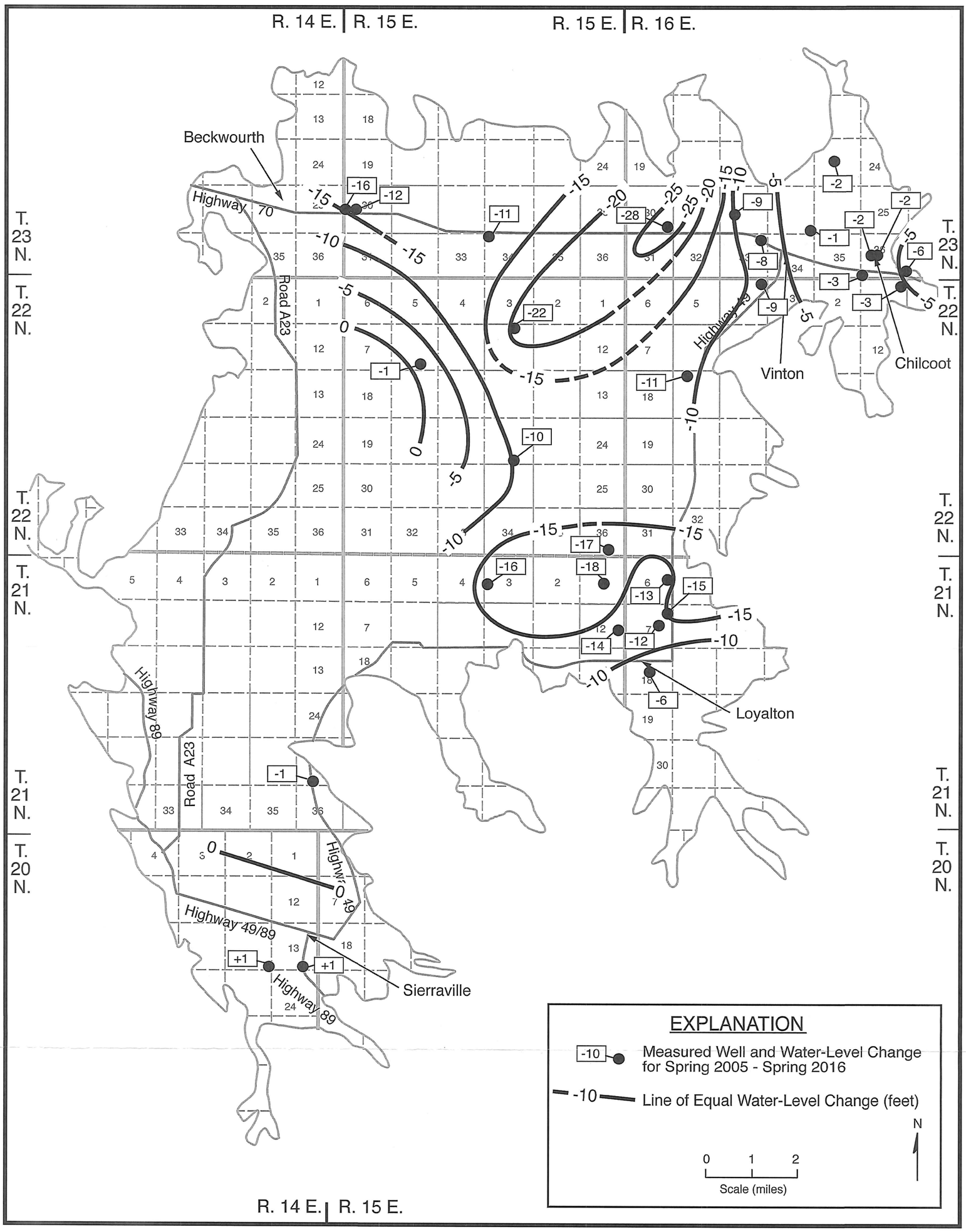


FIGURE 4 - WATER-LEVEL CHANGES FOR SPRING 2005-SPRING 2016

WATER-LEVEL HYDROGRAPHS

Monitor Wells

Water-level measurements for District monitor wells and other frequently measured wells are provided in Appendix B and locations are shown in Figure 5. There are six sets of District monitor wells. Water levels were formerly frequently measured in a number of District monitor wells and other wells, but this program was discontinued in the mid-2005. The program was resumed during June-December 2011, but water levels were not measured in 2012. Water levels were measured in January 2013 and 2014. Frequent measurements were resumed from 2015 through Spring 2017. Water levels in MW-1s and 1d (north of Loyalton) fell from 1996 through Spring 2005. In 2011, water levels were slightly lower than in Spring 2005. The net change in water levels in MW-1s from Spring 2015 to Spring 2016 was a slight rise. Measurements for MW-1d show much more seasonal fluctuations, characteristic of confined groundwater. Spring water levels in this well fell between 1996 and 2004. Water levels in MW-1d were lower in 2011 than during 1996-2004. The net change in water levels in MW-1d from Spring 2015 to Spring 2017 was a rise of about five feet. This is attributed to precipitation during Winter 2016-17. The water levels in MW-2 (all three completions) generally rose or were stable from Fall 2002 through Spring 2007. MW-2 is located several miles northwest of Sierraville. Water levels at this site were about

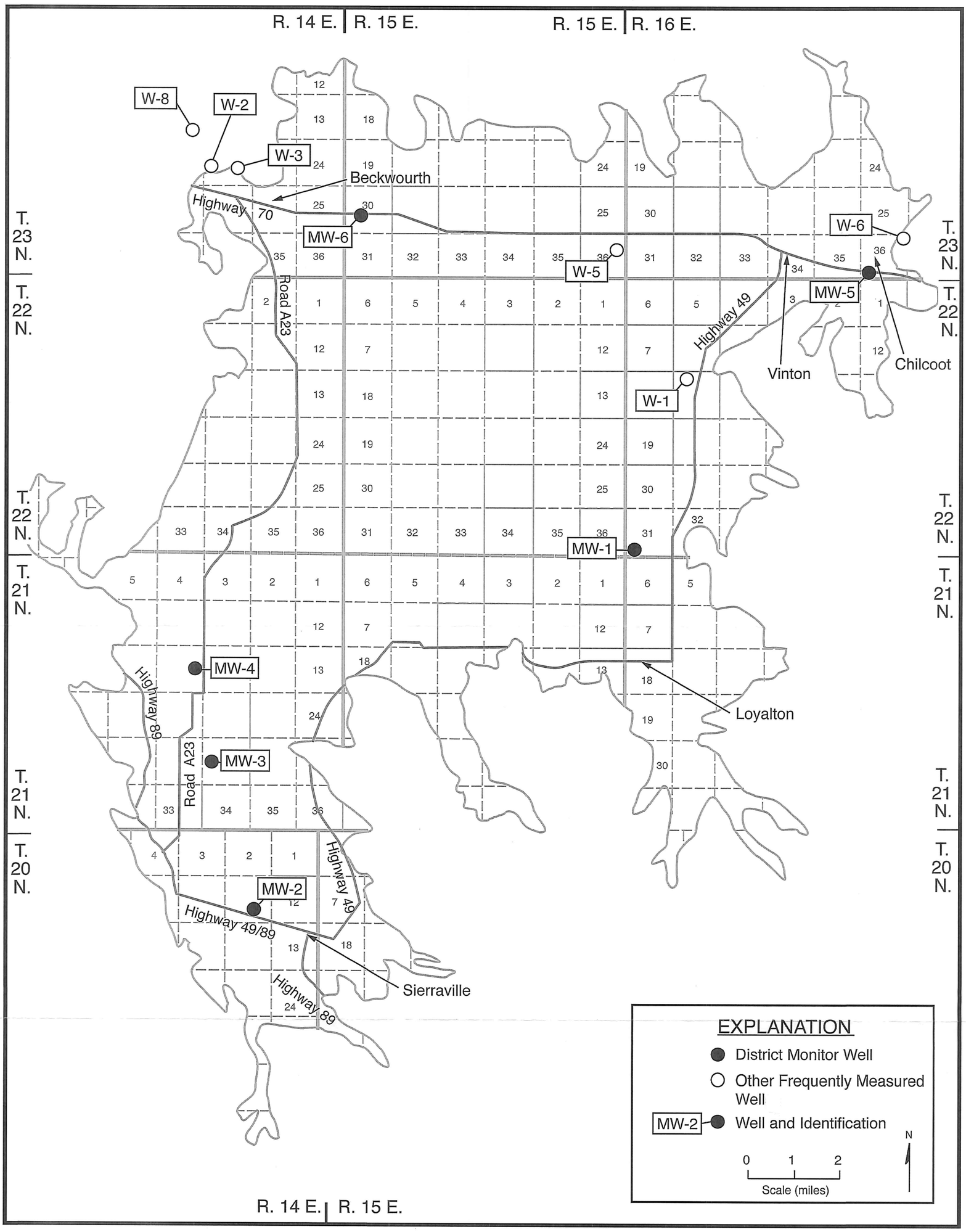


FIGURE 5 - LOCATION OF DISTRICT MONITOR WELLS AND OTHER FREQUENTLY MEASURED WELLS

the same in 2011, but were falling during the year due to the low precipitation. The net change in water levels in MW-2 from Spring 2015 to spring 2017 was a rise of two to three feet. Water levels in MW-3 (all three completions) were relatively stable from Fall 2002 through Spring 2007, and each completion clearly showed a marked response to summer pumping in 2003 and 2004. The water levels at this site were about the same in 2011 as previously, and indicated no overall decline. The net change in water levels in MW-3 from Spring 2015 to Spring 2017 was a rise of less than one foot. MW-3 is located northeast of Sattley. The water levels in MW-4 (all three completions) were relatively stable between Fall 2002 and Spring 2007. Summer declines were evident in 2003, 2004, and 2005. Water levels in 2011 were about the same as previously and showed no overall decline. The net change in water levels in MW-4 from Spring 2015 to Spring 2017 was a decline of two to seven feet. Water levels in MW-5 (all three completions) were stable or rose between October 2004 and Spring 2009. MW-5 is located in Chilcoot. The water levels at MW-5 slightly fell during 2011 due to the low precipitation. The net change in water levels in MW-5 from Spring 2015 to Spring 2017 was a rise of five to seven feet. This is attributed to winter precipitation during 2016-17. Water levels in MW-6 (two completions) also rose or were relatively stable between Fall 2004 and Spring 2009. MW-6 is located east of Beckwourth. Temporary summer declines were

evident in 2005, 2007, 2008, and 2011. The net change in water levels in MW-6 from Spring 2015 to Spring 2017 was a water-level rise of four feet. Overall, water levels fell during 2013-16 and then rose in Spring 2017 due to recharge during the previous winter.

Other Frequently Measured Wells

Four wells near the Grizzly Ranch project have been frequently measured. The water level in the easternmost of these (W-3) fell from 57.6 feet in June 1996 to 110.5 feet in February 2001. In 2011, depth to water in W-3 ranged from 102 to 114 feet. From Spring 2015 to spring 2017 the depth to water in W-3 ranged from 133 to 157 feet, with a net rise of 21 feet. Water levels in the next most easterly well (W-2) fell from 34.7 feet in May 1997 to 73.1 feet in March 2001. In 2011, the water level in W-2 ranged from 75.0 to 78.3 feet deep. From Spring 2015 to Spring 2017, the depth to water in W-2 ranged from 86 to 116 feet, with a net rise of 26 feet. The water level in W-4 fell from flowing prior to October 1998 to 18.6 feet deep in September 2007. Measurements for 2011 through Spring 2017 aren't available for this well. The water level in W-8 fell from 7.6 feet deep in June 2000 to 15.5 feet in November 2002. The water level then rose to a depth of 8.1 feet in April 2003, and then fell to 17.0 feet in September 2004. The water level in this well has risen since September 2004, and was the shallowest of record (3 feet deep) in

2011. From Spring 2015 to Spring 2017, the depth to water ranged from one to 23 feet, with a net rise of eight feet.

Three other frequently measured wells (W-1, W-5, and W-6) located in the northeast part of Sierra Valley. W-1 is located southwest of Vinton and from Spring 2015 to Spring 2017, the depth to water ranged from 18 to 27 feet, with a net rise of about three feet. W-5 is located west of Vinton. The depth to water ranged from 73 to 144 feet and from Spring 2015 to Spring 2017, with a net rise of about three feet. W-6 is located northeast of Chilcoot and from Spring 2015 to Spring 2017, the depth to water ranged from 9 to 50 feet, with a net rise of 40 feet. The water-level rises as of Spring 2017 are attributed to recharge during the previous winter.

Long-Term Trends

In previous groundwater updates, long-term water-level hydrographs were discussed for four wells in the main part of the valley and two wells in the Chilcoot Sub-basin. The wells in the main part of the valley were:

T22N/R15E-22Q1 (northwest of Loyalton)
T22N/R15E-36N1 (north of Loyalton)
T22N/R16E-17C1 (southwest of Vinton)
T22N/R16E-4A1 (southwest of Vinton).

Fairly continuous water-level records are available for 29 other wells in the valley, extending from at least about 1980 to 2015. Most

of these wells began to be measured by DWR as part of Sierra Valley Groundwater Management District activities. Long-term water-level hydrographs for these wells are provided in Appendix C.

Vinton Subarea

Figure 6 shows long-term water-level hydrographs for two wells southwest of Vinton: T22N/R16E-4A1 and 17C1. Well 4A1 is reportedly 251 feet deep. The well was flowing prior to 1979. The water level in this well was relatively stable and showed small seasonal fluctuations prior to 1979. The water level then began to decline after 1978, and reached a depth of about 25 feet in Fall 1991-92. After 1992, the water level recovered through Spring 1999 (to about five feet deep). After Spring 1999, the water level fell to about 35 feet by Fall 2004. By Fall 2004, depth to water in Well 4A1 was the deepest of record as of that time. Between Spring 2005 and 2012, the spring water levels have ranged from about 14 to 26 feet deep. Water levels fell about nine feet between Spring 2013 and Spring 2015. In Fall 2014, the water level was the deepest of record. Water levels in this well were about the same in Spring 2015 as in Spring 2017. These water-level trends have been directly related to pumping patterns.

Well 17C1 is also termed the Dyson Lane recorder, and has been equipped with a continuous water-level recorder since 1981. This

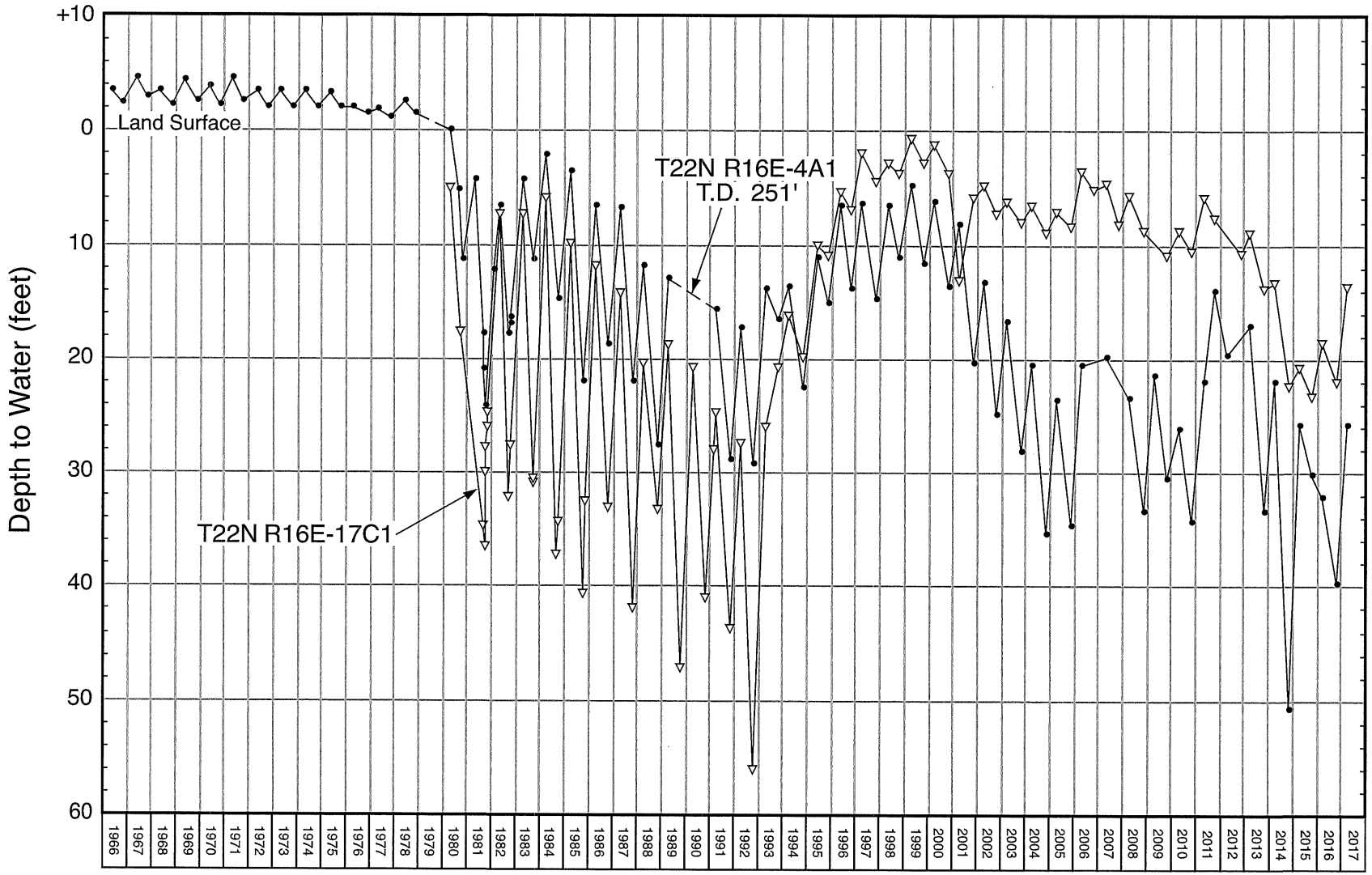


FIGURE 6 - WATER-LEVEL HYDROGRAPHS FOR VINTON AREA

well is indicated to be about 100 feet deep. The well was originally perforated from 73 to 184 feet, but was sanded in to a depth of about 100 feet as of Fall 1980. The water level in this well has also responded highly to pumping of nearby irrigation wells, primarily to the north. Water-level records started in 1980, when depth to water was about five feet (Figure 6). Water levels fell from 1980 through 1993. The deepest water level in this well was about 56 feet in Fall 1992. Since that time, water levels have been less than 26 feet deep. By April 1999, the water level in Well 17C1 had recovered to a depth of about one foot. By Spring of 2005, the depth to water was about nine feet. During 2005-11, spring water levels in this well ranged from four to nine feet deep and were relatively stable. The spring water levels in Well 17C1 fell about 13 feet between Spring 2013 and Spring 2015, and rose about nine feet between Spring 2015 and Spring 2017.

Loyalton Subarea

Figure 7 shows long-term water level hydrographs for two wells in the Loyalton area: T22N/R15E-22Q1 and 36N1. Well 22Q1 is reportedly about 600 feet deep, and was flowing prior to 1966. The water level then declined slightly through 1981, and more sharply through Fall 1992 (23 feet deep). The water level in this well then recovered to 10 feet deep by Spring 1996. The water level in Well 22Q1 was relatively

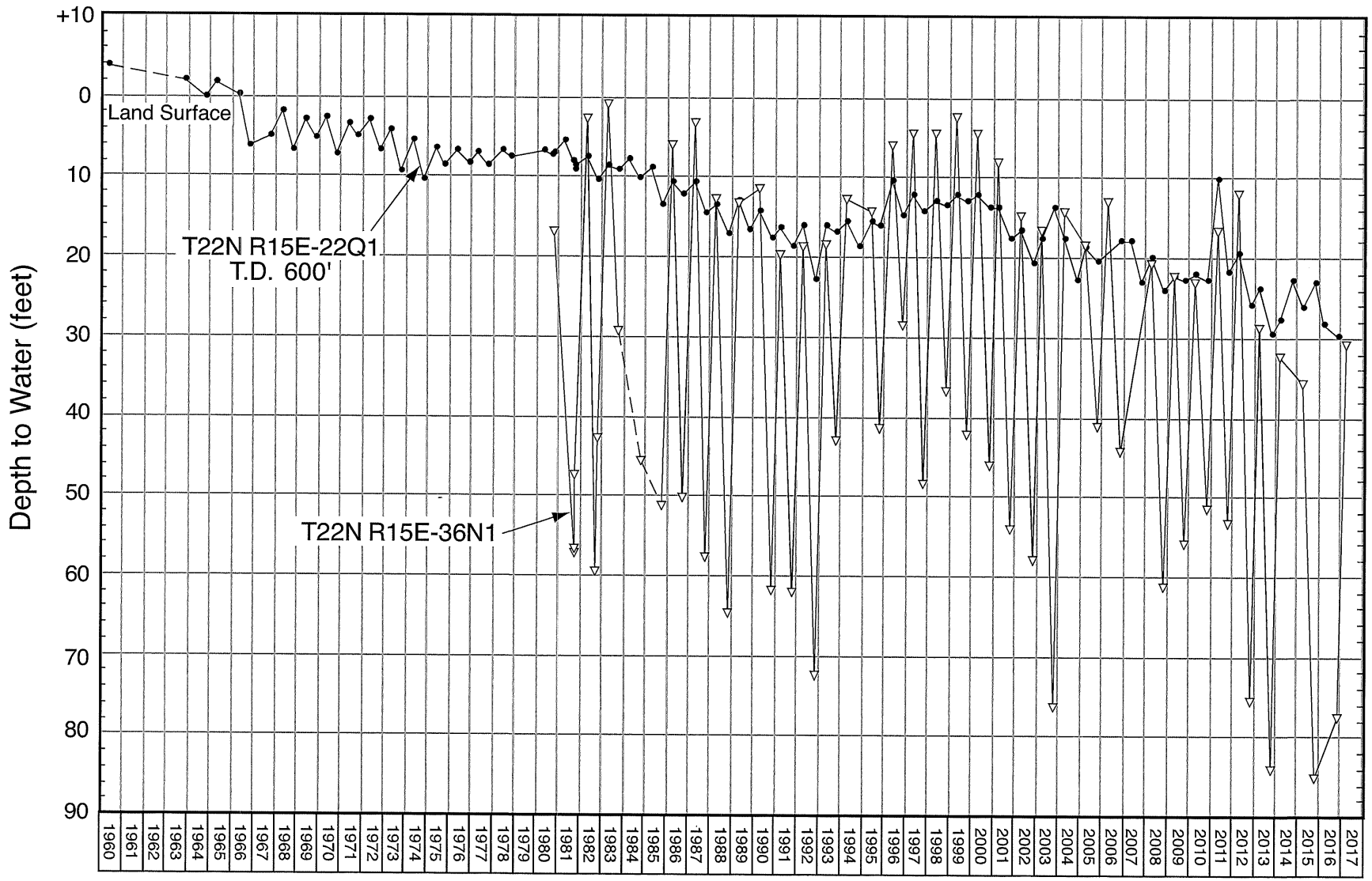


FIGURE 7 - WATER-LEVEL HYDROGRAPHS FOR LOYALTON AREA

stable through early 2000, then fell to a depth of 23 feet by Fall 2005. Spring measurements for 2005 to 2010 indicated depth to water ranging from about 18 to 22 feet, and relatively stable water levels. The water level fell about seven feet between Spring 2012 and Spring 2017, and was the deepest of record (about 30 feet deep) in Fall 2013 and Fall 2016. The water-level trend in this well is related to pumping patterns of wells in the Loyalton subarea. The small seasonal fluctuations in this well are more typical of the shallow zone.

Well 36N1 is perforated from 268 to 792 feet in deep. The water level in Well 36N1 was near the land surface prior to 1986, then gradually declined to a depth of 62 feet in Fall 1992. From Fall 1992 through Spring 1996, the water level in this well rose to a depth of seven feet in Spring 1996. The water level in this well was relatively stable from Spring 1991 through Spring 2000, then fell to a depth of 77 feet in Fall 2003. This was the deepest water level of record for this well at that time. Spring measurements for 2012-17 indicate a water-level decline of about 18 feet. Fall water-level measurements ranged from about 76 to 86 feet during 2012-15, and the latter value was the deepest of record. The water levels in this well also responded primarily to pumping in the subarea. Seasonal water-level fluctuations in this well are representative of the deep confined zone in this subarea.

Chilcoot Subarea

Figure 8 shows water-level hydrographs for two wells in the Chilcoot subarea: T22N/R16E-1A2 and T23N/R16E-36N2. Both of these are shallow wells, tapping alluvial deposits. Water levels were the shallowest in the mid-1980's, during and following years of high precipitation, and were lowest in later 1992, following years of very low precipitation. By Fall 2004, water levels in both wells were the shallowest of record. Spring measurements for Well 1A2 indicate depth to water ranging from 21 to 51 feet, and declining water levels since Spring 2011. A Spring 2017 measurement wasn't available for this well. Spring measurements for Well 36N2 also indicated declining levels since Spring 2011, except for a marked water-level rise by Spring 2017, due to Winter 2016-17 recharge. Water levels in these wells respond primarily to precipitation patterns and recharge, as there are no large-capacity wells in the subarea. Precipitation records were discontinued for the Vinton Station in late 2003.

PUMPAGE

Figures 9 and 10 show the distribution of the metered pumpage in the valley by section for 2015 and 2016, respectively. The total metered pumpage was about 12,300 acre-feet in 2013, about 12,200 acre-feet in 2014, about 14,400 acre-feet in 2015, and about 10,900

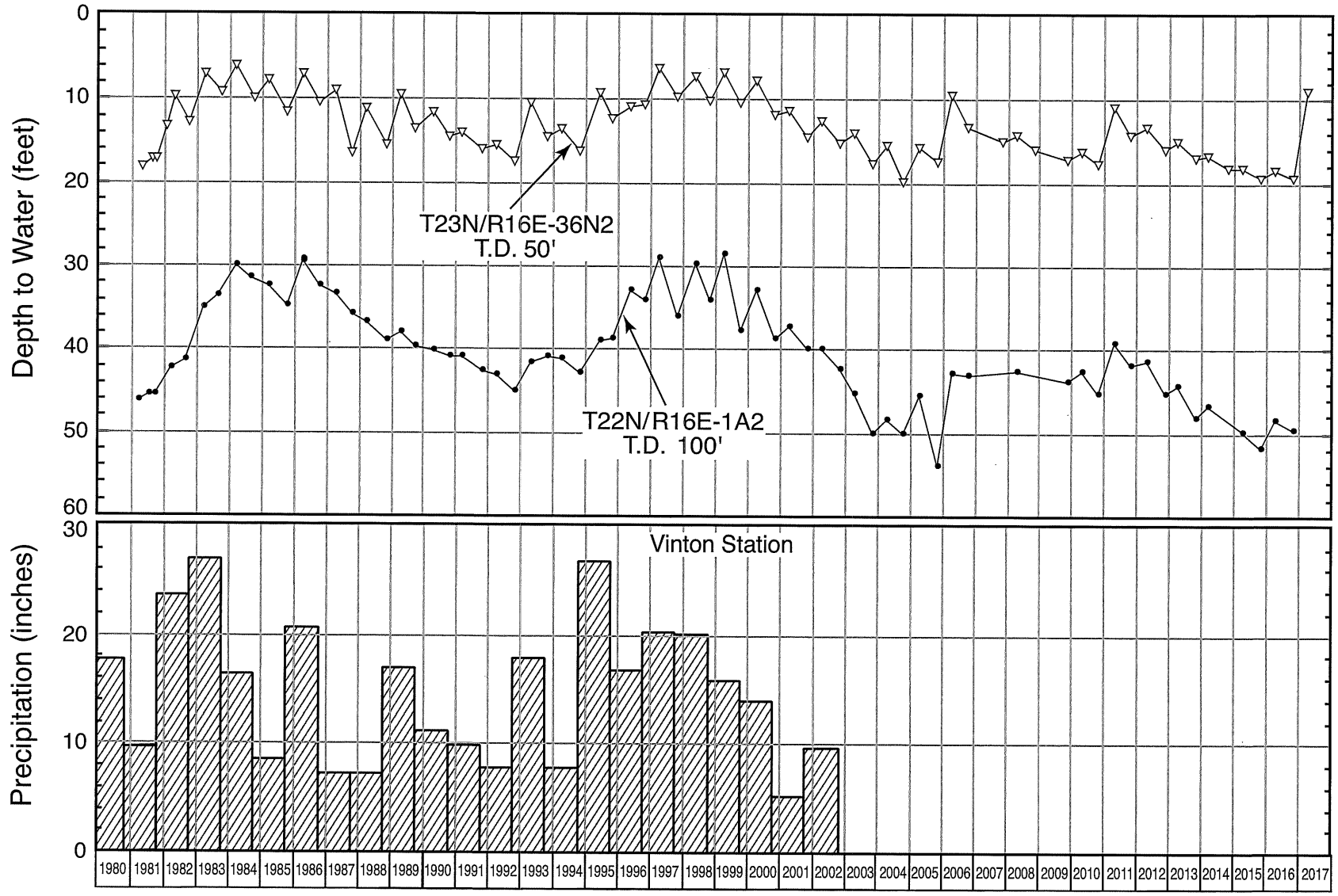


FIGURE 8 - WATER-LEVEL HYDROGRAPHS AND PRECIPITATION FOR CHILCOOT SUB-BASIN

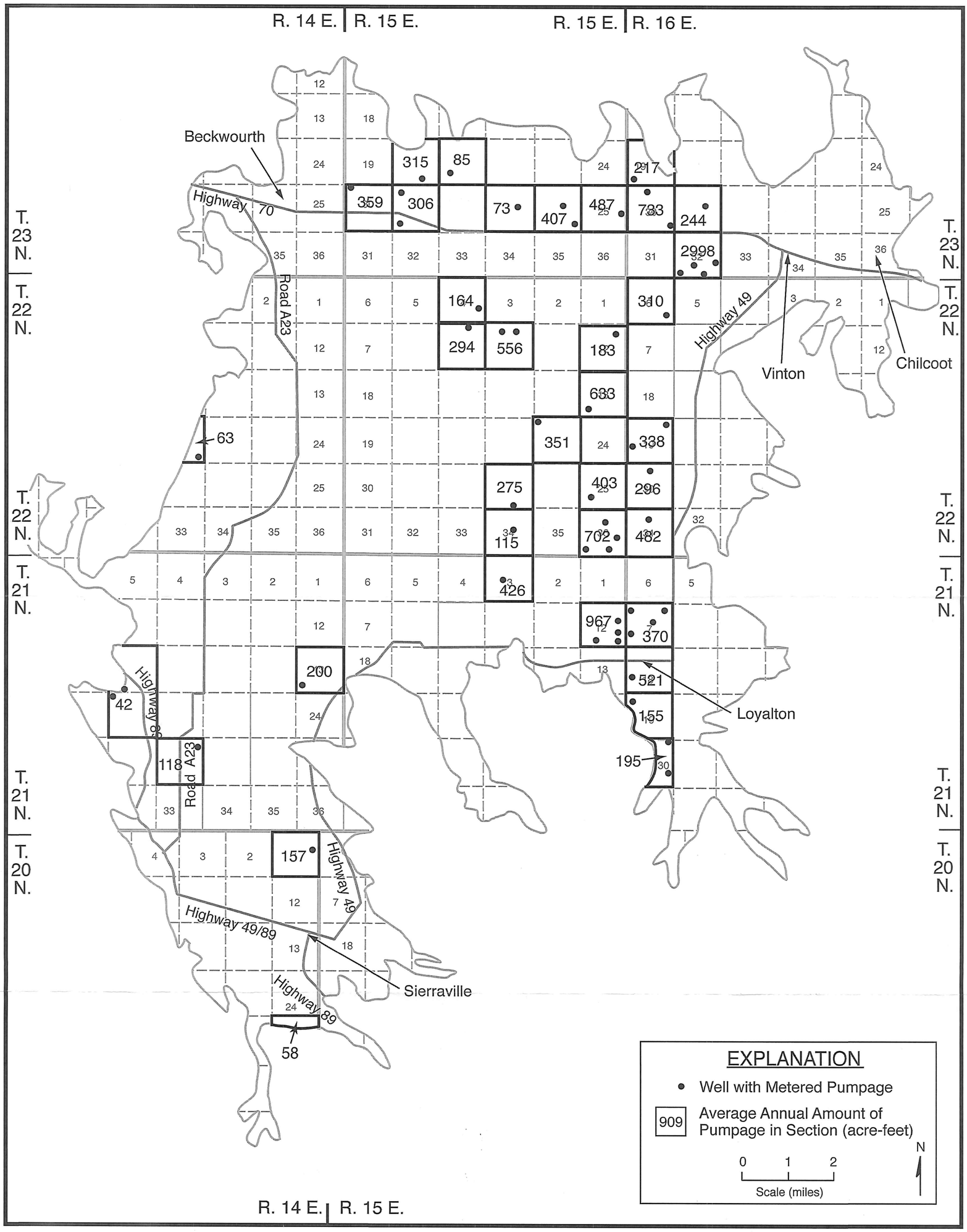


FIGURE 9 - ANNUAL METERED GROUNDWATER PUMPAGE FOR 2015

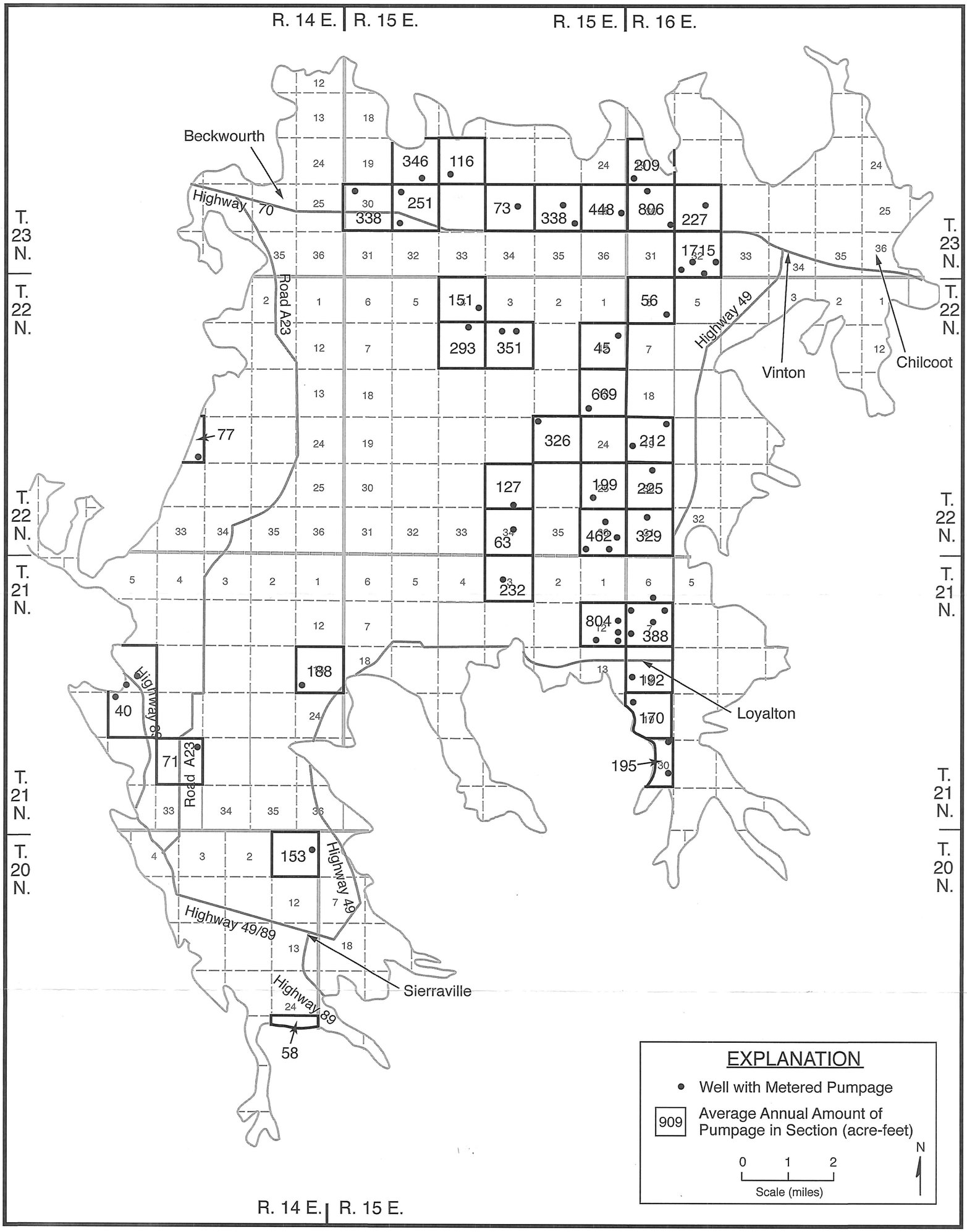


FIGURE 10 - ANNUAL METERED GROUNDWATER PUMPAGE FOR 2016

acre-feet in 2016. The last four years have been the largest annual amounts pumped since metering of the wells began. Table 1 indicates the distribution of the annual metered pumpage in the valley subareas during 2015-16. Two-thirds or more of the annual pumpage in these years was in the combined Loyalton and Vinton subareas.

Table 2 summarizes annual metered pumpage for Sierra Valley by section for 2005-2016. Table 3 summarizes metered pumpage in Sierra Valley by sub-area since 1989. Annual metered pumpage ranged from a low of 3,470 acre-feet in 1998, to four consecutive highs of 12,290 acre-feet in 2013, 12,160 acre-feet in 2014, 14,400 acre-feet in 2015, and 10,900 acre-feet in 2016. These highs exceeded the previous high of 10,131 acre-feet in 1990. The period 1989-1994 was one of moderately high metered pumpage (average of about 7,800 acre-feet per year) at that time, whereas the period 1995-1999 was one of much lower pumpage (average of about 4,700 acre-feet per year). Metered pumpage during 2001-2005 averaged about 8,300 acre-feet per year, greater than the average during 1989-94. Annual pumpage in 2004, 2010, and 2012 (9,427 to 9,680 acre-feet per year) was the largest annual amount since 1990 and until 2013. The average annual pumpage during 2013-16 was about 12,500 acre-feet per year, the greatest four-year average since metering of the wells commenced. The metered pumpage in the Vinton Sub-area was 6,550 acre-feet in 2015, the greatest amount of record.

TABLE 1-DISTRIBUTION OF AVERAGE ANNUAL METERED PUMPAGE BY SUBAREA FOR 2015-16

	2015		2016	
Subarea	Pumpage (acre-feet)	% of Total	Pumpage (acre-feet)	% of Total
Near Beckwourth	980	7	935	9
Vinton	6,550	45	4,725	43
Loyalton	3,658	25	2,597	24
Other	3,211	23	2,686	24
Total	14,399		10,943	

TABLE 2- ANNUAL METERED PUMPAGE FOR 2005-2016

Location	Amount Pumped (Acre-feet)											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
T20N/R14E-1	-	-	-	-	-	-	-	168	182	193	157	153
-25	58	58	58	58	58	58	58	58	58	58	58	58
T21N/R14E-3	-	-	-	-	-	-	-	-	672	-	-	-
-13	-	-	-	-	-	-	-	-	-	126	200	188
-17&20	61	61	61	61	61	61	61	61	61	61	43	40
-28	-	-	-	-	-	-	-	-	-	-	118	71
T21N/R15E-3	326	357	486	159	208	-	814	417	388	298	426	232
-12	774	797	1,133	1,016	769	1,640	771	676	797	909	767	804
T21N/R16E-7	356	297	530	465	347	65	311	552	594	669	370	388
-18	920	874	-	409	245	-	140	482	467	568	521	192
-19	-	-	-	-	-	-	-	-	-	-	155	170
-30	-	-	-	-	-	-	-	-	-	-	195	195
T22N/R14E-21	-	-	-	-	-	-	-	-	-	-	63	77
T22N/R15E-4	236	208	202	238	153	61	120	227	246	276	164	151
-9	0	881	543	303	99	434	67	277	283	369	294	293
-10	520	431	600	656	553	510	127	359	499	535	556	351
-12	-	-	-	-	-	-	-	-	178	355	183	45
-13	-	-	-	-	-	-	-	-	224	-	633	669
-23	308	173	522	341	228	242	242	358	449	486	351	326
-25											403	199
-27	260	309	430	366	235	866	169	372	364	337	275	127
-34	186	157	288	283	176	-	-	-	-	-	115	63
-36	469	634	935	1,008	640	1,913	533	1,122	1,302	684	702	462
T22N/R16E-6	213	68	325	467	66	34	0	112	269	103	310	56
-19	11	11	10	10	135	43	130	206	830	394	338	212
-30	-	-	-	-	-	-	-	-	-	168	296	225
-31	-	-	-	-	-	-	-	-	-	498	482	329
T23N/R15E-20	208	227	331	244	185	418	107	216	828	375	315	346
-21	-	-	-	-	-	-	-	-	-	-	85	116
-25	27	3	1	24	-	-	594	447	323	642	487	448
-26	63	63	60	108	68	-	66	84	91	197	407	338
-27	106	101	115	105	38	417	52	84	79	103	73	73
-29	296	176	399	0	0	28	261	334	337	337	306	251
-30	-	-	-	-	-	-	-	372	455	470	359	338
T23N/R16E-19	15	60	125	143	98	168	119	239	280	202	217	209
-29	173	97	241	390	271	535	233	-	156	256	244	227
-30	1,032	663	1,045	989	687	1,070	613	1,553	1,280	956	733	806
-32	487	430	523	653	245	952	508	651	601	1,639	2,998	1,715
Total	7,105	7,136	8,963	8,496	5,565	9,515	6,096	9,427	12,293	12,161	14,399	10,943

Records for Sections T20N/R14E-25 for 2005-16 and T21N/R14E-17 and 20 for 2005-14 were taken from previous years.

TABLE 3-SUMMARY OF METERED PUMPAGE BY SUBAREA FOR 1989-2016

	Beckwourth	Vinton	Loyalton	Other	Total
1989	668	3,574	2,798	616	7,656
1990	489	5,139	3,875	628	10,131
1991	289	3,607	3,486	935	8,317
1992	120	3,326	4,548	1,119	9,113
1993	83	1,226	2,066	719	4,094
1994	388	1,558	3,831	1,552	7,329
1995	533	973	1,964	630	4,100
1996	778	1,692	2,457	892	5,819
1997	932	1,685	2,242	457	5,316
1998	212	606	2,336	311	3,465
1999	385	1,350	2,333	797	4,865
2000	417	2,599	1,938	1,015	5,969
2001	809	2,641	2,824	1,217	7,491
2002	1,099	2,393	3,225	1,596	8,313
2003	733	2,332	3,154	1,618	7,837
2004	657	3,200	3,887	1,936	9,680
2005-11*	412	2,214	3,691	1,537	7,854
2012	922	3,292	3,621	1,592	9,427
2013	1,620	4,232	3,912	2,529	12,293
2014	1,182	4,744	4,028	2,207	12,162
2015	980	6,550	3,658	3,211	14,399
2016	935	4,725	2,597	2,686	10,943

The "other" subarea for 2000-2016 includes areas adjacent to the Loyalton or Vinton subareas that were previously delineated. *Values for the 2005-11 period are average annual values.

SUMMARY AND CONCLUSIONS

Records of metered pumpage during 2015 and 2016 and water levels for the period Spring 2015 to Spring 2017 in Sierra Valley were reviewed and trends interpreted. In addition, long-term water-level records extending back to the 1960's were reviewed. The primary influences on water-level changes from year to year are 1) pumping amounts, and 2) recharge from winter precipitation. There was a significant reduction in metered pumpage in the valley during 1993-97, following a severe drought. Metered pumpage during 1993-1997 averaged about 5,300 acre-feet per year, compared to an average of about 9,200 acre-feet per year during 1990-92. Because of the reductions in pumpage, water levels in many wells in pumped parts of the valley recovered in the late 1990's to near levels prior to the onset of heavy pumping in the late 1970's. Precipitation during 1993-97 was above average except for one year, and the increased recharge also caused water levels to rise. The lowest metered pumpage since 1989 was in 1998. Metered pumpage increased after 1998, and by 2004 was in the range of that for 1991-92. This increased pumpage, along with below average precipitation and less recharge, caused water levels in most wells in pumped parts of the valley to fall after 1998, in some cases to the deepest levels as of that time (in Fall 2004). During 2005-2011, the pumpage averaged about 7,800 acre-feet per year, greater than the estimated safe yield (the amount

of groundwater that can be pumped without overdraft). Most of the overdraft was indicated to be in or west of the Vinton subarea.

The greatest annual metered pumpage in Sierra Valley was for 2013-16, when the annual pumpage ranged from about 12,200 acre-feet to 14,400 acre-feet.

Metered pumpage records indicate that the safe yield is about 6,000 acre-feet per year in the part of the valley now tapped by large-capacity supply wells. Metered pumpage of about 3,500 to 5,000 acre-feet per year during wet years was associated with water-level rises. Metered pumpage of about 8,000 to 14,000 acre-feet per year during dry years has resulted in water-level declines. Pumpage during 2013 to 2016 averaged about 12,500 acre-feet per year, and at the end of this pumpage, water levels in some wells were the deepest of record. Much of this pumping was centered in the Vinton and Loyalton areas. The average pumpage during 2013 to 2016 was thus about double the estimated safe yield.

Groundwater monitoring in the District provides a valuable data base for future groundwater management activities. Historical records provide a good indication of water-level declines that can occur due to increases in pumpage. Also, the influence of changes in precipitation on recharge and water levels have been determined.

REFERENCES

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Kenneth D. Schmidt and Associates, 1994, "1991-94 Sierra Valley Groundwater Update", prepared for Sierra Valley Groundwater Management District, Loyalton, California, 23 p.

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APPENDIX A

WATER-LEVEL MEASUREMENTS FOR SPRING AND FALL 2015, SPRING AND FALL 2016, AND SPRING 2017

Kenneth D. Schmidt

From: "Scholzen, April@DWR" <April.Scholzen@water.ca.gov>
Date: Friday, June 09, 2017 3:07 PM
To: "Vellines, Patricia@DWR" <Patricia.Vellines@water.ca.gov>; "Spangler, Debbie@DWR" <Debbie.Spangler@water.ca.gov>
Cc: <kdschmidt@bak.rr.com>
Attach: CASGEM_2015_03_SierraChilcootMohawk_Book1.xlsx; CASGEM_2015_10_SierraChilcootMohawk_Book1.xlsx; CASGEM_2016_03_SierraChilcootMohawk_Book1.xlsx; CASGEM_2016_10_SierraValley.xlsx; CASGEM_2017_04_SierraValley.xlsx
Subject: RE: Sierra Valley GMD

Hi Jim,

Attached are the spreadsheets that contain the water level data that DWR collected in 2015, 2016 and 2017. Please let me know if you have any questions.

April

From: Vellines, Patricia@DWR
Sent: Monday, June 5, 2017 4:36 PM
To: Spangler, Debbie@DWR; Scholzen, April@DWR
Cc: Kenneth D. Schmidt (kdschmidt@bak.rr.com)
Subject: RE: Sierra Valley GMD

April will take care of this tomorrow Thanks!

From: Spangler, Debbie@DWR
Sent: Monday, June 05, 2017 4:28 PM
To: Vellines, Patricia@DWR
Cc: Kenneth D. Schmidt (kdschmidt@bak.rr.com)
Subject: FW: Sierra Valley GMD

Hi Pat – Do you have someone who can help? I'm thinking the CASGEM upload sheets would be the easiest way to go.

Thanks,

Deb

From: Kenneth D. Schmidt [mailto:kdschmidt@bak.rr.com]
Sent: Monday, June 5, 2017 4:17 PM
To: Spangler, Debbie@DWR
Subject: Sierra Valley GMD

Hi Debbie
We're preparing the biennial report on groundwater in the Sierra Valley GMD. Can you provide to us an excel file for 2015, 2016, and spring 2017 water-level measurements in the Sierra Valley Basin and the Chilcoot Sub-basin?
Thanks

WATER-LEVEL DATA FOR
SPRING 2015

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (SPRING 2015)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
20N14E11P001M	3/23/2015	8.73	4955.14	4946.410
20N14E11P002M	3/23/2015	6.73	4955.25	4948.520
20N14E11P003M	3/23/2015	3.22	4955.08	4951.860
20N14E13Q002M	3/23/2015	3.86	4990.30	4986.440
20N14E14R001M	3/23/2015	10	5039.50	5035.800
21N14E16H001M	3/23/2015	20.86	4919.40	4898.540
21N14E16H002M	3/23/2015	38.87	4920.10	4881.230
21N14E16H003M	3/23/2015	46.91	4919.80	4872.890
21N14E28G001M	3/23/2015	1.88	4915.20	4913.320
21N14E28G002M	3/23/2015	0.05	4915.20	4915.150
21N15E01K001M	3/23/2015	36.25	4917.30	4881.050
21N15E01K002M	3/23/2015	18.94	4917.10	4898.160
21N15E03M003M	3/23/2015	50	4897.80	4852.900
21N15E12J001M	3/23/2015	45.97	4946.50	4900.530
21N15E12P003M	3/23/2015	33.26	4932.10	4898.840
21N15E14L001M	3/23/2015	110	5004.20	4911.100
21N16E07A001M	3/23/2015	54.93	4971.30	4916.370
21N16E07F004M	3/23/2015	31.31	4965.40	4934.090
21N16E07M001M	3/23/2015	56	4941.70	4892.500
21N16E18G002M	3/23/2015	24.19	5000.40	4976.210
21N16E30A001M	3/23/2015	26.1	5095.60	5069.500
22N12E09P001M	3/23/2015	7.85	4354.50	4346.650
22N15E08Q001M	3/23/2015	4.95	4880.52	4875.570
22N15E10B001M	3/23/2015	100	4894.74	4804.040
22N15E13N001M	3/23/2015	80	4897.57	4817.470
22N15E22Q001M	3/23/2015	27.55	4885.77	4858.220
22N15E27Q001M	3/23/2015	60	4888.27	4837.170
22N15E34L006M	3/23/2015	50.35	4889.58	4839.230
22N15E36N001M	3/23/2015	40	4901.57	4864.870
22N15E36Q001M	3/23/2015	30	4911.89	4884.390
22N16E04A001M	3/23/2015	30	4936.10	4910.300

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (SPRING 2015)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
22N16E06R002M	3/23/2015	100	4911.58	4826.280
22N16E17C001M	3/23/2015	20.65	4914.79	4894.140
22N16E17E002M	3/23/2015	18.84	4906.19	4887.350
22N16E20P002M	3/23/2015	10	4940.72	4935.120
23N14E35L001M	3/23/2015	14.17	4882.66	4868.490
23N15E30M001M	3/23/2015	37.11	4891.58	4854.470
23N15E30M002M	3/23/2015	24.26	4891.59	4867.330
23N15E34D001M	3/23/2015	28.93	4896.53	4867.600
23N16E23F001M	3/23/2015	20.71	4995.59	4974.880
23N16E27R001M	3/23/2015	10.62	4967.39	4956.770
23N16E28L001M	3/23/2015	22.9	4943.79	4920.890
23N16E30R001M	3/23/2015	100	4919.58	4825.680
23N16E32Q001M	3/23/2015	90	4924.09	4848.590
23N16E33A002M	3/23/2015	22.36	4944.59	4922.230

DWR WATER-LEVEL DATA FOR CHILCOOT SUB-BASIN (SPRING 2015)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
23N16E36L003M	3/23/2015	21.15	5014.80	4993.650
23N16E36L004M	3/23/2015	49.53	5034.70	4985.170
23N16E36N002M	3/23/2015	19	5014.40	4995.400
23N16E36N003M	3/23/2015	9.87	5011.90	5002.030
23N16E36N004M	3/23/2015	12.99	5011.90	4998.910
23N16E36N005M	3/23/2015	15.93	5011.90	4995.970
23N16E36R001M	3/23/2015	23.13	5039.60	5016.470
23N17E31P001M	3/23/2015	127.65	5174.60	5046.950
23N17E31Q001M	3/23/2015	200	5244.50	5055.700
23N17E31Q002M	3/23/2015	151.950	5214.60	5062.650
22N16E01A002M	3/23/2015	50.15	5094.00	5043.850

WATER-LEVEL DATA FOR
FALL 2015

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (FALL 2015)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
20N14E11P001M	10/19/2015	10.83	4955.14	4944.31
20N14E11P002M	10/19/2015	7.59	4955.25	4947.66
20N14E11P003M	10/19/2015	3.56	4955.08	4951.52
20N14E13Q002M	10/19/2015	6.57	4990.30	4983.73
20N14E14R001M	10/19/2015	30	5039.50	5012.1
21N14E16H001M	10/19/2015	29.76	4919.40	4889.64
21N14E16H002M	10/19/2015	40.11	4920.10	4879.99
21N14E16H003M	10/19/2015	48.22	4919.80	4871.58
21N14E28G001M	10/19/2015	16.57	4915.20	4898.63
21N14E28G002M	10/19/2015	13.01	4915.20	4902.19
21N14E28G003M	10/19/2015	9.11	4915.20	4906.09
21N15E01K001M	10/19/2015	78.05	4917.30	4839.25
21N15E01K002M	10/19/2015	19.35	4917.10	4897.75
21N15E03M003M	10/19/2015	110	4897.80	4809.7
21N15E12J001M	10/19/2015	75.5	4946.50	4871
21N15E12P003M	10/19/2015	59.94	4932.10	4872.16
21N15E14L001M	10/19/2015	110	5004.20	4908.7
21N16E06H003M	10/19/2015	90	4954.70	4883.7
21N16E07A001M	10/19/2015	67.35	4971.30	4903.95
21N16E07F004M	10/19/2015	35.71	4965.40	4929.69
21N16E07G001M	10/19/2015	86.89	4963.90	4877.01
21N16E18G002M	10/19/2015	28.32	5000.40	4972.08
21N16E30A001M	10/19/2015	29.34	5095.60	5066.26
22N12E09P001M	10/19/2015	7.8	4354.50	4346.7
22N15E08Q001M	10/19/2015	6.85	4880.52	4873.67
22N15E10B001M	10/19/2015	152.7	4894.74	4742.04
22N15E13N001M	10/19/2015	120	4897.57	4777.97
22N15E22Q001M	10/19/2015	24.4	4885.77	4861.37
22N15E34L006M	10/19/2015	93.63	4889.58	4795.95
22N15E36N001M	10/19/2015	90	4901.57	4815.57
22N16E04A001M	10/19/2015	30	4936.10	4905.4
22N16E06R002M	10/19/2015	160	4911.58	4760.18
22N16E17C001M	10/19/2015	27.5	4914.79	4887.29

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (FALL 2015)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
22N16E17E002M	10/19/2015	24.8	4906.19	4881.39
22N16E20P002M	10/19/2015	16	4940.72	4935.22
23N15E30M001M	10/19/2015	50.56	4891.58	4841.02
23N15E30M002M	10/19/2015	42.9	4891.59	4848.69
23N16E27R001M	10/19/2015	10.76	4967.39	4956.63
23N16E32Q001M	10/19/2015	110	4924.09	4831.09
23N16E33A002M	10/19/2015	34.4	4944.59	4910.19
23N16E36L003M	10/19/2015	25.02	5014.80	4989.78
23N16E36N002M	10/19/2015	20.25	5014.40	4994.15
23N16E36N003M	10/19/2015	9.98	5011.90	5001.92
23N16E36N004M	10/19/2015	15.06	5011.90	4996.84
23N16E36N005M	10/19/2015	17.44	5011.90	4994.46
23N16E36R001M	10/19/2015	22.62	5039.60	5016.98
23N17E31P001M	10/19/2015	131.68	5174.60	5042.92
23N17E31Q001M	10/19/2015	200	5244.50	5060.5
23N17E31Q002M	10/19/2015	153.760	5214.60	5060.84

DWR WATER-LEVEL DATA FOR CHILCOOT SUB-BASIN (FALL 2015)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
23N16E36L003M	10/19/2015	25.02	5014.80	4989.78
23N16E36N002M	10/19/2015	20.25	5014.40	4994.15
23N16E36N003M	10/19/2015	9.98	5011.90	5001.92
23N16E36N004M	10/19/2015	15.06	5011.90	4996.84
23N16E36N005M	10/19/2015	17.44	5011.90	4994.46
23N16E36R001M	10/19/2015	22.62	5039.60	5016.98
23N17E31P001M	10/19/2015	131.68	5174.60	5042.92
23N17E31Q001M	10/19/2015	200	5244.50	5060.5
23N17E31Q002M	10/19/2015	153.760	5214.60	5060.84
22N16E01A002M	10/19/2015	52.26	5094.00	5041.74

WATER-LEVEL DATA FOR SPRING 2016

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (SPRING 2016)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
20N14E11P001M	3/21/2016	7.64	4955.14	4947.500
20N14E11P002M	3/21/2016	6.09	4955.25	4949.160
20N14E11P003M	3/21/2016	2.81	4955.08	4952.270
20N14E13Q002M	3/21/2016	1.83	4990.30	4988.470
20N14E14R001M	3/21/2016	8	5039.50	5038.000
21N14E16H001M	3/21/2016	23.18	4919.40	4896.220
21N14E16H002M	3/21/2016	40.34	4920.10	4879.760
21N14E16H003M	3/21/2016	48.51	4919.80	4871.290
21N14E25P003M	3/21/2016	18.01	4939.60	4921.590
21N15E01K001M	3/21/2016	37.42	4917.30	4879.880
21N15E01K002M	3/21/2016	18.65	4917.10	4898.450
21N15E03M003M	3/21/2016	50	4897.80	4849.900
21N15E12J001M	3/21/2016	46.15	4946.50	4900.350
21N15E14L001M	3/21/2016	105	5004.20	4913.600
21N16E06H003M	3/21/2016	70	4954.70	4892.600
21N16E07A001M	3/21/2016	56.62	4971.30	4914.680
21N16E07F004M	3/21/2016	21.36	4965.40	4944.040
21N16E07G001M	3/21/2016	59.7	4963.90	4904.200
21N16E18G002M	3/21/2016	24.88	5000.40	4975.520
21N16E30A001M	3/21/2016	21.95	5095.60	5073.650
22N12E09P001M	3/21/2016	5.35	4354.50	4349.150
22N15E08Q001M	3/21/2016	4.3	4880.52	4876.220
22N15E10B001M	3/21/2016	105	4894.74	4803.640
22N15E13N001M	3/21/2016	81	4897.57	4820.770
22N15E22Q001M	3/21/2016	29.6	4885.77	4856.170
22N15E34L006M	3/21/2016	45.21	4889.58	4844.370
22N15E36Q001M	3/21/2016	35	4911.89	4883.390
22N16E04A001M	3/21/2016	35	4936.10	4903.400
22N16E06R002M	3/21/2016	101	4911.58	4823.080
22N16E17C001M	3/21/2016	22.77	4914.79	4892.020
22N16E17E002M	3/21/2016	19.42	4906.19	4886.770

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (SPRING 2016)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
22N16E20P002M	3/21/2016	10	4940.72	4934.620
23N14E35L001M	3/21/2016	9.35	4882.66	4873.310
23N15E30M001M	3/21/2016	38.95	4891.58	4852.630
23N15E30M002M	3/21/2016	25.2	4891.59	4866.390
23N15E34D001M	3/21/2016	29.77	4896.53	4866.760
23N16E23F001M	3/21/2016	19.73	4995.59	4975.860
23N16E27R001M	3/21/2016	10.83	4967.39	4956.560
23N16E28L001M	3/21/2016	24.56	4943.79	4919.230
23N16E30R001M	3/21/2016	105	4919.58	4822.780
23N16E32Q001M	3/21/2016	90	4924.09	4858.590
23N16E33A002M	3/21/2016	23.72	4944.59	4920.870
23N16E36L003M	3/21/2016	21.7	5014.80	4993.100
23N16E36L004M	3/21/2016	49.32	5034.70	4985.380
23N16E36N002M	3/21/2016	19.18	5014.40	4995.220
23N16E36N003M	3/21/2016	10.36	5011.90	5001.540
23N16E36N004M	3/21/2016	13.48	5011.90	4998.420
23N16E36N005M	3/21/2016	16.27	5011.90	4995.630
23N16E36R001M	3/21/2016	25.51	5039.60	5014.090
23N17E31P001M	3/21/2016	128.92	5174.60	5045.680
23N17E31Q001M	3/21/2016	200	5244.50	5065.800
23N17E31Q002M	3/21/2016	152.85	5214.60	5061.750

DWR WATER-LEVEL DATA FOR CHILCOOT SUB-BASIN (SPRING 2016)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
23N16E36L003M	3/21/2016	21.7	5014.80	4993.100
23N16E36L004M	3/21/2016	49.32	5034.70	4985.380
23N16E36N002M	3/21/2016	19.18	5014.40	4995.220
23N16E36N003M	3/21/2016	10.36	5011.90	5001.540
23N16E36N004M	3/21/2016	13.48	5011.90	4998.420
23N16E36N005M	3/21/2016	16.27	5011.90	4995.630
23N16E36R001M	3/21/2016	25.51	5039.60	5014.090
23N17E31P001M	3/21/2016	128.92	5174.60	5045.680
23N17E31Q001M	3/21/2016	200	5244.50	5065.800
23N17E31Q002M	3/21/2016	152.85	5214.60	5061.750
22N16E01A002M	3/21/2016	48.9	5094.00	5045.100

WATER-LEVEL DATA FOR
FALL 2016

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (FALL 2016)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
20N14E11P001M	10/24/2016	10.040	4955.140	4945.1
20N14E11P002M	10/24/2016	6.700	4955.250	4948.55
20N14E11P003M	10/24/2016	2.530	4955.080	4952.55
20N14E13Q002M	10/24/2016	4.420	4990.300	4985.88
20N14E14R001M	10/24/2016	30.000	5039.500	5020.1
21N14E16H001M	10/24/2016	30.000	4919.400	4889.4
21N14E16H002M	10/24/2016	40.770	4920.100	4879.33
21N14E16H003M	10/24/2016	48.780	4919.800	4871.02
21N14E25P003M	10/24/2016	22.260	4939.600	4917.34
21N14E28G001M	10/24/2016	6.350	4915.200	4908.85
21N14E28G002M	10/24/2016	2.590	4915.200	4912.61
21N14E28G003M	10/24/2016	0.320	4915.200	4914.88
21N15E01K001M	10/24/2016	68.330	4917.300	4848.97
21N15E01K002M	10/24/2016	19.270	4917.100	4897.83
21N15E03M003M	10/24/2016	100.000	4897.800	4824.4
21N15E12J001M	10/24/2016	69.380	4946.500	4877.12
21N15E12P003M	10/24/2016	54.300	4932.100	4877.8
21N15E14L001M	10/24/2016	100.000	5004.200	4910.3
21N16E06H003M	10/24/2016	80.000	4954.700	4884.6
21N16E07A001M	10/24/2016	66.270	4971.300	4905.03
21N16E07F004M	10/24/2016	33.750	4965.400	4931.65
21N16E07G001M	10/24/2016	81.100	4963.900	4882.8
21N16E18G002M	10/24/2016	26.270	5000.400	4974.13
21N16E30A001M	10/24/2016	103.200	5095.600	4992.4
22N12E09P001M	10/24/2016	6.300	4354.500	4348.2
22N15E08Q001M	10/24/2016	5.700	4880.520	4874.82
22N15E10B001M	10/24/2016	120.000	4894.740	4777.04
22N15E13N001M	10/24/2016	120.000	4897.570	4786.37
22N15E22Q001M	10/24/2016	31.200	4885.770	4854.57
22N15E27Q001M	10/24/2016	61.000	4888.270	4831.37
22N15E34L006M	10/24/2016	87.700	4889.580	4801.88
22N15E36N001M	10/24/2016	80.000	4901.570	4823.07
22N15E36Q001M	10/24/2016	80.000	4911.890	4849.49

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (FALL 2016)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
22N16E04A001M	10/24/2016	42.000	4936.100	4895.9
22N16E06R002M	10/24/2016	160.000	4911.580	4770.98
22N16E17C001M	10/24/2016	26.200	4914.790	4888.59
22N16E17E002M	10/24/2016	23.350	4906.190	4882.84
22N16E20P002M	10/24/2016	10.000	4940.720	4932.22
23N15E30M001M	10/24/2016	49.150	4891.580	4842.43
23N15E30M002M	10/24/2016	39.810	4891.590	4851.78
23N15E34D001M	10/24/2016	33.820	4896.530	4862.71
23N16E23F001M	10/24/2016	22.150	4995.590	4973.44
23N16E27R001M	10/24/2016	11.070	4967.390	4956.32
23N16E28L001M	10/24/2016	33.600	4943.790	4910.19
23N16E30R001M	10/24/2016	160.000	4919.580	4779.78
23N16E33A002M	10/24/2016	32.780	4944.590	4911.81

DWR WATER-LEVEL DATA FOR CHILCOOT SUB-BASIN (FALL 2016)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
23N16E36L003M	10/24/2016	24.940	5014.800	4989.86
23N16E36L004M	10/24/2016	53.850	5034.700	4980.85
23N16E36N002M	10/24/2016	20.200	5014.400	4994.2
23N16E36N003M	10/24/2016	11.710	5011.900	5000.19
23N16E36N004M	10/24/2016	14.680	5011.900	4997.22
23N16E36N005M	10/24/2016	17.300	5011.900	4994.6
23N16E36R001M	10/24/2016	20.490	5039.600	5019.11
23N17E31P001M	10/24/2016	137.100	5174.600	5037.5
23N17E31Q001M	10/24/2016	200.000	5244.500	5048
23N17E31Q002M	10/24/2016	155.270	5214.600	5059.33
22N16E01A002M	10/24/2016	49.940	5094.000	5044.06

WATER-LEVEL DATA FOR SPRING 2017

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (SPRING 2017)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
20N14E11P001M	4/3/2017	6.3	4955.14	4948.840
20N14E11P002M	4/3/2017	3.9	4955.25	4951.350
20N14E11P003M	4/3/2017	1	4955.08	4954.080
20N14E13Q002M	4/3/2017	2.9	4990.30	4987.400
20N14E14R001M	4/3/2017	7	5039.50	5037.800
21N14E16H001M	4/3/2017	23.1	4919.40	4896.300
21N14E16H002M	4/3/2017	40.75	4920.10	4879.350
21N14E16H003M	4/3/2017	48.8	4919.80	4871.000
21N14E28G001M	4/3/2017	0.7	4915.20	4914.500
21N15E01K001M	4/3/2017	31.5	4917.30	4885.800
21N15E01K002M	4/3/2017	18.7	4917.10	4898.400
21N15E12J001M	4/3/2017	39.1	4946.50	4907.400
21N15E12P003M	4/3/2017	25.4	4932.10	4906.700
21N15E14L001M	4/3/2017	102	5004.20	4916.300
21N16E06H003M	4/3/2017	70	4954.70	4894.800
21N16E07A001M	4/3/2017	60	4971.30	4916.000
21N16E07F004M	4/3/2017	12.25	4965.40	4953.150
21N16E07G001M	4/3/2017	53.8	4963.90	4910.100
21N16E18G002M	4/3/2017	14.2	5000.40	4986.200
21N16E30A001M	4/3/2017	18	5095.60	5077.600
22N12E09P001M	4/3/2017	6.7	4354.50	4347.800
22N15E27Q001M	4/3/2017	50	4888.27	4842.570
22N15E34L006M	4/3/2017	53	4889.58	4844.380
22N15E36N001M	4/3/2017	41	4901.57	4869.670
22N15E36Q001M	4/3/2017	31	4911.89	4890.990
22N16E04A001M	4/4/2017	40	4936.10	4909.800
22N16E17C001M	4/3/2017	17.9	4914.79	4896.890
22N16E17E002M	4/3/2017	26	4906.19	4891.090
22N16E20P002M	4/3/2017	21	4940.72	4930.020
23N14E35L001M	4/3/2017	7.9	4882.66	4874.760
23N15E30M001M	4/4/2017	35.45	4891.58	4856.130

DWR WATER-LEVEL DATA FOR SIERRA VALLEY (SPRING 2017)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
23N15E30M002M	4/4/2017	13.75	4891.59	4877.840
23N15E34D001M	4/4/2017	25.7	4896.53	4870.830
23N16E27R001M	4/4/2017	15	4967.39	4956.590
23N16E28L001M	4/4/2017	21	4943.79	4922.790
23N16E32Q001M	4/4/2017	70	4924.09	4866.090
23N16E33A002M	4/4/2017	20.75	4944.59	4923.840

DWR WATER-LEVEL DATA FOR CHILCOOT SUB-BASIN (SPRING 2017)

Local Well Number	Date	Depth to Water (feet)	Measuring Point (feet)	Water-Level Elevation (feet)
23N16E36L003M	4/4/2017	3.2	5014.80	5011.600
23N16E36L004M	4/4/2017	28.8	5034.70	5005.900
23N16E36N002M	4/4/2017	9.8	5014.4	5004.600
23N16E36N003M	4/4/2017	3.75	5011.9	5008.150
23N16E36N004M	4/4/2017	6.75	5011.9	5005.150
23N16E36N005M	4/4/2017	8.45	5011.9	5003.450
23N17E31P001M	4/4/2017	128	5174.6	5046.600
23N17E31Q001M	4/4/2017	181	5244.5	5063.500
23N17E31Q002M	4/4/2017	152.35	5214.6	5062.250

APPENDIX B

WATER-LEVEL MEASUREMENTS FOR FREQUENTLY MEASURED WELLS

MONITORING WELLS-2015

WELL	JAN	FEB	MAR	APR
MW 1s	19	19	19	19
MW 1d	48.5	42.8	38	37.3
MW 2s	9.2	9	8.8	8.8
MW 2i	7.5	7.5	7	7
MW 2d	3.6	3.5	3.5	3.5
MW 3s	4.5	5	2.5	2
MW 3i	1	0.5	FULL	FULL
MW 3d	FLOWING	FULL	FLOWING	FLOWING
MW 4s	23.1	21.7	21.1	20.8
MW 4i	38.3	38.8	38.6	38.8
MW 4d	46.4	46.9	46.9	46.9
MW 5s	16.1	16	15.8	15.8
MW 5i	13.2	13.2	13	13
MW 5d	10	10	9.9	9.8
MW 6s	29	27	25	24
MW 6d	41.8	39.9	37.9	35.8
W 1	22	21.8	21.1	20.5
W 2	125	125	112	111.5
W 3	153	153.3	153.5	153.5
W 5	97	89	81	76
W 6	49	49.2	49	49
W 8	10	10	0-gate locked	9

MONITORING WELLS-2015				
WELL	MAY	JUNE	JULY	AUG
MW 1s	19.2	21.5	22	19.5
MW 1d	66.5	76.3	96.5	92.5
MW 2s	9.1	9.5	no reading	no reading
MW 2i	6.6	6.7	no reading	no reading
MW 2d	3.2	3.1	no reading	no reading
MW 3s	10	10	24.6	29.8
MW 3i	5.6	5.5	20.2	15.5
MW 3d	2.2	2	13.7	15.6
MW 4s	21.1	23.3	no reading	no reading
MW 4i	39.4	39	no reading	no reading
MW 4d	47	47	no reading	no reading
MW 5s	16.1	16.8	no reading	no reading
MW 5i	13.3	13.6	no reading	no reading
MW 5d	10	10.3	no reading	no reading
MW 6s	28.5	34	43.5	42.9
MW 6d	35.8	37	39.8	44
W 1	20.6	21	23.1	23.8
W 2	115.5	115.8	no reading	no reading
W 3	154.5	154	no reading	no reading
W 5	107	127	138	138
W 6	48.8	49	no reading	no reading
W 8	13	13.5	no reading	no reading

Elevations were not taken on some wells as a cost-saving measure — wells nearest to active pumping were sounded monthly as they were deemed the most important

JM

MONITORING WELLS-2015				
WELL	SEP	OCT	NOV	DEC
MW 1s	19.5	18.5	19.5	19
MW 1d	100.5	92.8	70	56.3
MW 2s	no reading	10.9	no reading	no reading
MW 2i	no reading	7.6	no reading	no reading
MW 2d	no reading	3.7	no reading	no reading
MW 3s	19	18	11.5	no reading
MW 3i	15.5	14.5	7.6	no reading
MW 3d	11.2	10.2	4.9	no reading
MW 4s	no reading	30	30.5	30.8
MW 4i	no reading	39.8	40	40.3
MW 4d	no reading	48	48.4	48.7
MW 5s	17.6	17.6	17.2	17
MW 5i	15.7	15.3	15	14.5
MW 5d	12	12.3	12	11.6
MW 6s	54	45	40.5	34
MW 6d	48	50.8	49.8	46.8
W 1	25.5	27.2	27	27
W 2	no reading	116.2	no reading	no reading
W 3	no reading	157.3	no reading	no reading
W 5	144	138	128	109.5
W 6	no reading	49.3	no reading	no reading
W 8	no reading	22.5	no reading	no reading

MONITORING WELLS-2016				
WELL	JAN	FEB	MAR	APR
MW 1s	19	no reading	no reading	18.6
MW 1d	50	no reading	no reading	36
MW 3s	4.4	no reading	no reading	1.5
MW 3i	1.5	no reading	no reading	0.3
MW 3d	FULL	no reading	no reading	FLOWING
MW 6s	31.2	no reading	no reading	24.5
MW 6d	44.2	no reading	no reading	38.2
W 1	25.8	no reading	no reading	22.3
W 5	99.3	no reading	no reading	78

WELL	4/1/2016	8/1/2016	10/1/2016	
MW 2s	7.8	no reading	10.4	
2i	6	no reading	6.6	
2d	3	no reading	3.1	
MW 4s	23	27.8	31	
4i	40.5	40.5	40.8	
4d	48.6	48.3	48.7	
MW 5s	16.1	no reading	18	
5i	13.4	no reading	15.5	
5d	10.2	no reading	12.1	
W 2	102	no reading	114	
W 3	143	no reading	153.5	
W 6	42.5	no reading	49.5	
W 8	3.6	no reading	11.5	

2016

	MAY	JUN	JUL	AUG
MW 1s	19	19	19.2	19.4
MW 1d	33.5	32.8	86.5	97.5
MW 3s	1.5	1.2	2	37.7
MW 3i	0.2	FULL	0.4	33.8
MW 3d	FLOWING	FLOWING	FLOWING	21
MW 6s	23.3	23.1	36.8	43.5
MW 6d	37.1	35.8	38	41.8
W 1	21.6	21.2	23.1	23.3
W 5	73.5	70.8	111.8	139.8

MONITORING WELLS				
WELL	5/1/2016	7/1/2016	8/1/2016	9/5/2016
MW 1s	19	19.2	19.4	19.5-Dotta
MW 1d	33.5	86.5	97.5	94.5-Dotta
MW 3s	1.5	2	37.7	39.2-Dobbas
MW 3i	0.2	0.4	33.8	32.9
MW 3d	FLOWING	FLOWING	21	21.2
MW 6s	23.3	37	43.5	52.4-FRLT
MW 6d	37.1	38	41.8	49.3
W 1	21.6	23.1	23.3	24-D&S-Dyson Ln
W 5	73.5	111.8	139.8	138-D&S-Hwy 70

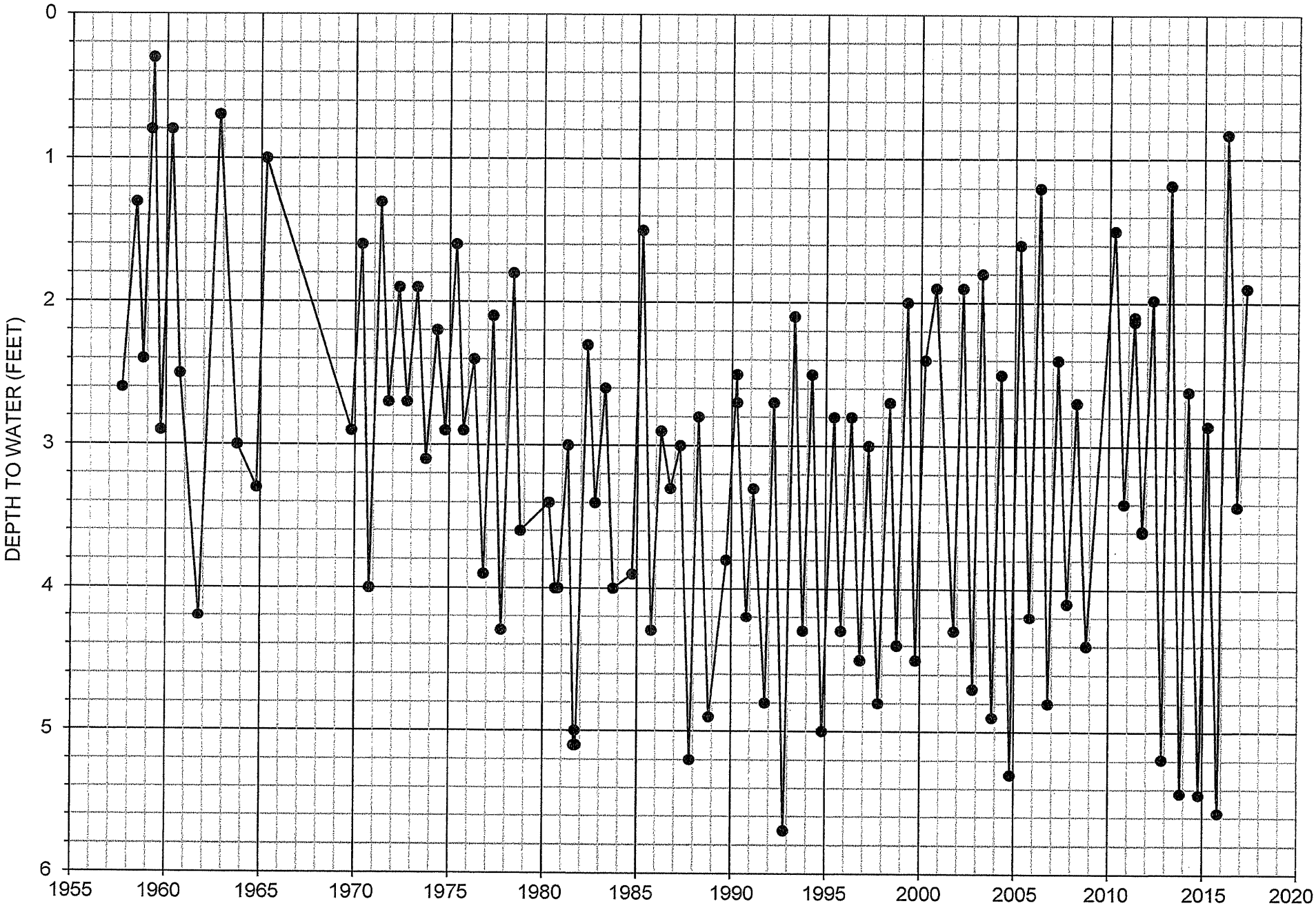
MONITORING WELLS-2016				
WELL	SEP	OCT	NOV	DEC
MW 1s	19.5	19.5	19.3	19.1
MW 1d	94.5	87.5	63.8	51.8
MW 3s	39.2	10.6	6.2	2.5
MW 3i	32.9	6.5	2	0.5
MW 3d	21.2	3.6	FULL	FULL
MW 6s	53.5	42	32.2	48
MW 6d	49.3	50	48.6	48
W 1	24	25	25.6	25.7
W 5	138	128.2	115.3	101.5

MONITORING WELLS-2017				
WELL	MARCH	APRIL	MAY	LOCATION
MW 1s	18.5	18.5	18.5	T Dotta-Lylton
MW 1d	36	32	28.5	T Dotta-Lylton
MW 2s	6.2	6	6	Sanford-S'ville
MW 2i	4.3	4.2	4.1	Sanford-S'ville
MW 2d	1.5	1.5	1.3	Sanford-S'ville
MW 3s	1	1	0.7	Dobbas-Sattley
MW 3i	FULL	FULL	FULL	Dobbas-Sattley
MW 3d	FLOWING	FLOWING	FLOWING	Dobbas-Sattley
MW 4s	24	23.3	23.5	Bradley-Calpine
MW 4i	40.6	40.8	40.8	Bradley-Calpine
MW 4d	49	48.8	48.6	Bradley-Calpine
MW 5s	10.2	8.8	7.3	Potter-Chilcoot
MW 5i	9.6	7.2	4.8	Potter-Chilcoot
MW 5d	7	4.6	1.3	Potter-Chilcoot
MW 6s	22.5	20.2	17.3	FRLT-Bkworth
MW 6d	37.8	35.8	32.8	FRLT-Bkworth
W 1	19.2	18	17.8	D&S-Dyson Ln
W 2	no reading	85.6	no reading	Murray-Bkworth
W 3	no reading	133	no reading	Williams-Bkworth
W 5	79.1	72.6	68	D&S-Hwy 70
W 6	no reading	9	no reading	S Black-Chilcoot
W 8	no reading	0.8	no reading	Grizzly Golf

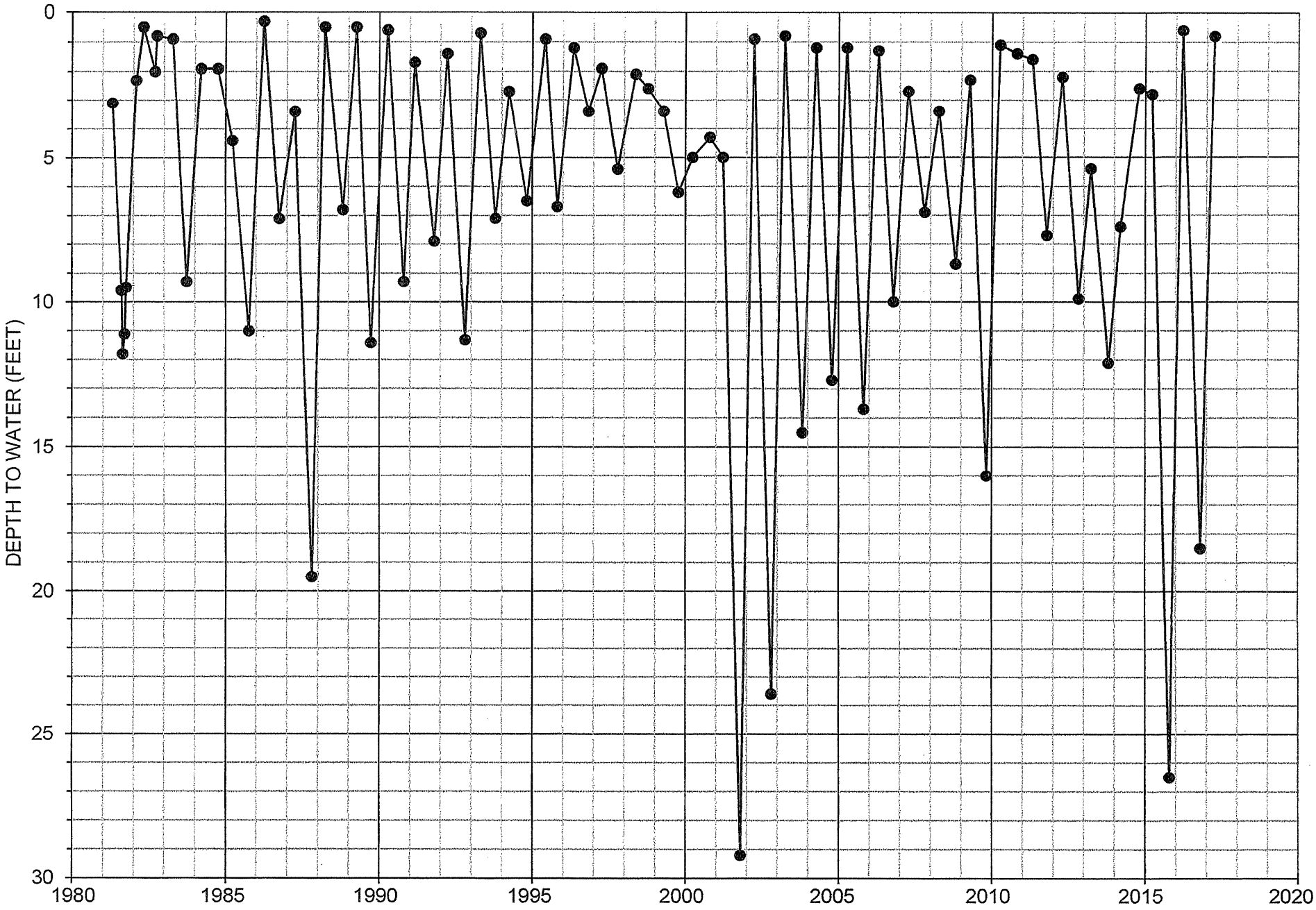
APPENDIX C

LONG-TERM WATER-LEVEL HYDROGRAPHS

Sierra Valley



WATER-LEVEL HYDROGRAPH FOR WELL T20N/R14E-13Q002



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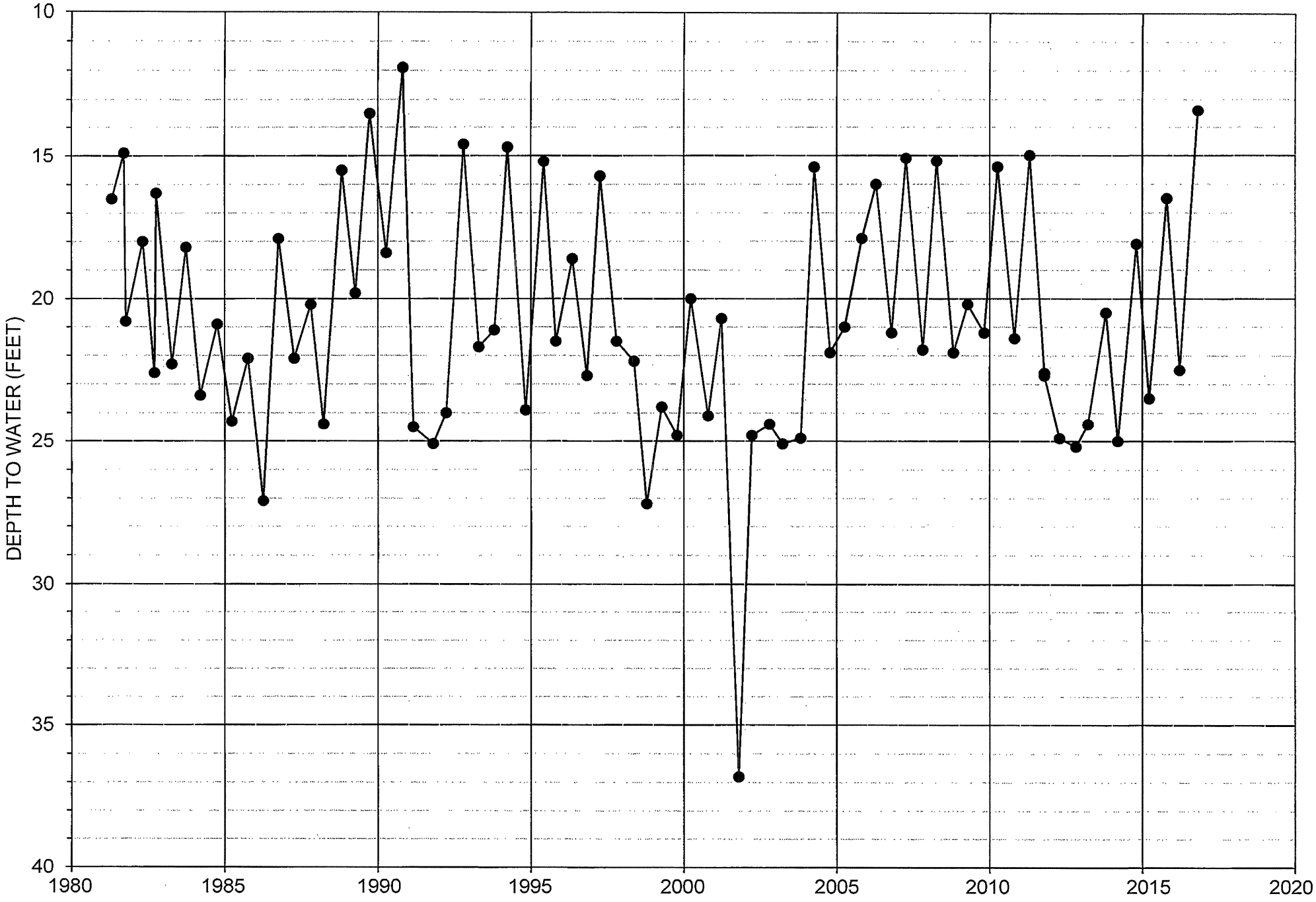

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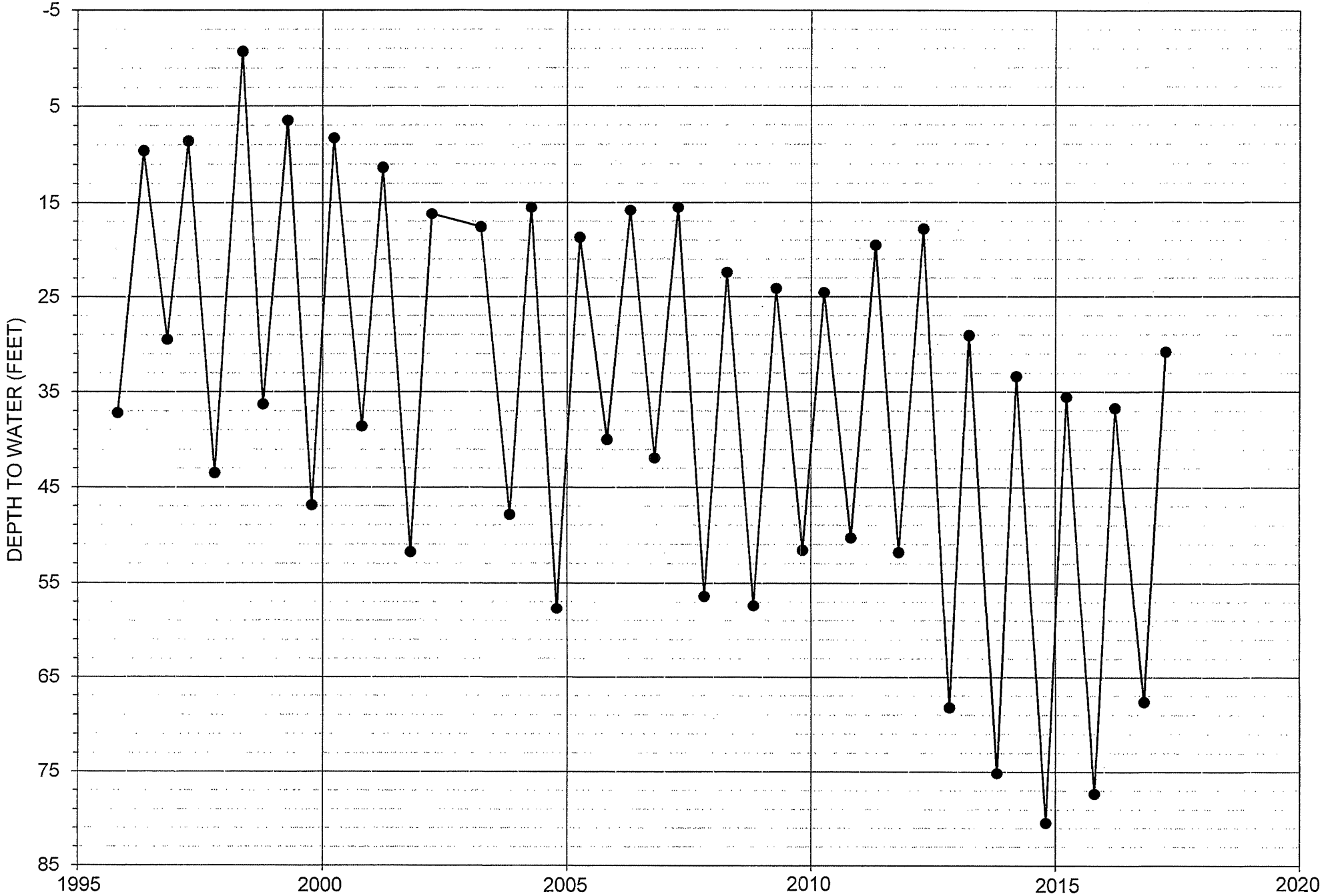

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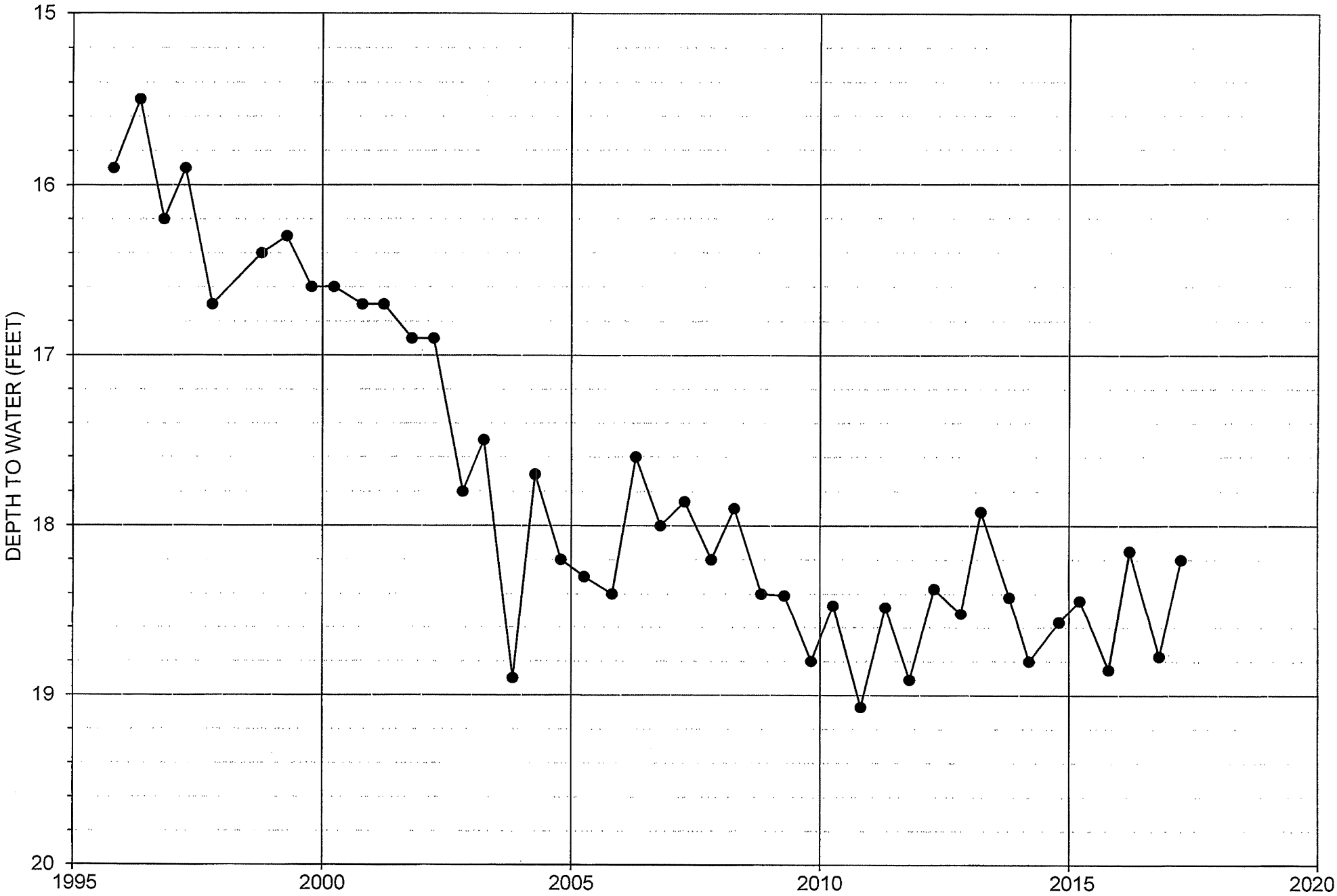

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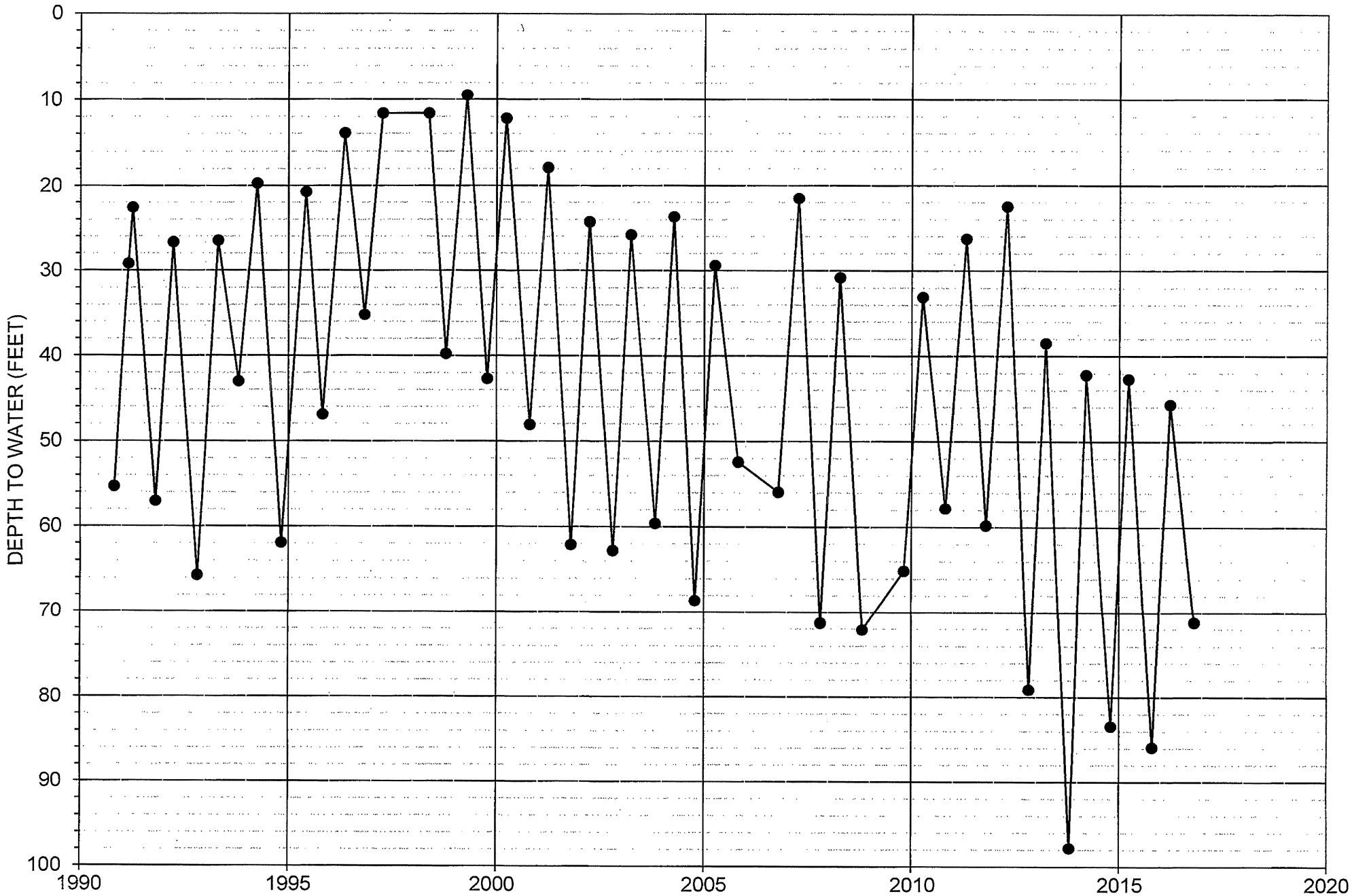
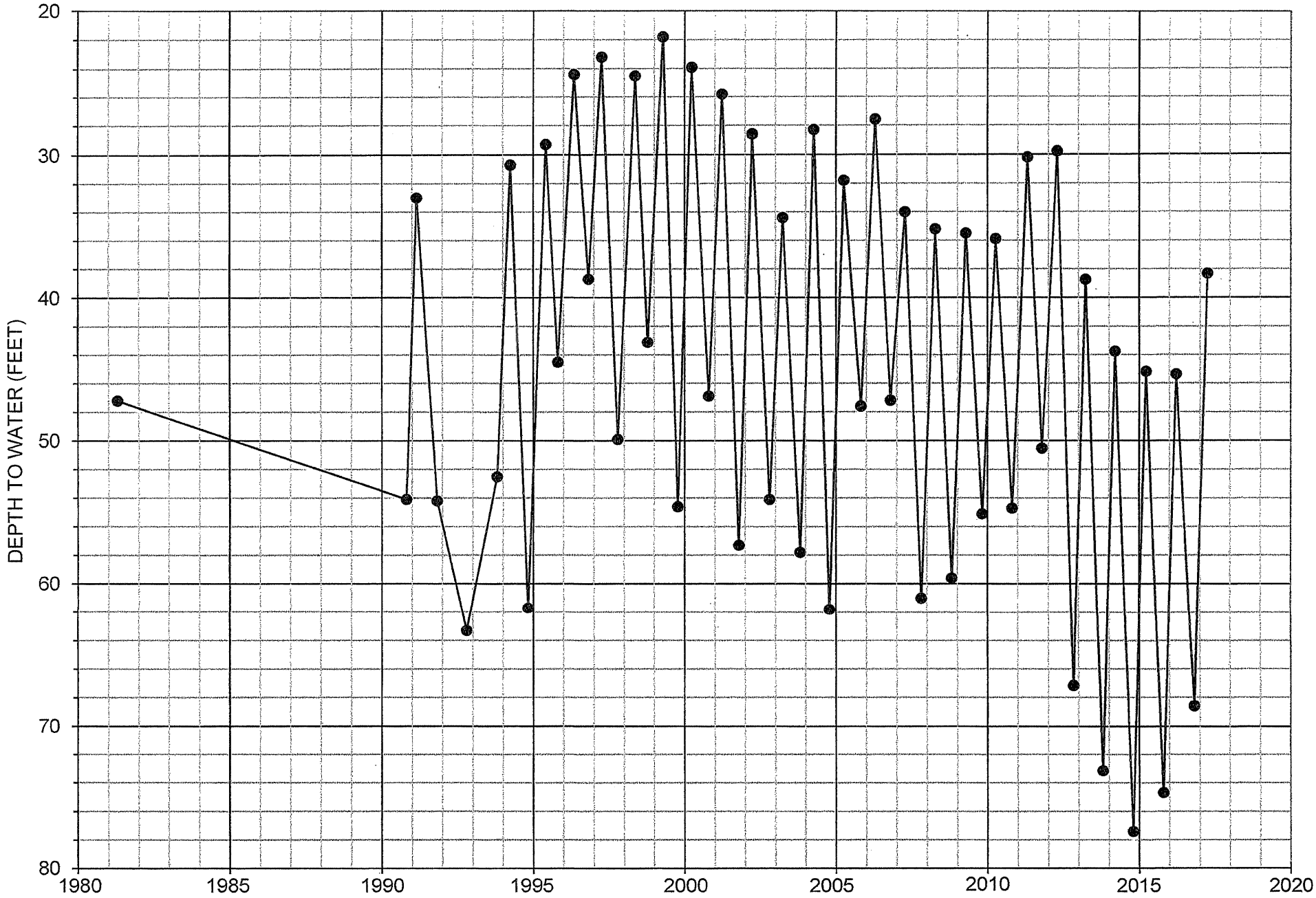
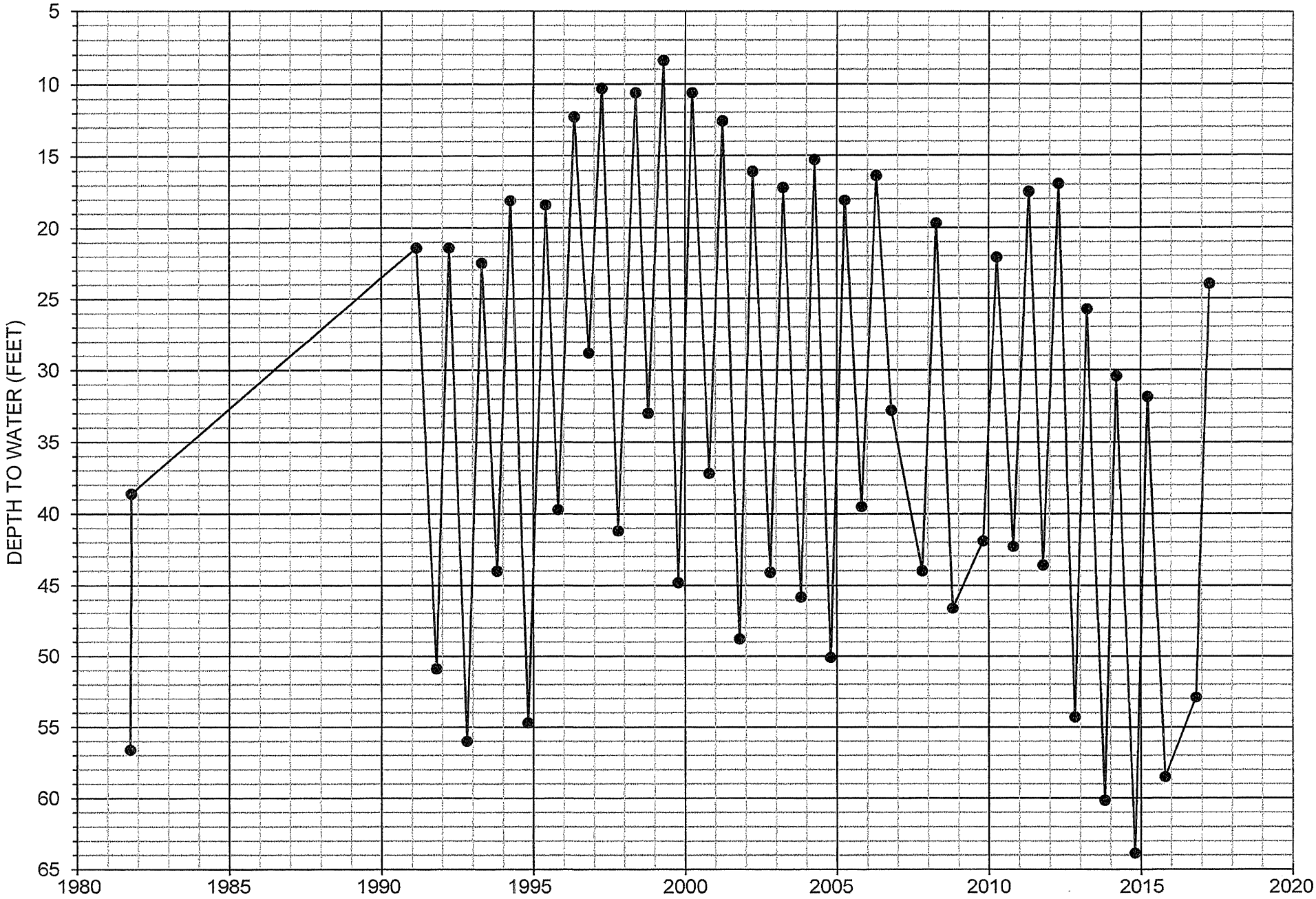


WATER-LEVEL HYDROGRAPH FOR WELL T21N/R15E-3M003



WATER-LEVEL HYDROGRAPH FOR WELL T21N/R15E-12J001



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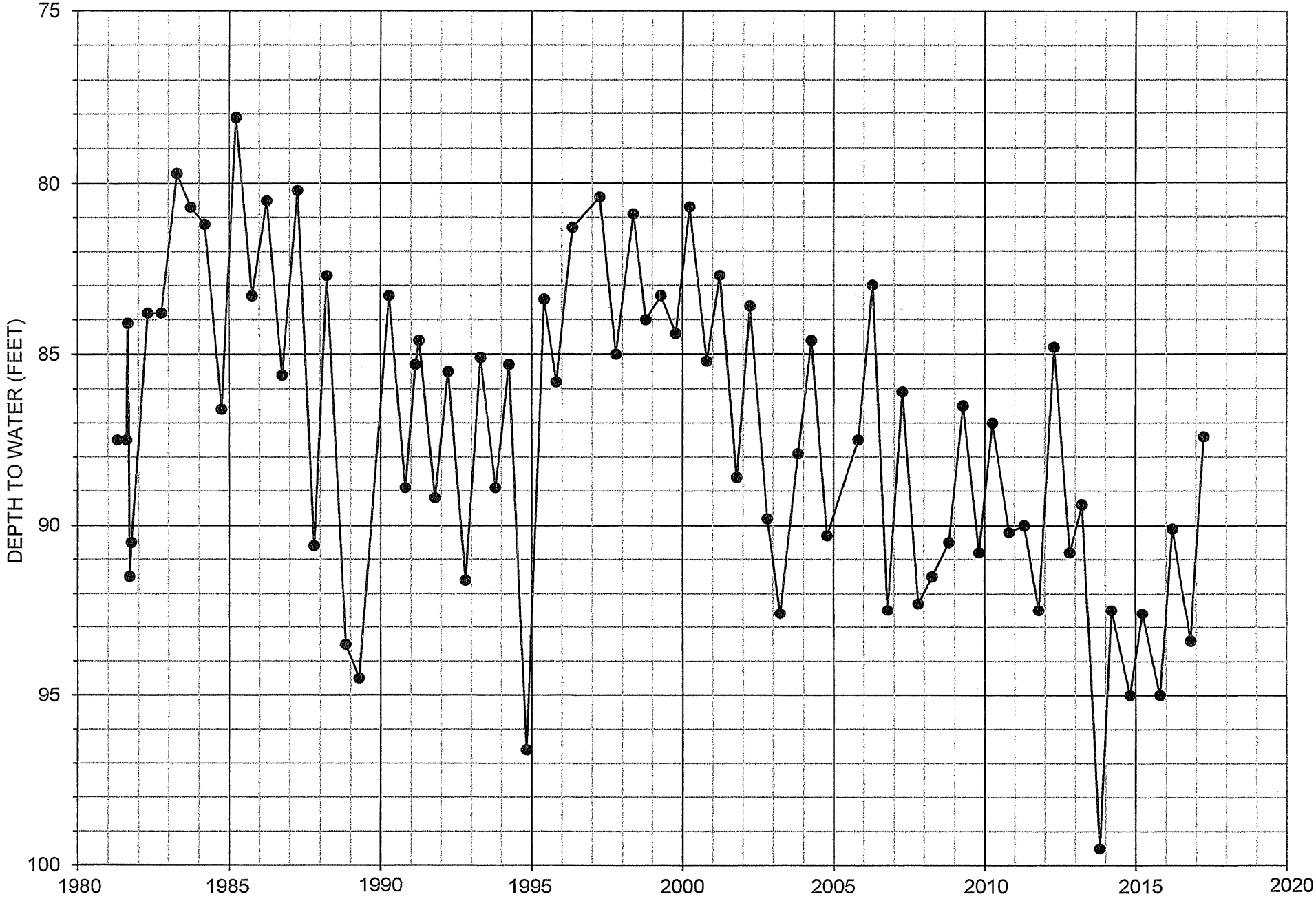

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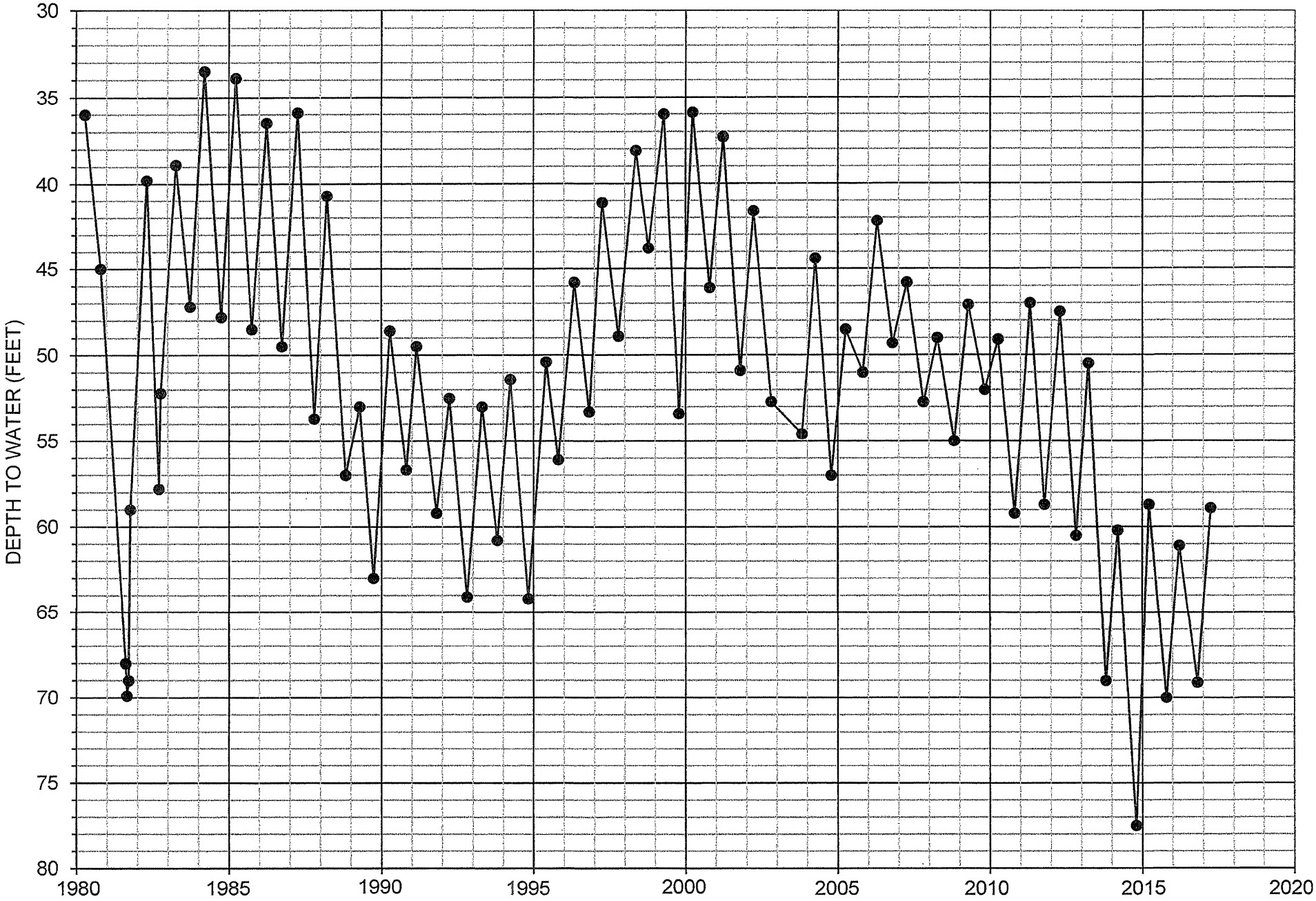
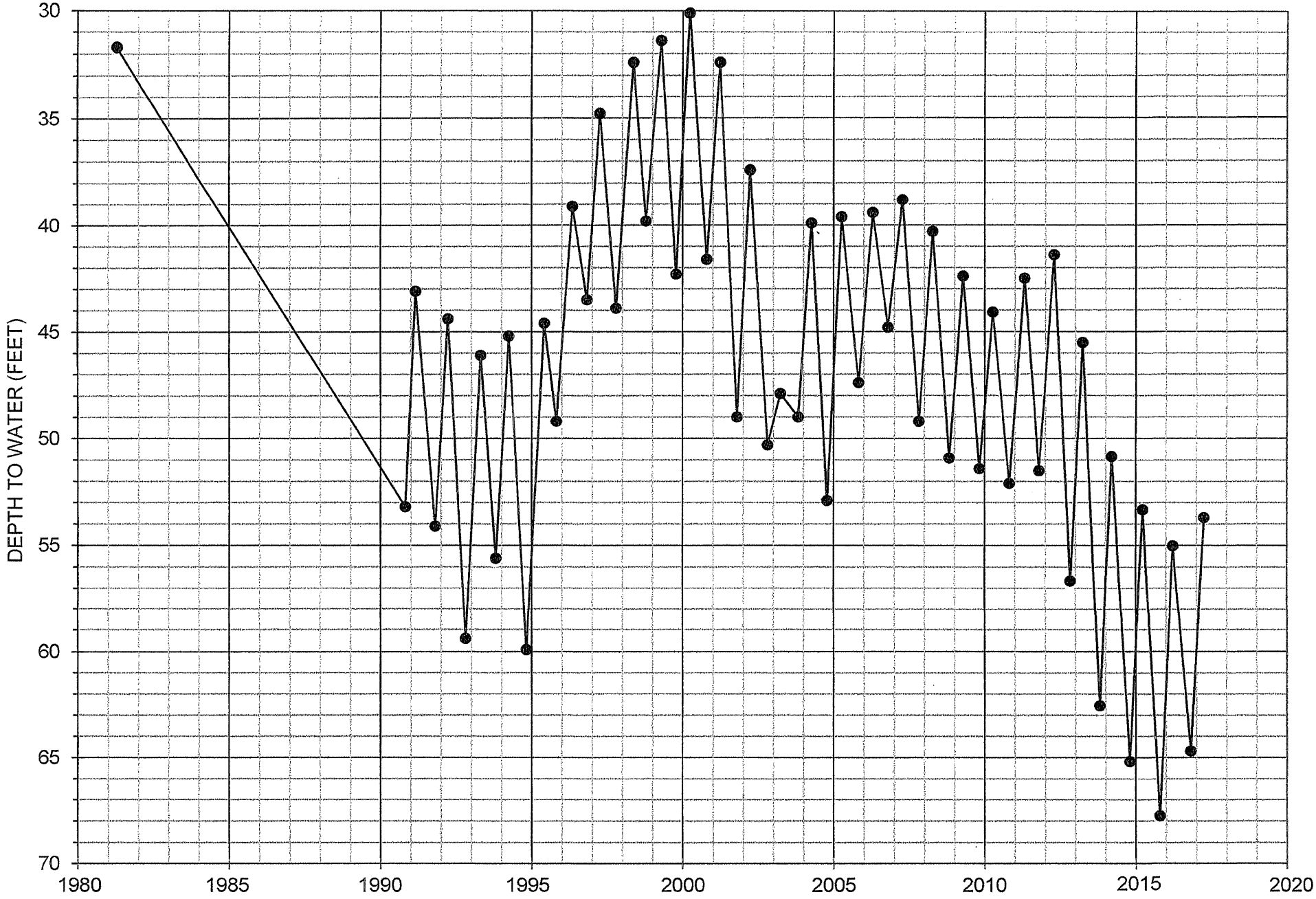
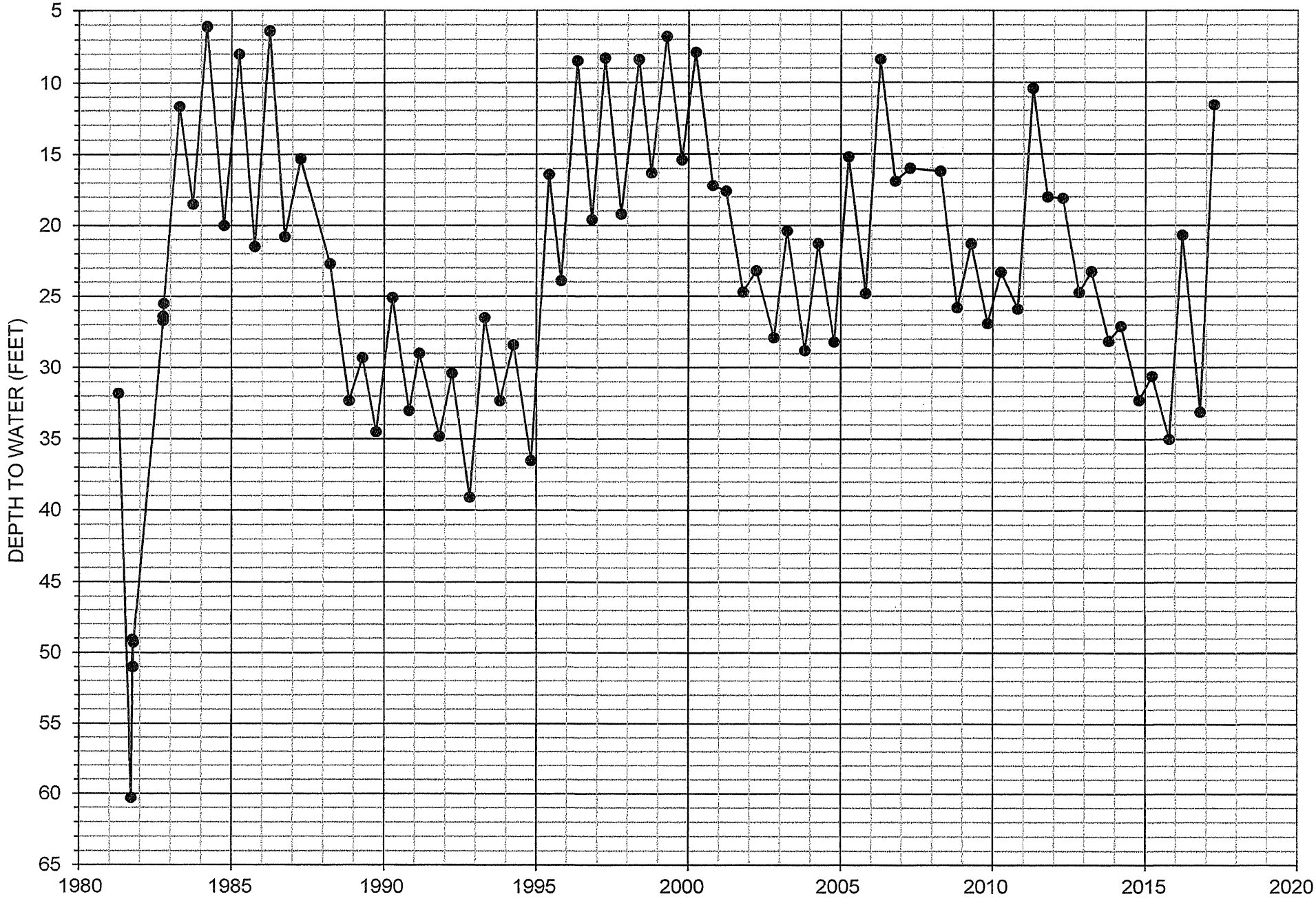


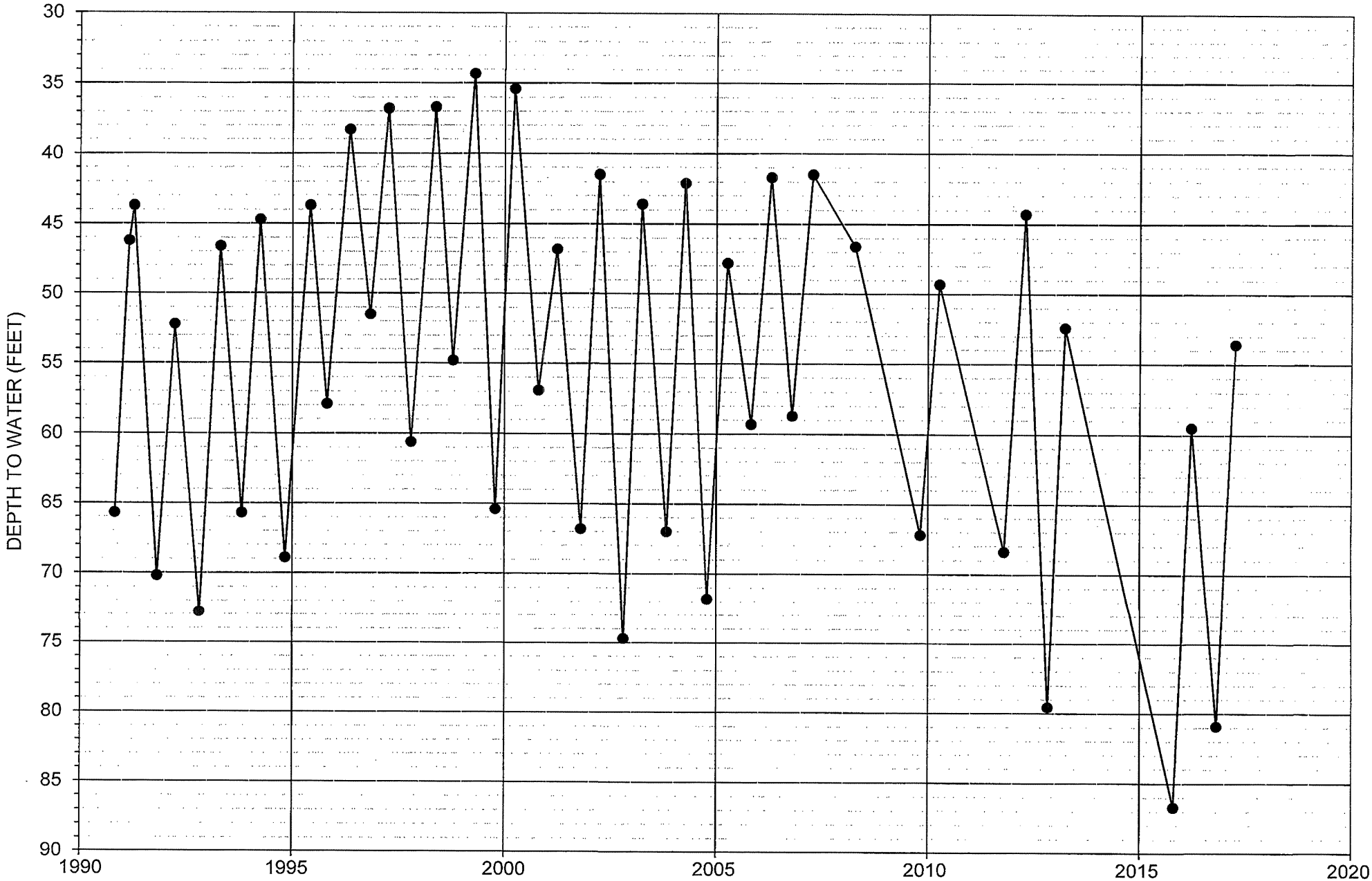
WATER-LEVEL HYDROGRAPH FOR WELL T21N/R16E-06H003



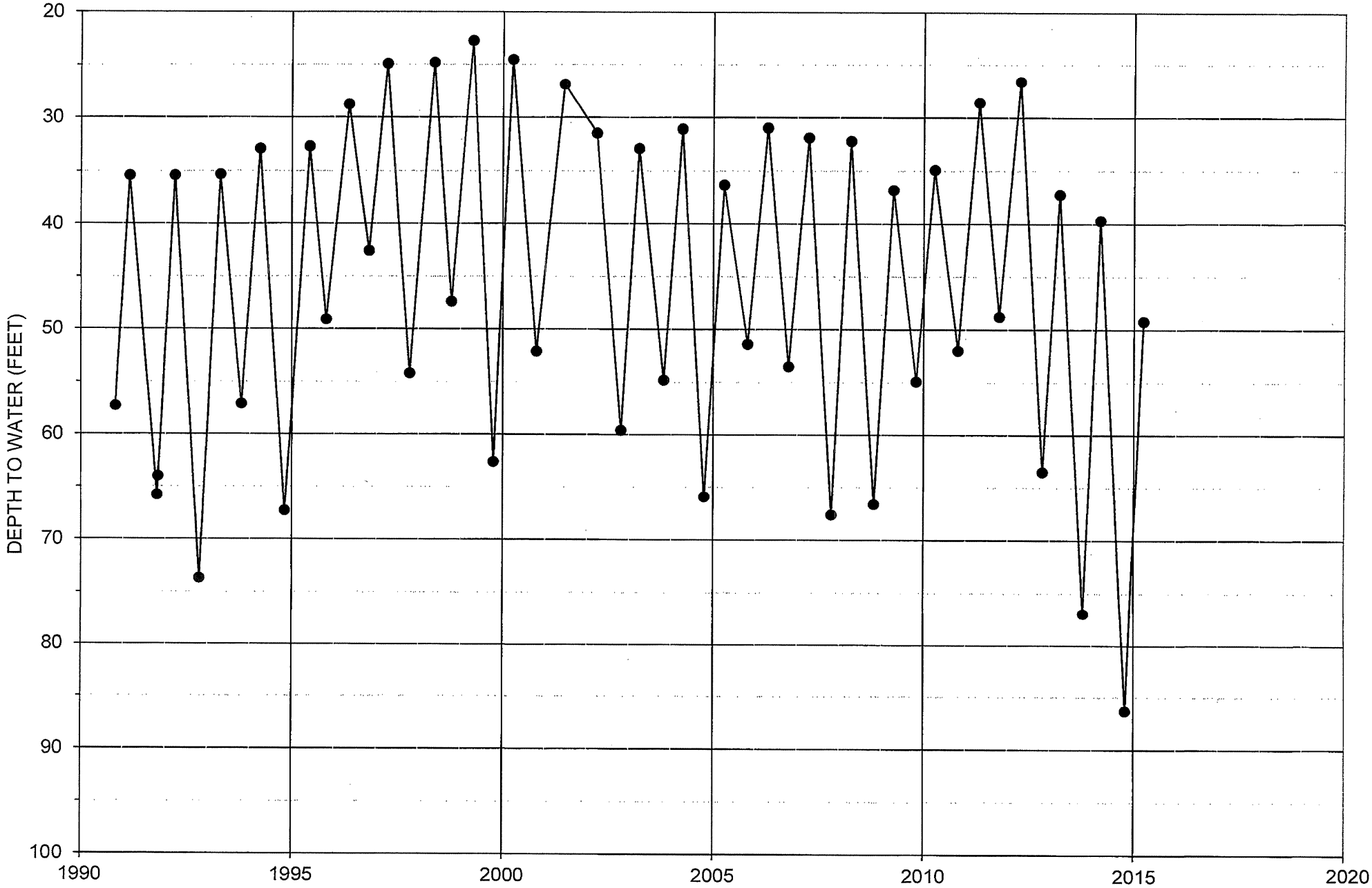
WATER-LEVEL HYDROGRAPH FOR WELL T21N/R16E-07A001



WATER-LEVEL HYDROGRAPH FOR WELL T21N/R16E-07F004



WATER-LEVEL HYDROGRAPH FOR WELL T21N/R16E-7G001



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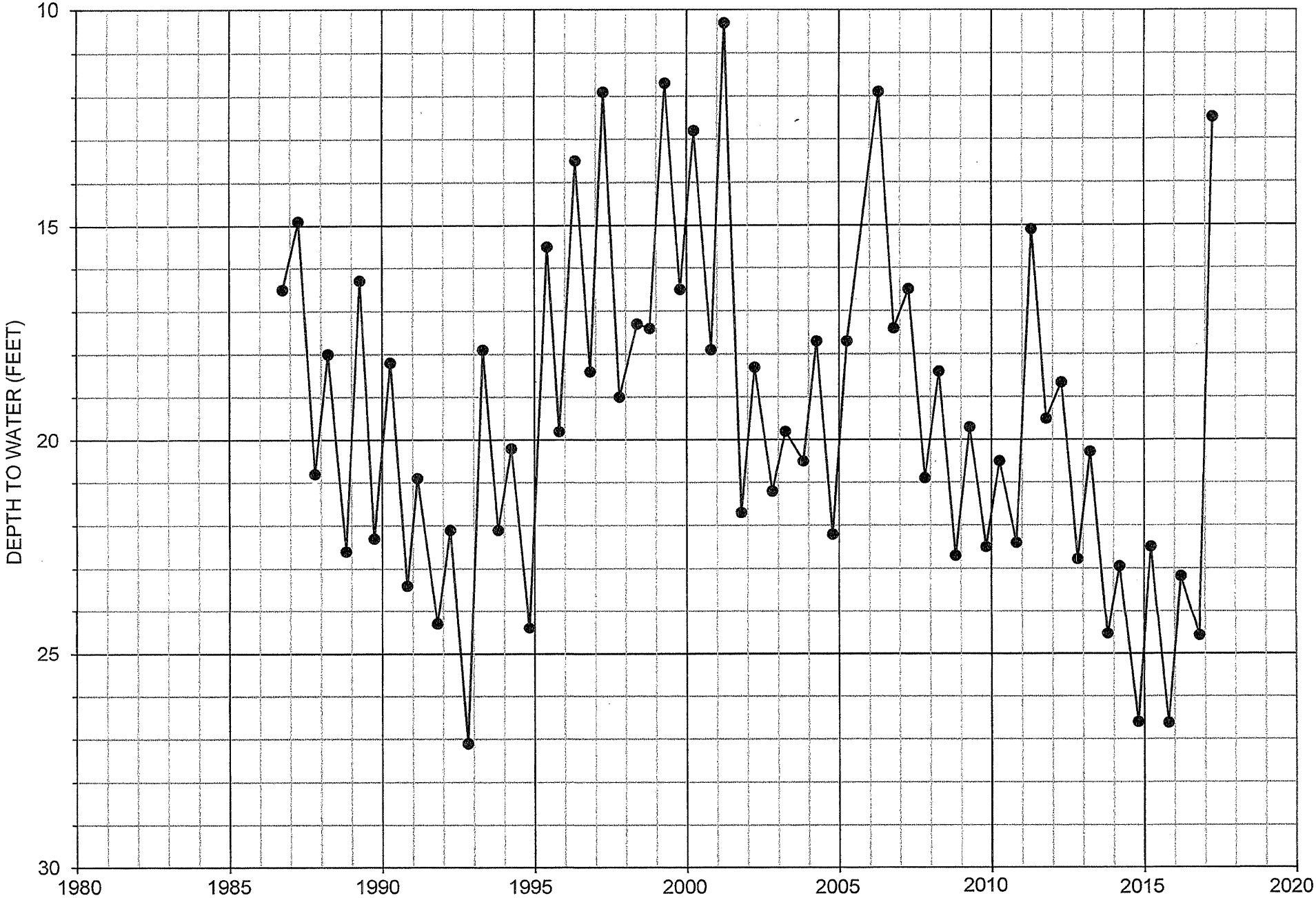
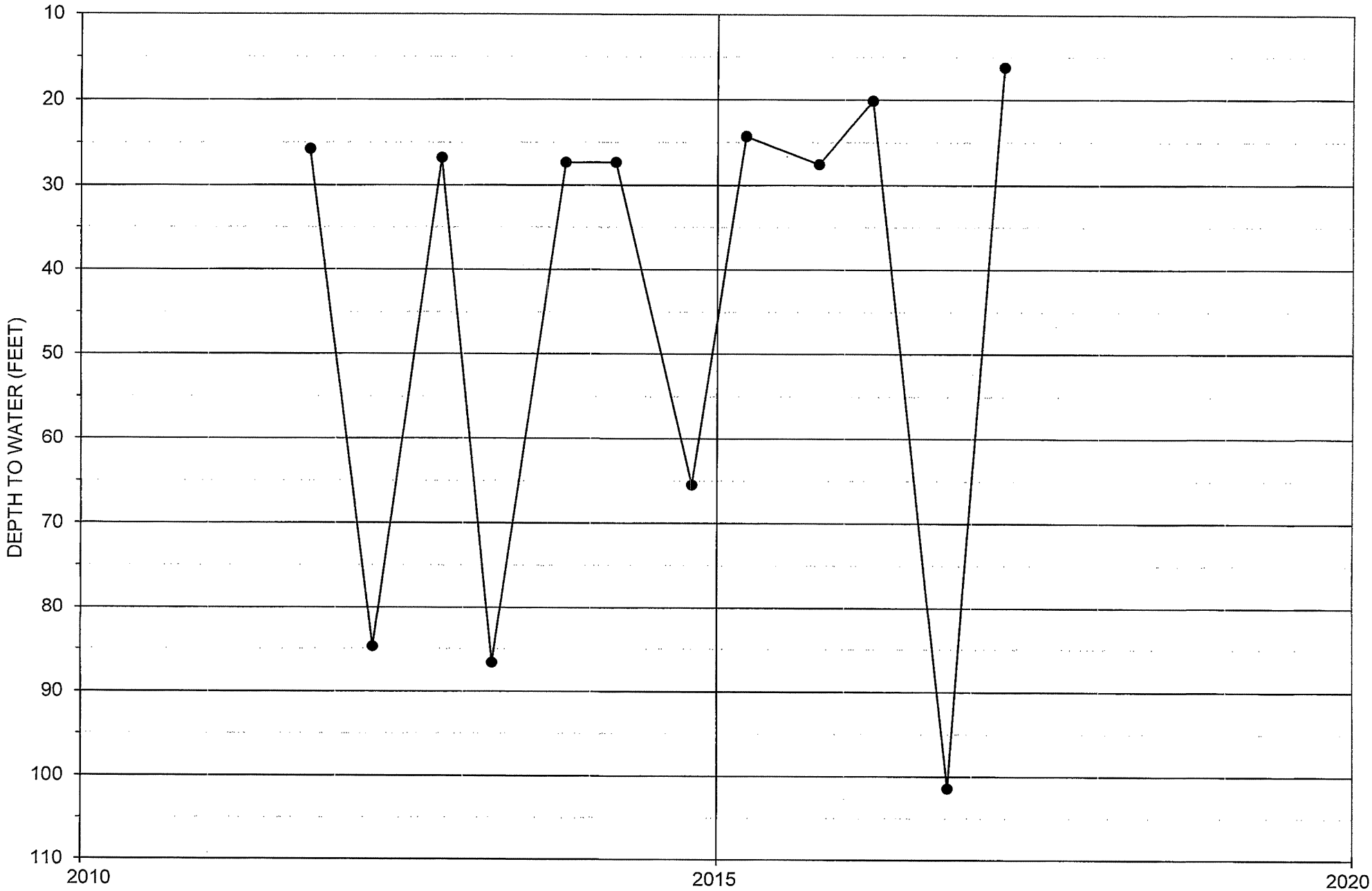
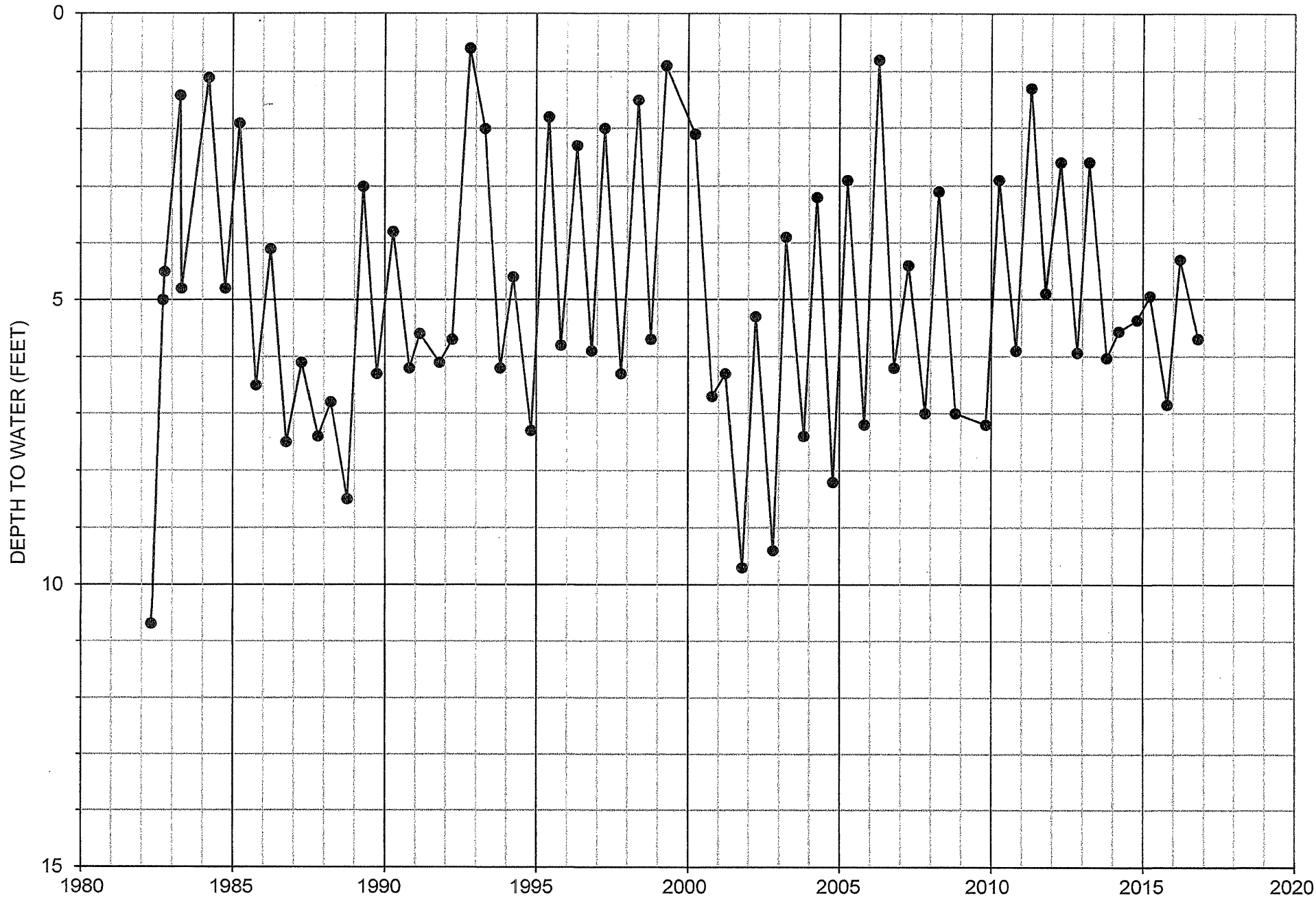


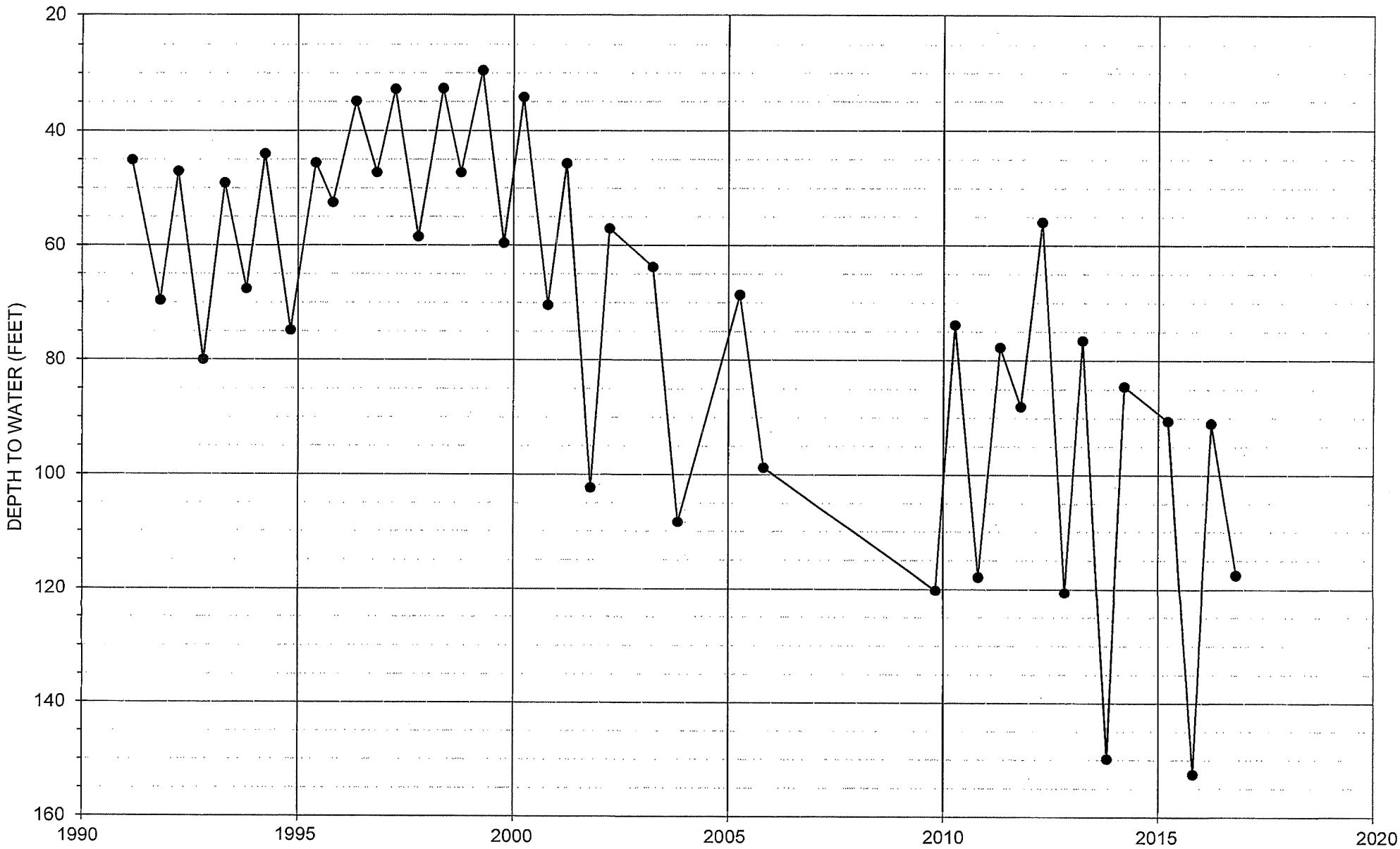
WATER-LEVEL HYDROGRAPH FOR WELL T21N/R16E-18G002



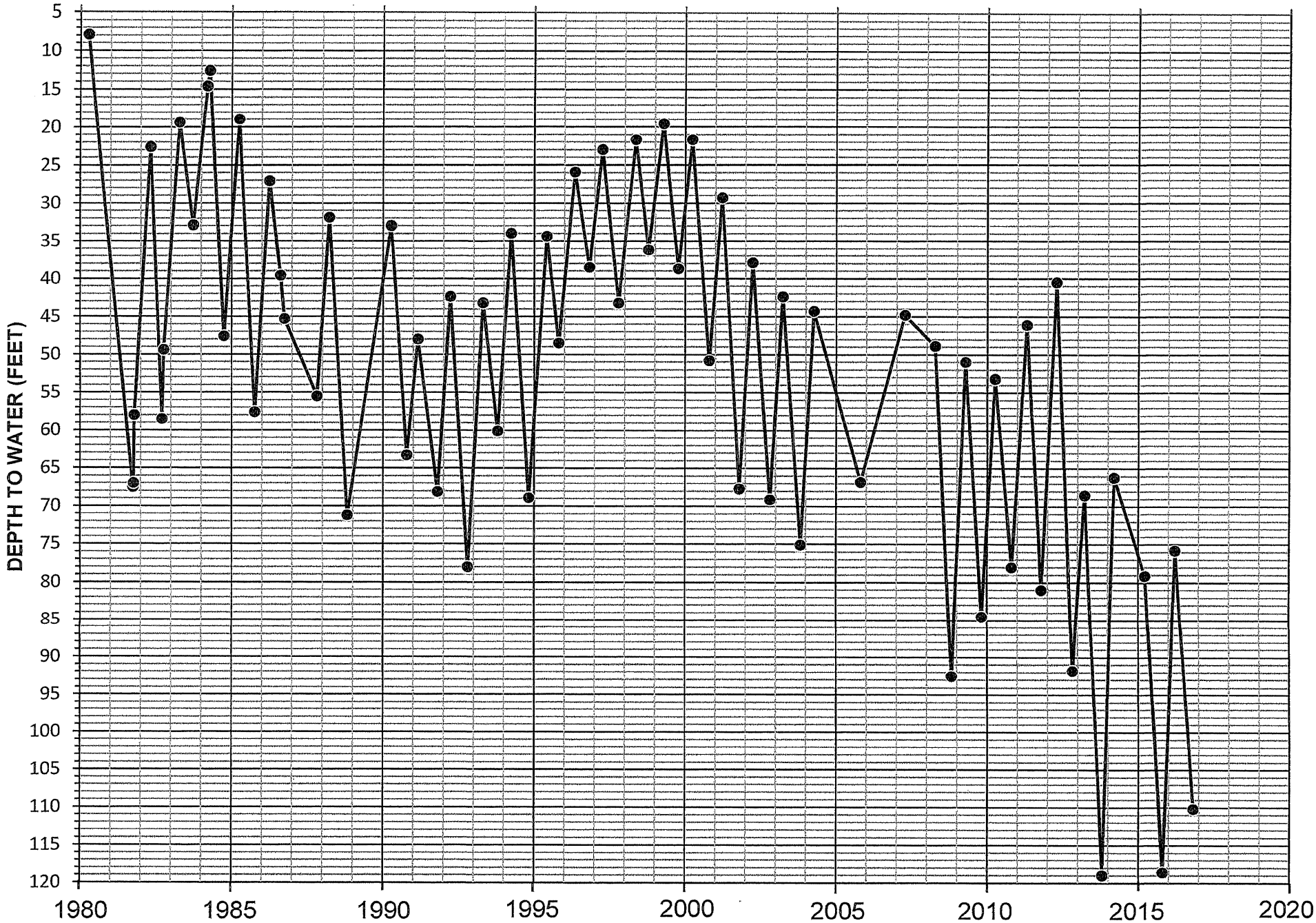
WATER-LEVEL HYDROGRAPH FOR WELL T21N/R16E-30A001



WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-08Q001

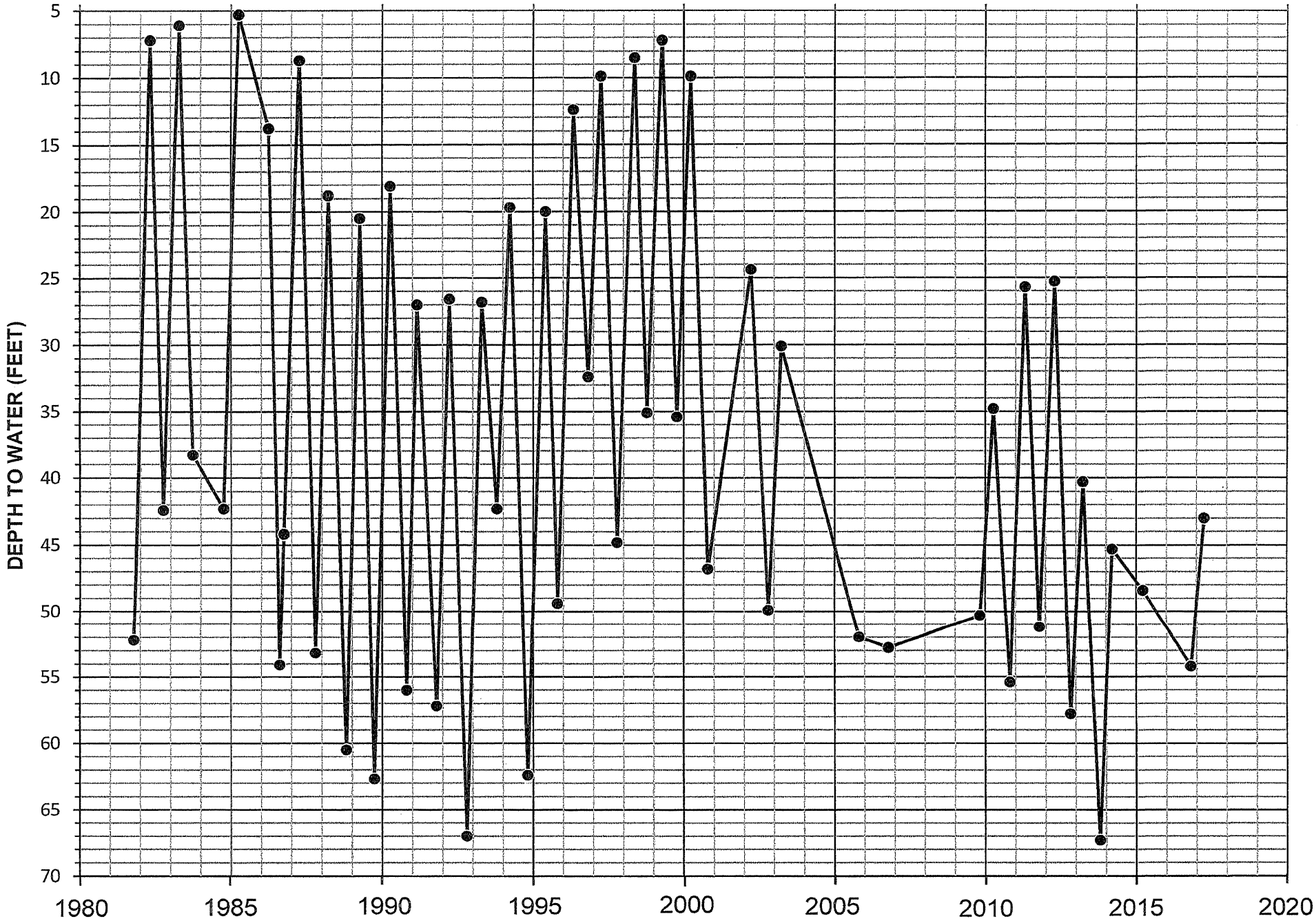


WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-10B001

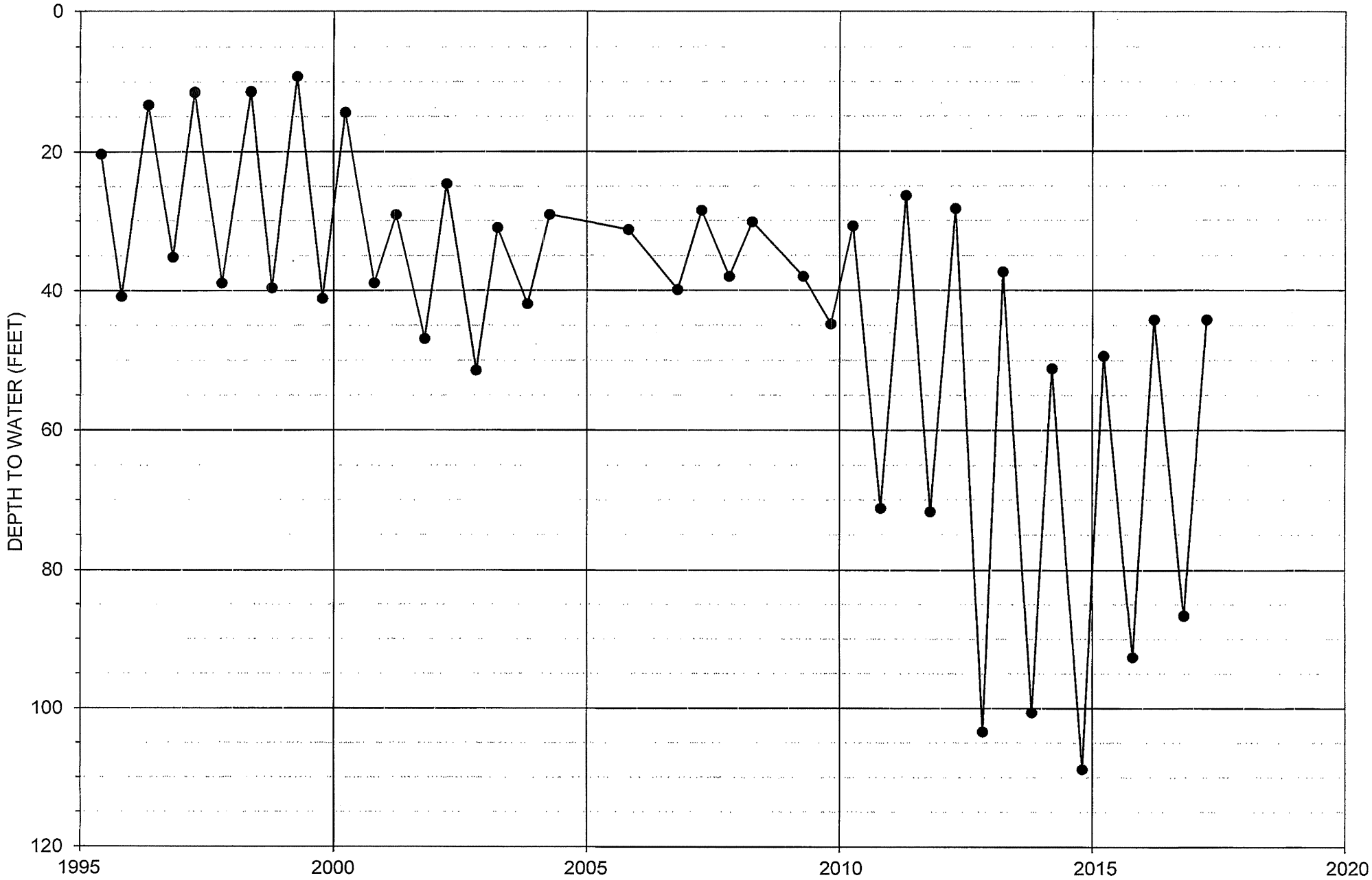


WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-13N001

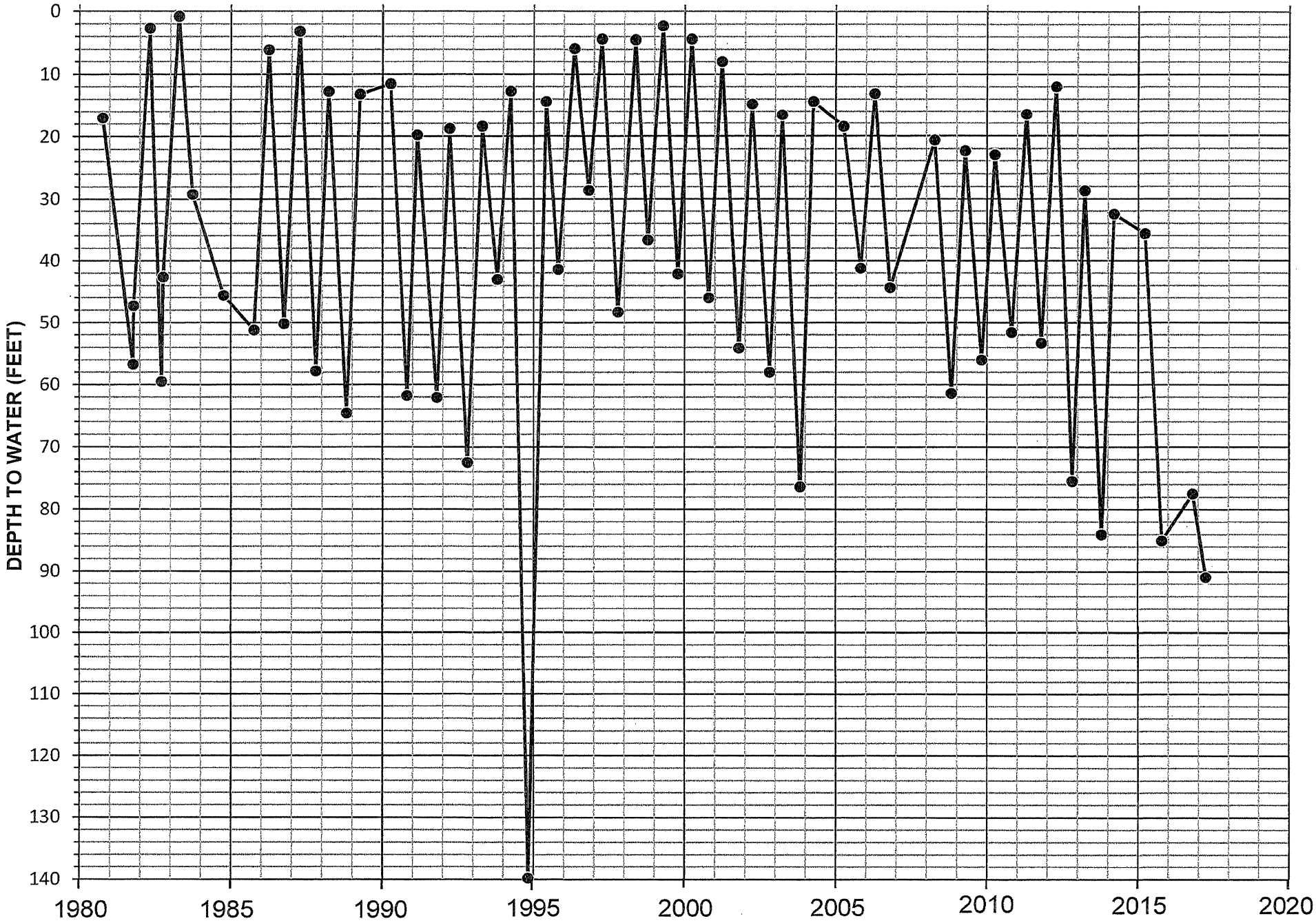
WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-22Q001



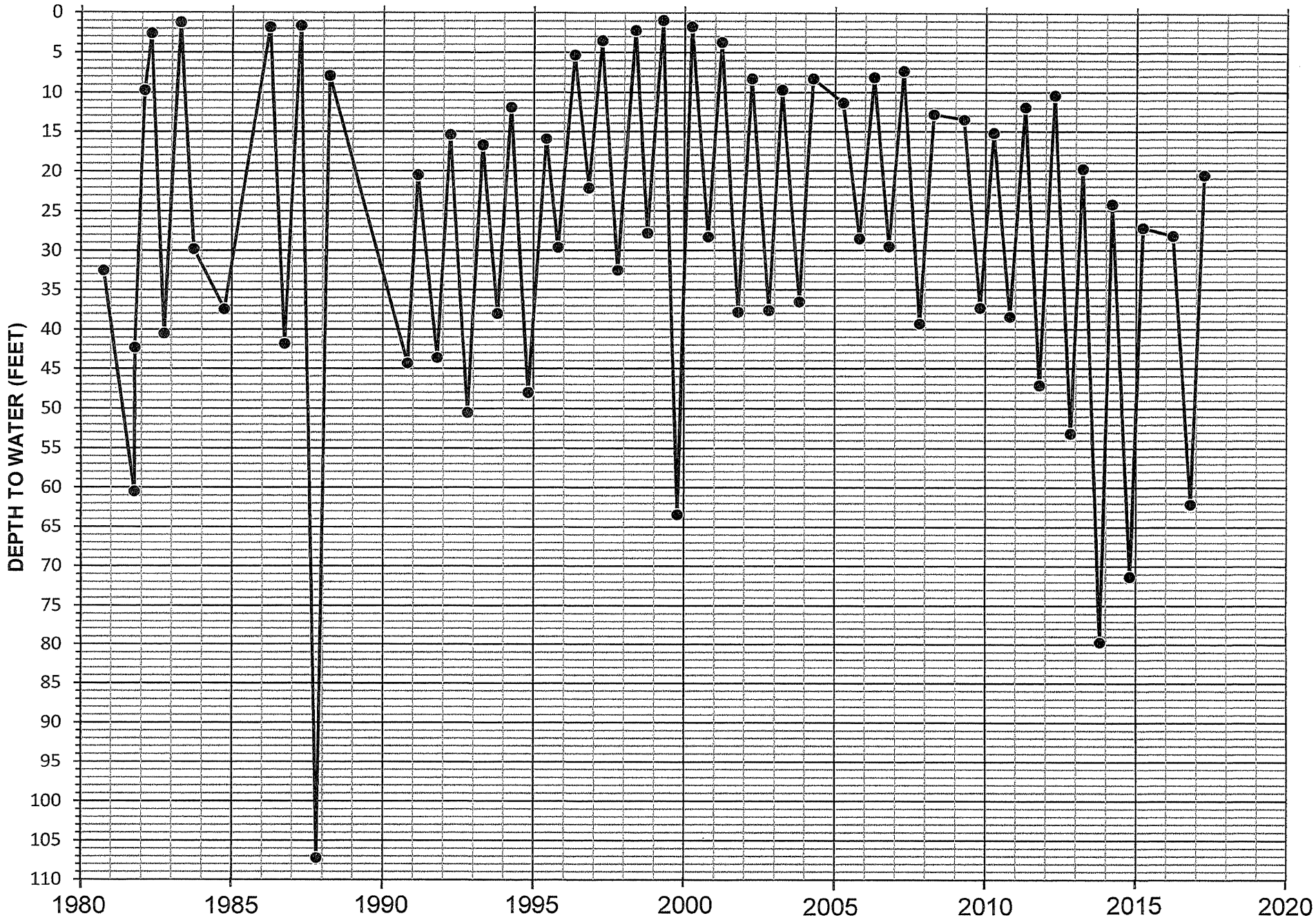
WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-27Q001



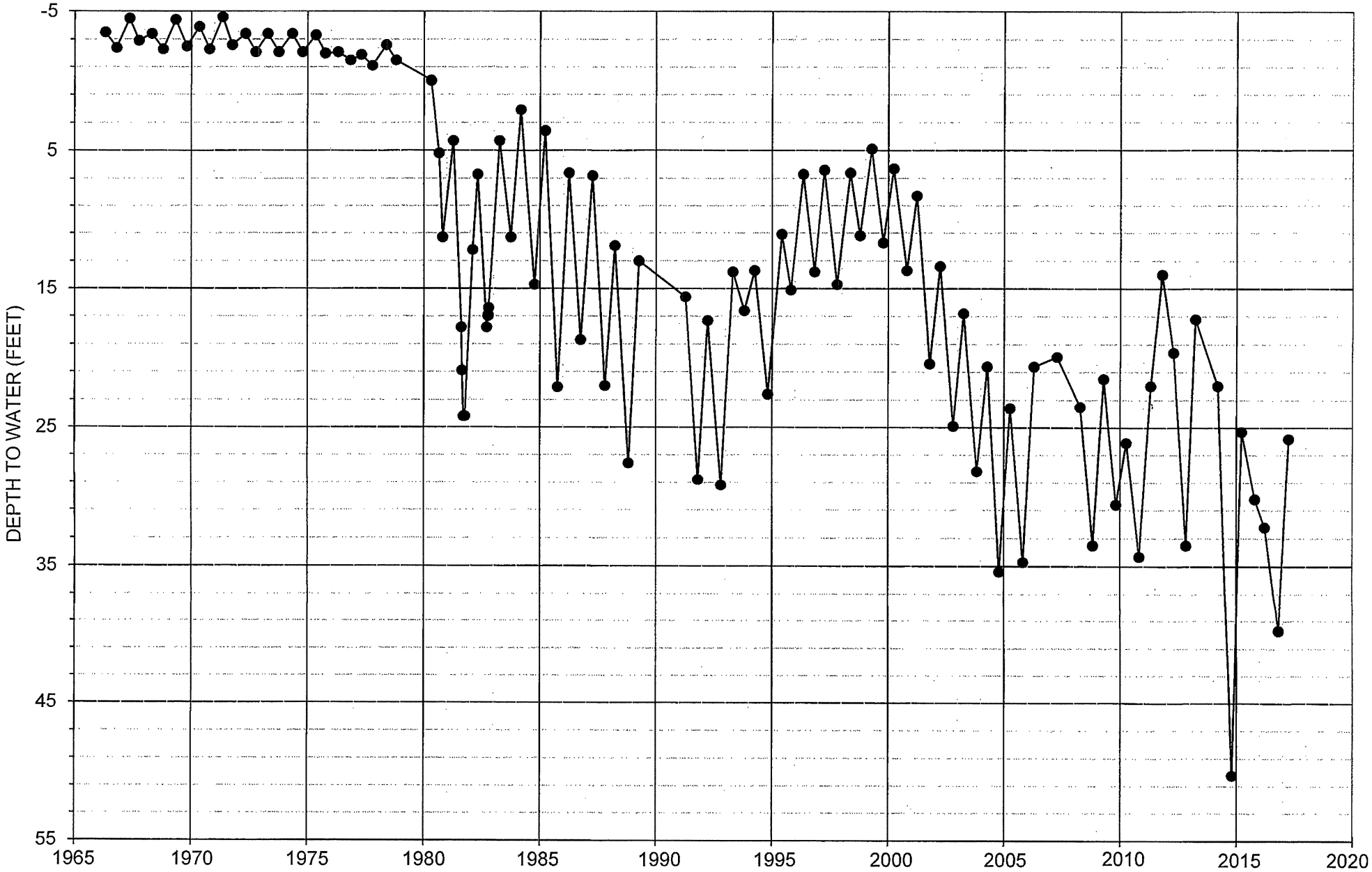
WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-34L006



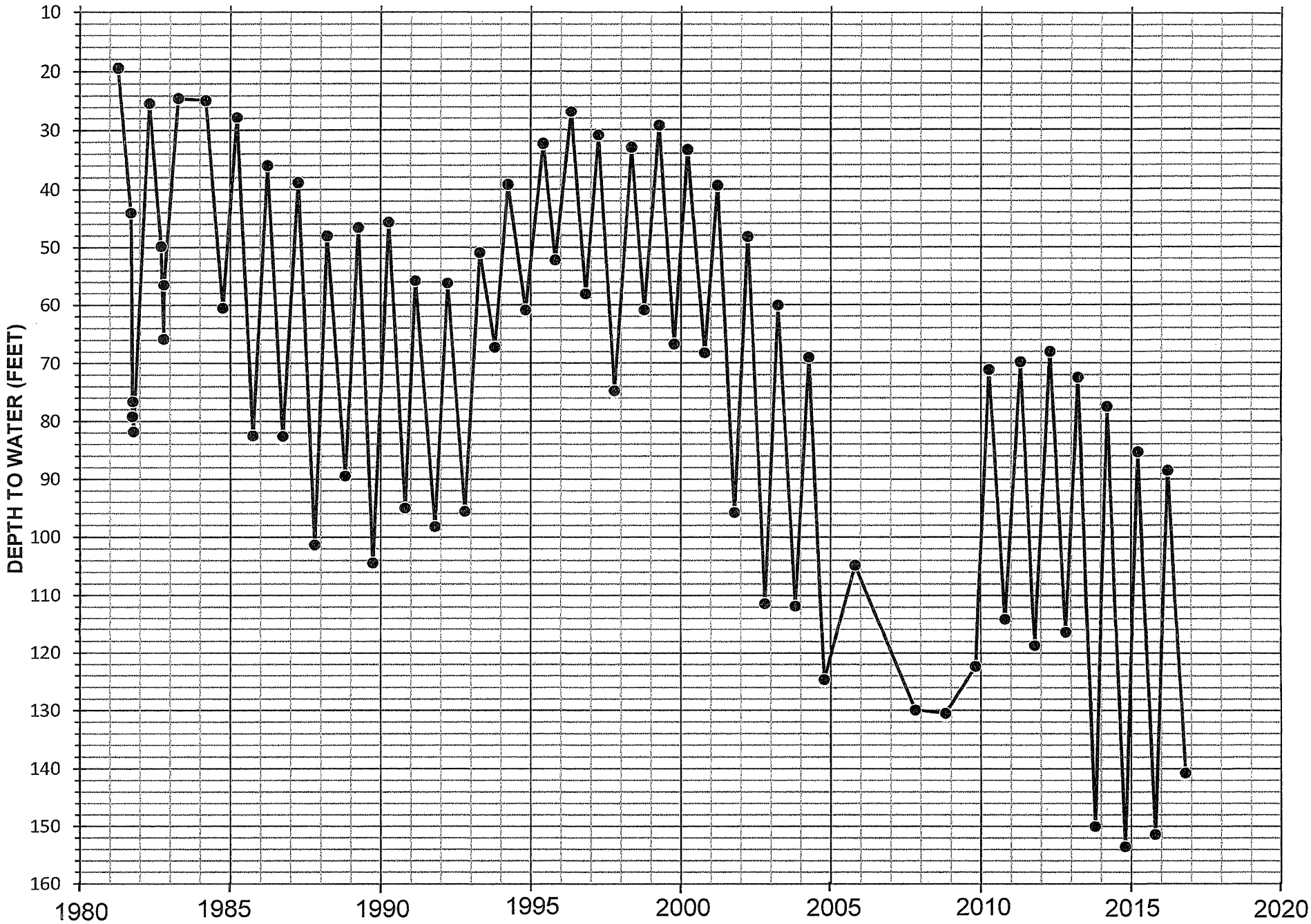
WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-36N001



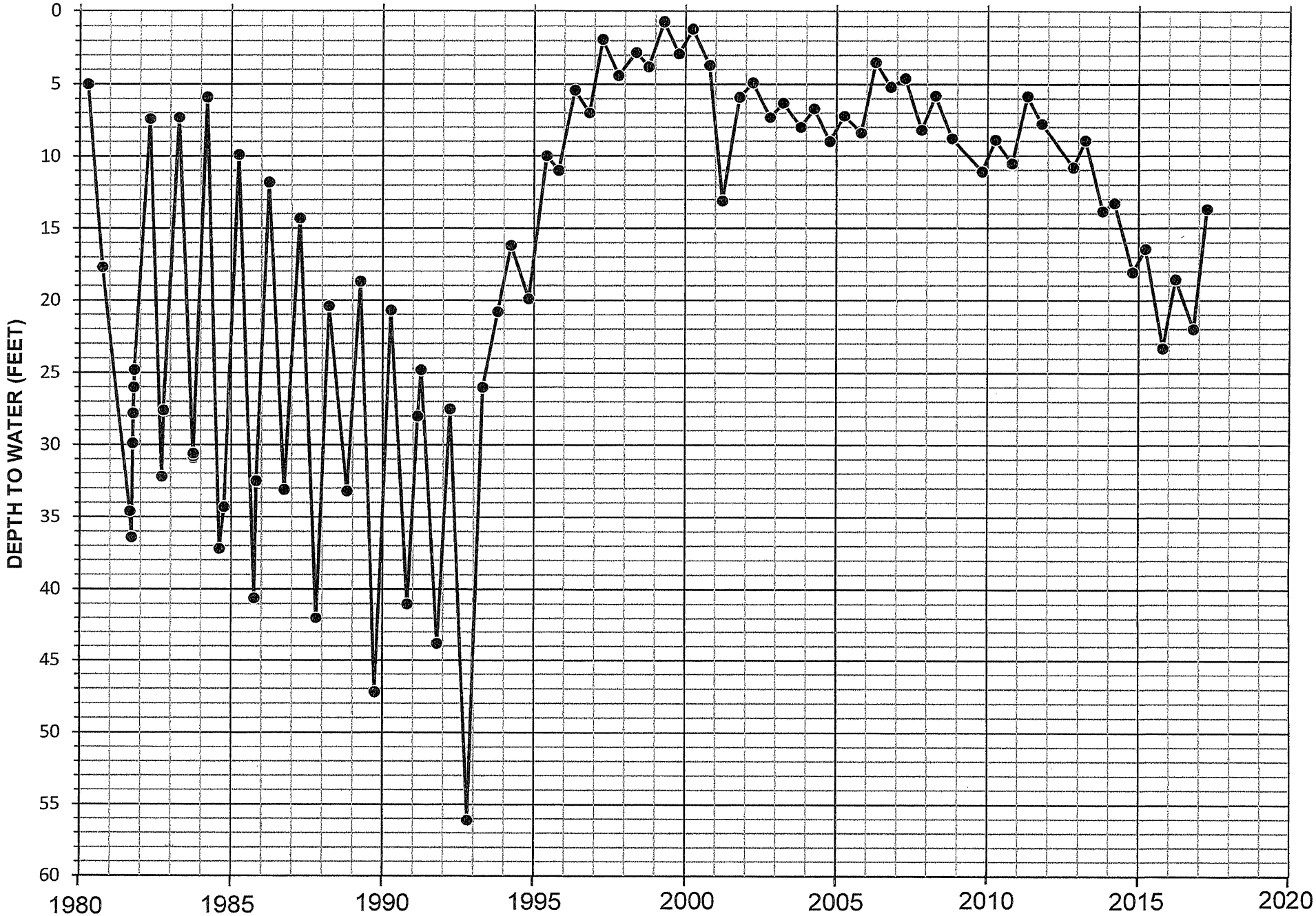
WATER-LEVEL HYDROGRAPH FOR WELL T22N/R15E-36Q001



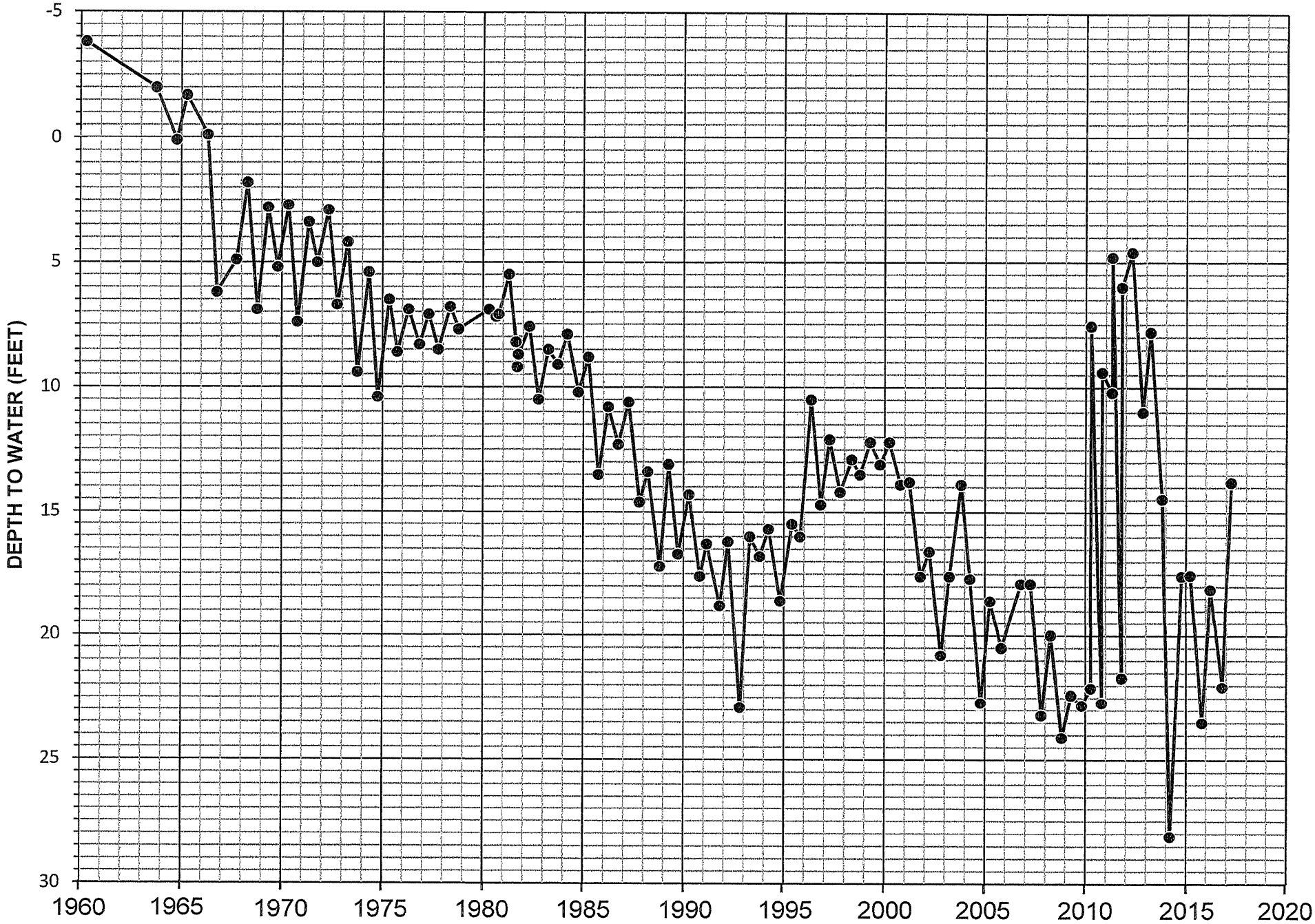
WATER-LEVEL HYDROGRAPH FOR WELL T22N/R16E-4A001



WATER-LEVEL HYDROGRAPH FOR WELL T22N/R16E-06R002



WATER-LEVEL HYDROGRAPH FOR WELL T22N/R16E-17C001



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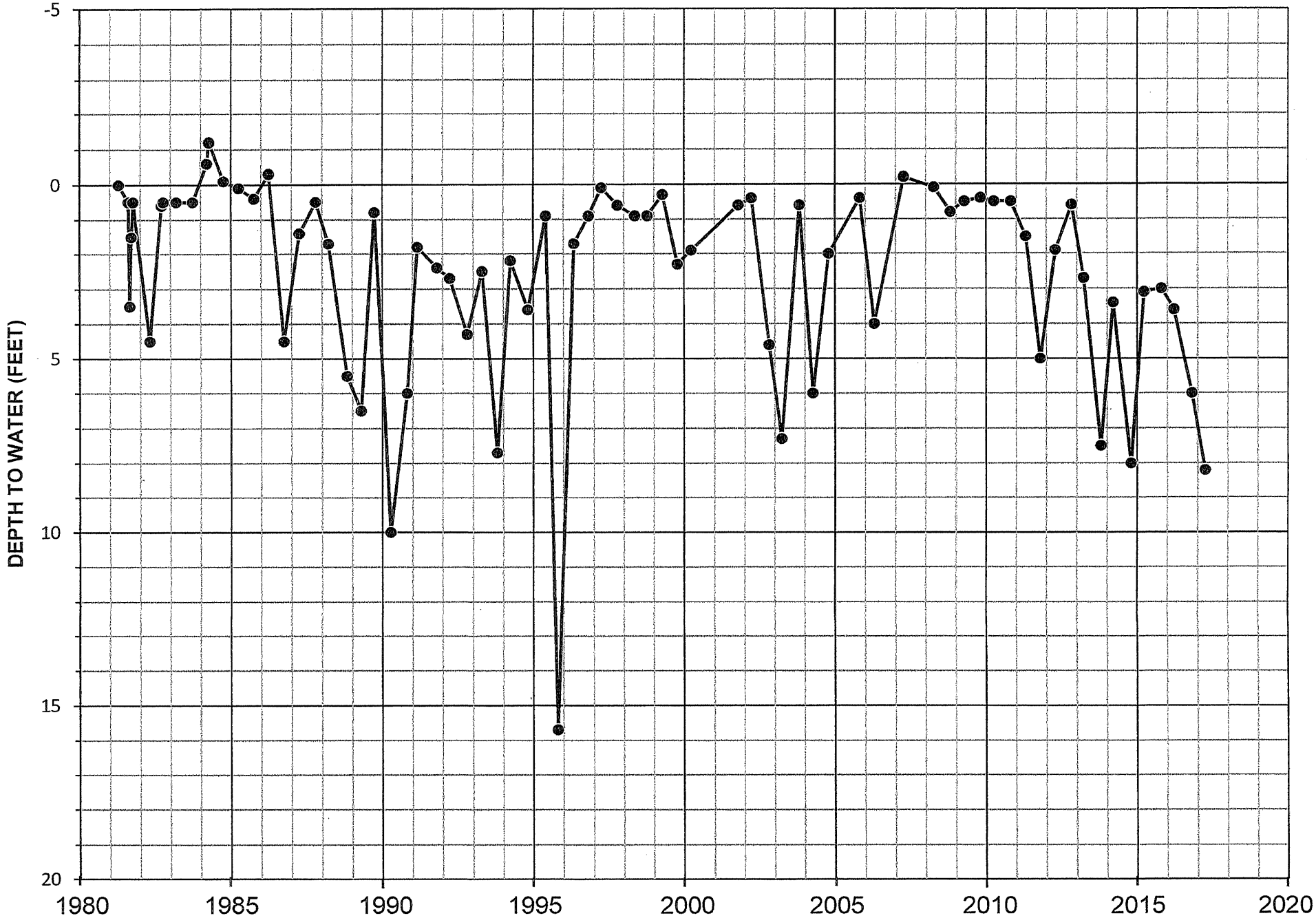

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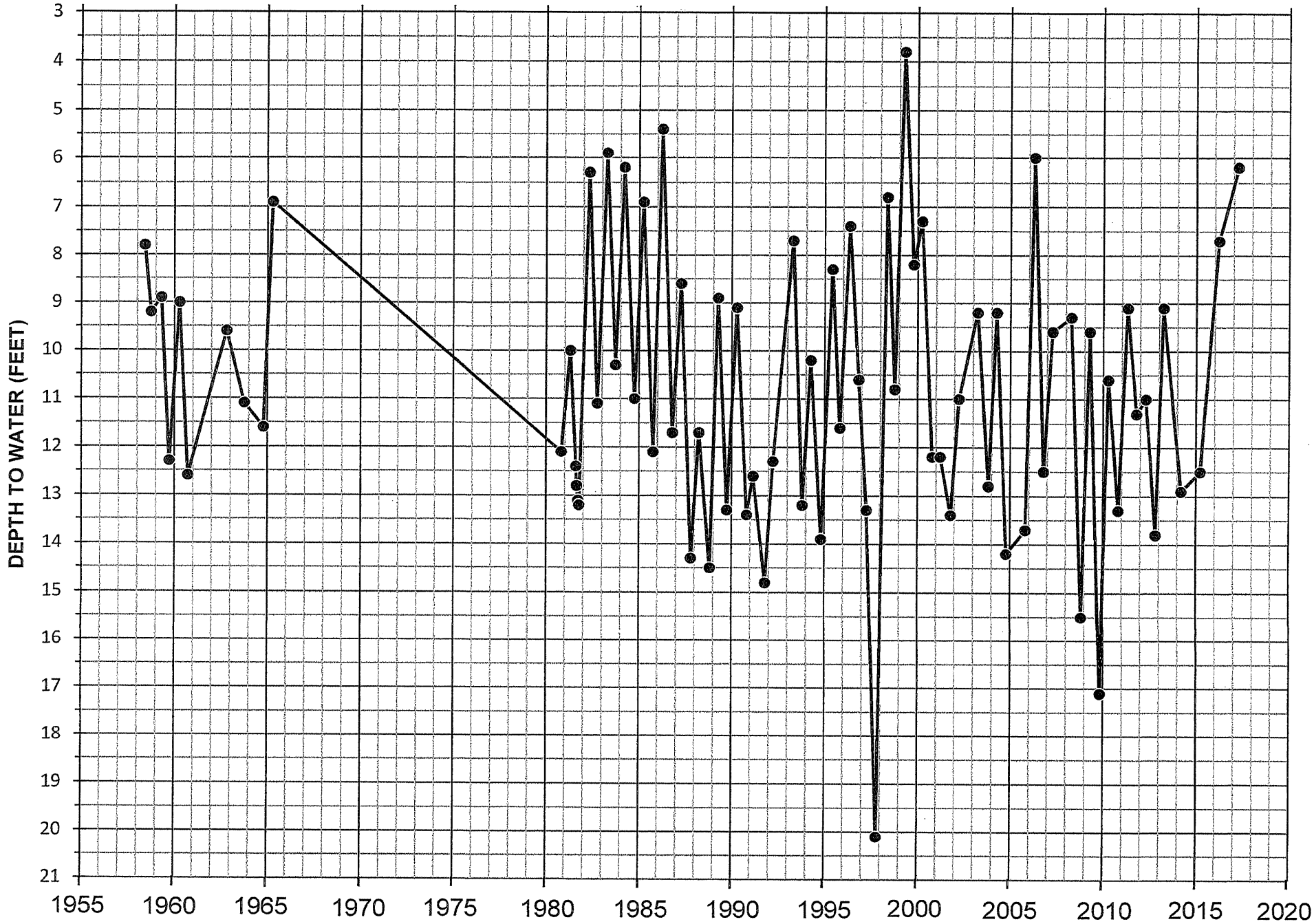
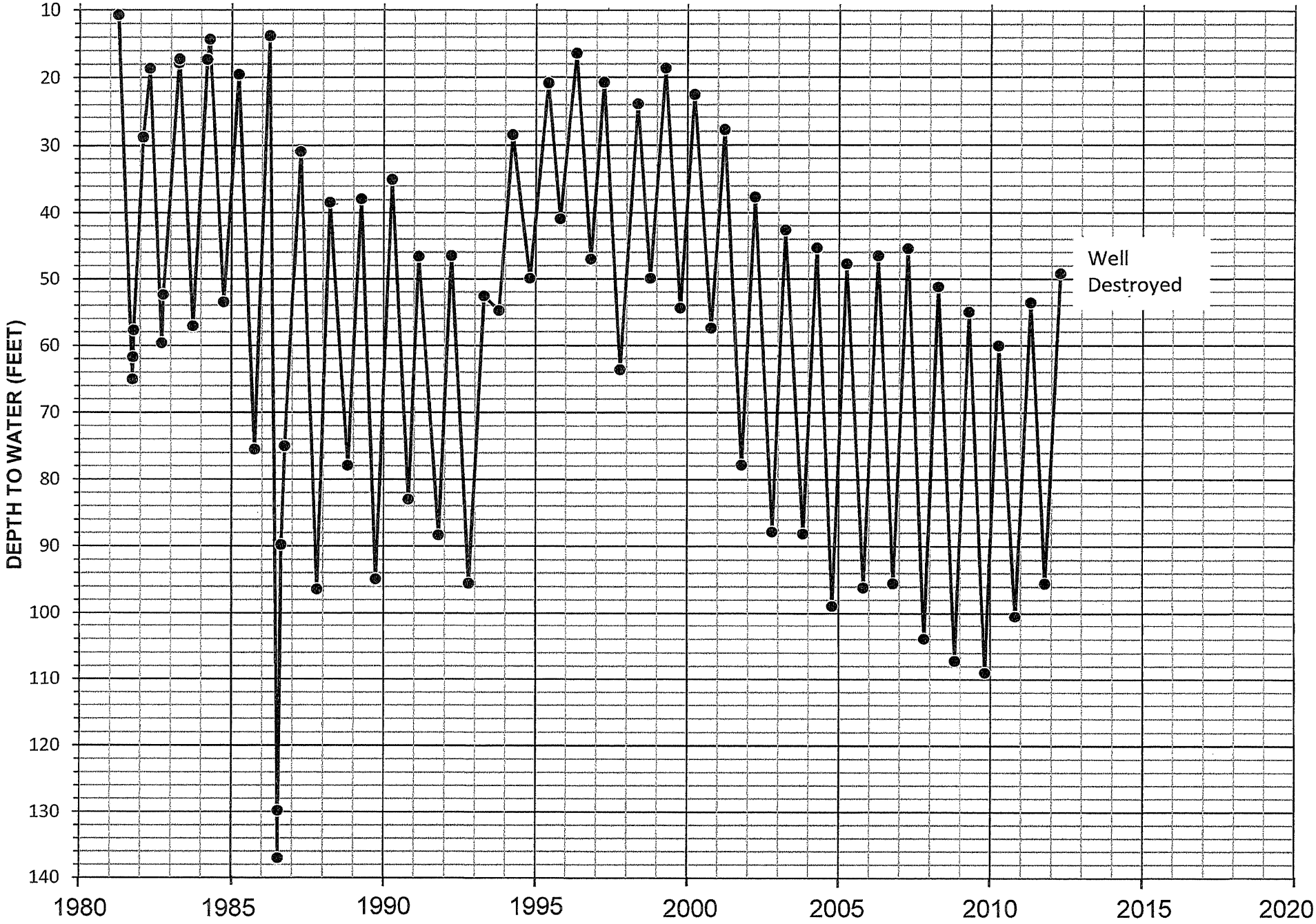
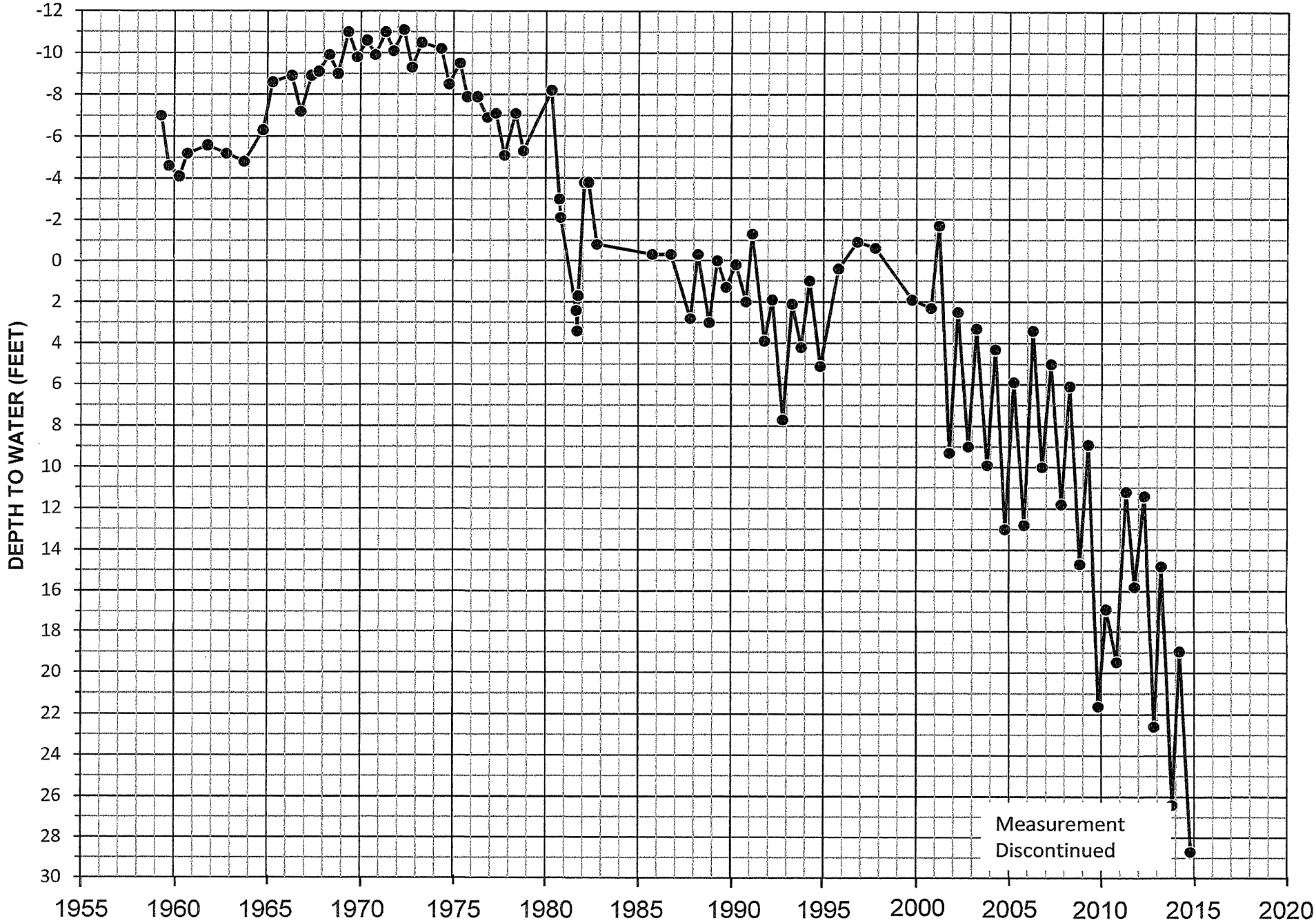


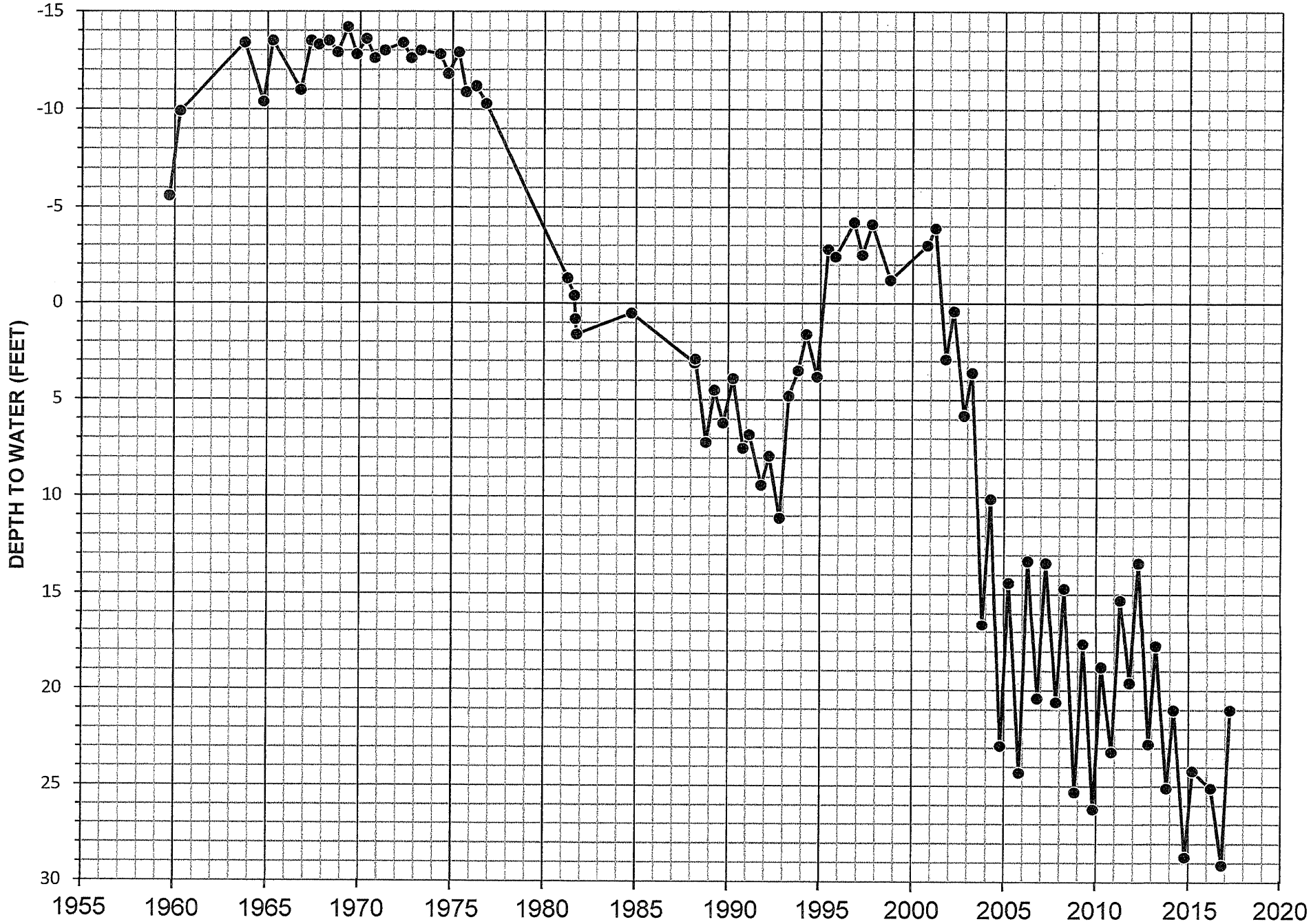
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R14E-35L001



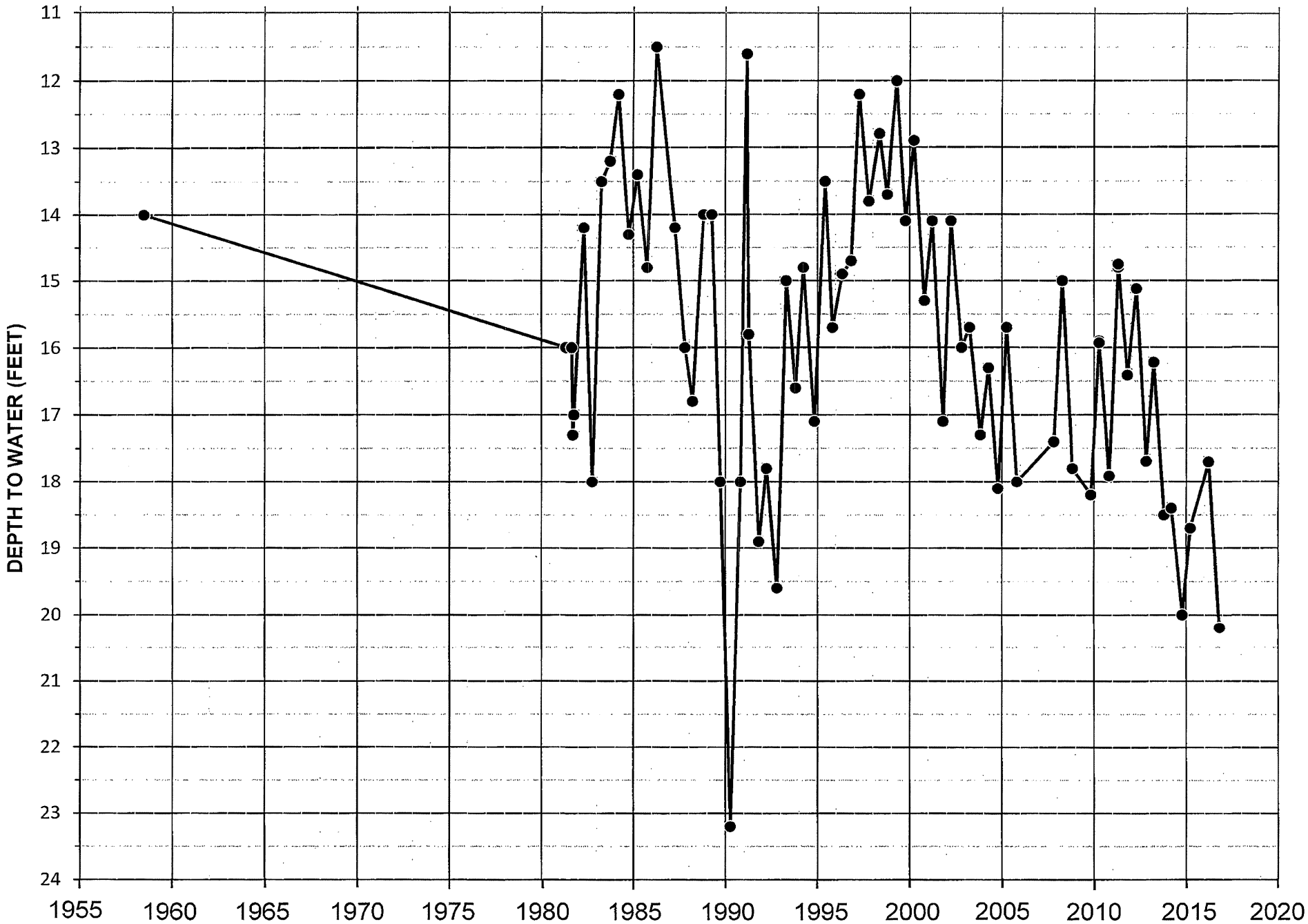
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R15E-26R001



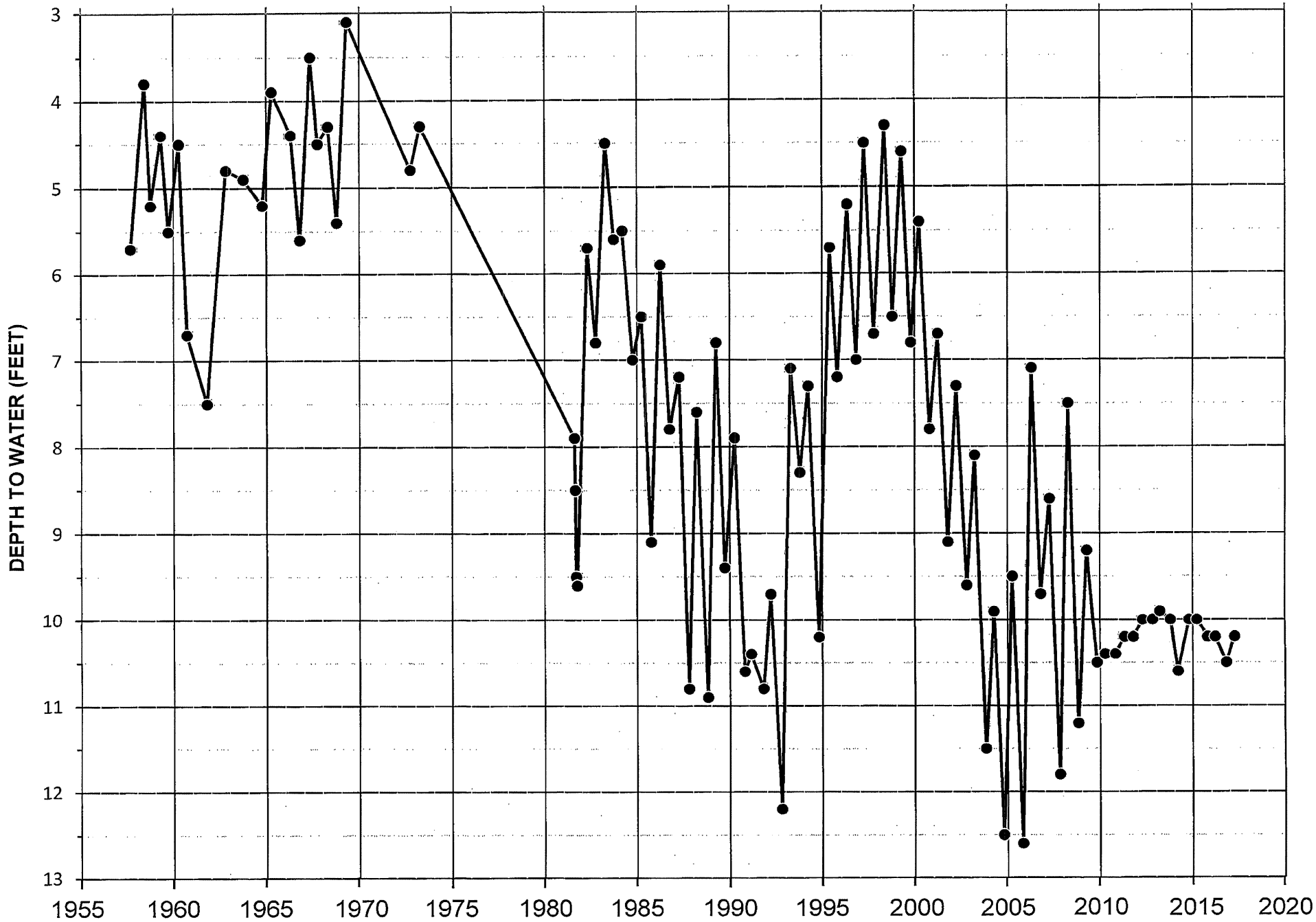
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R15E-29H001



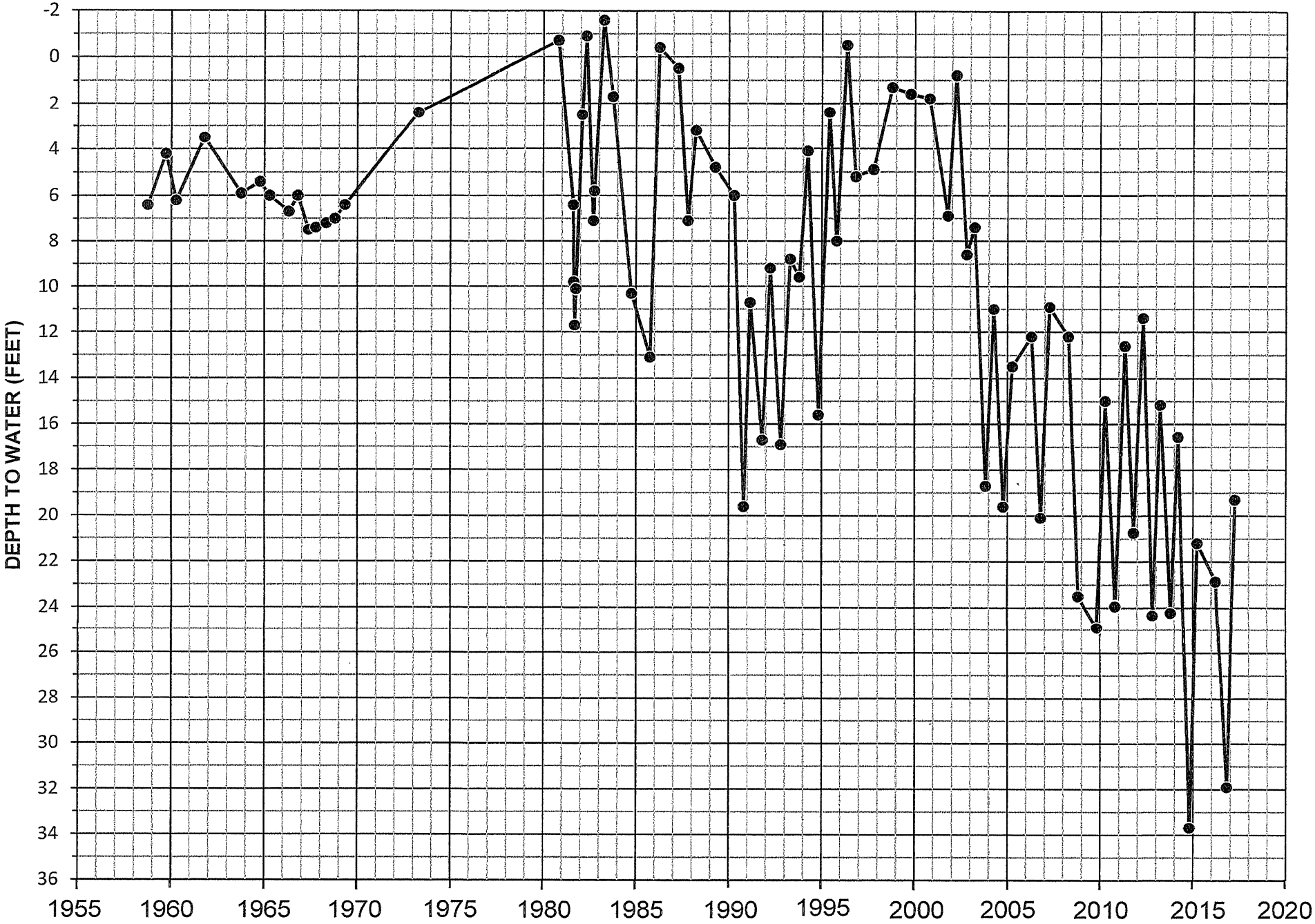
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R15E-34D001



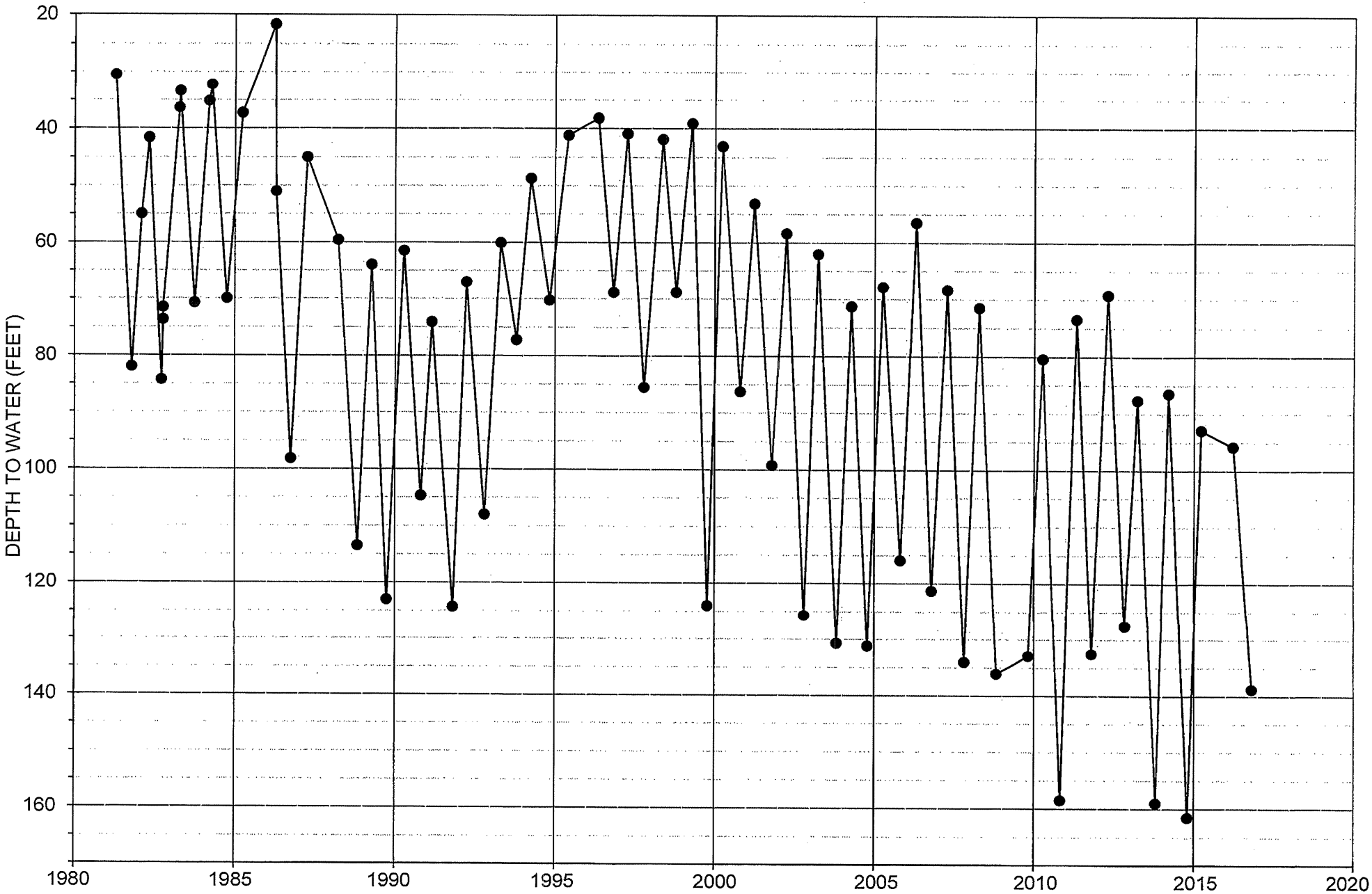
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-23F001



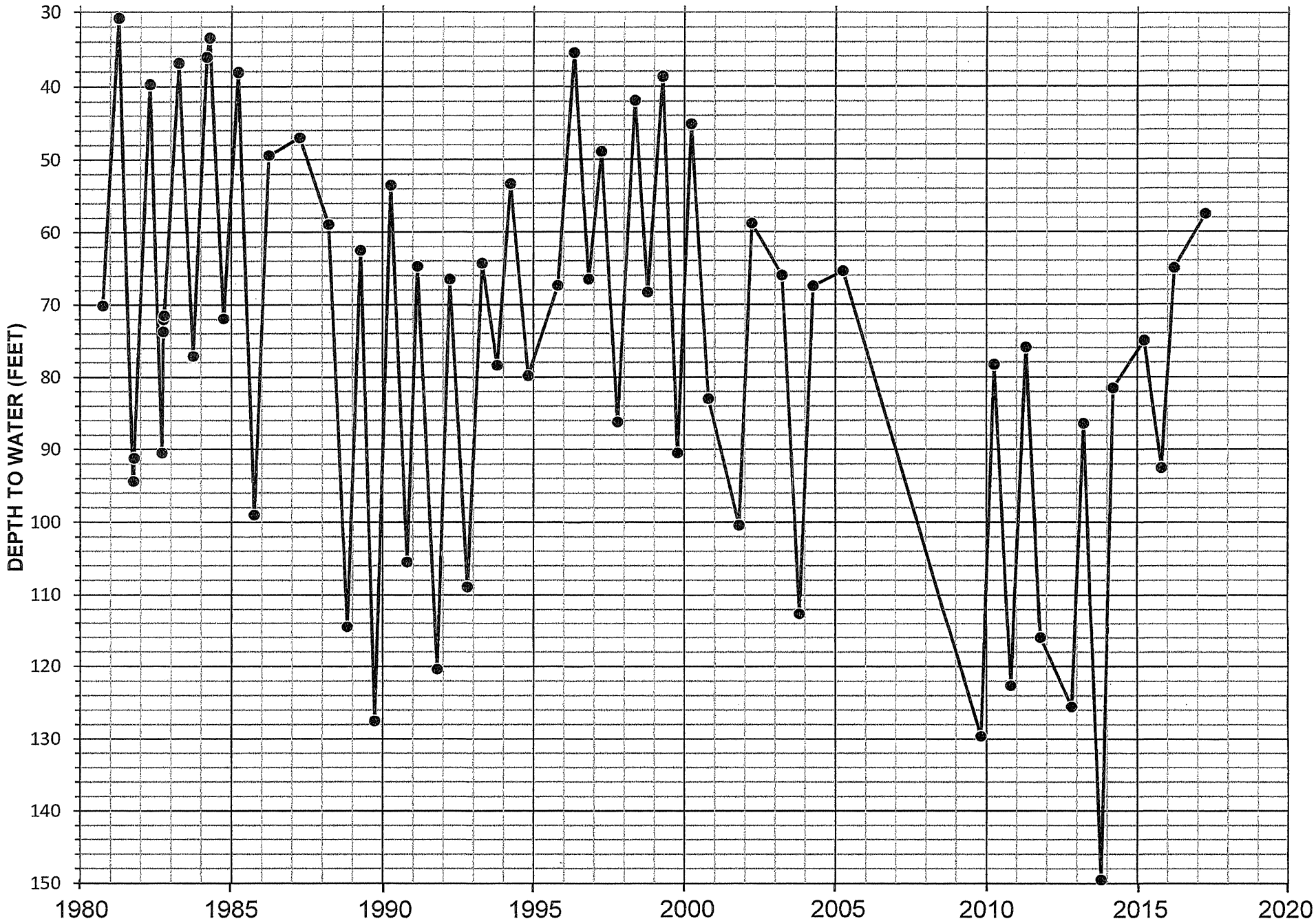
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-27R001



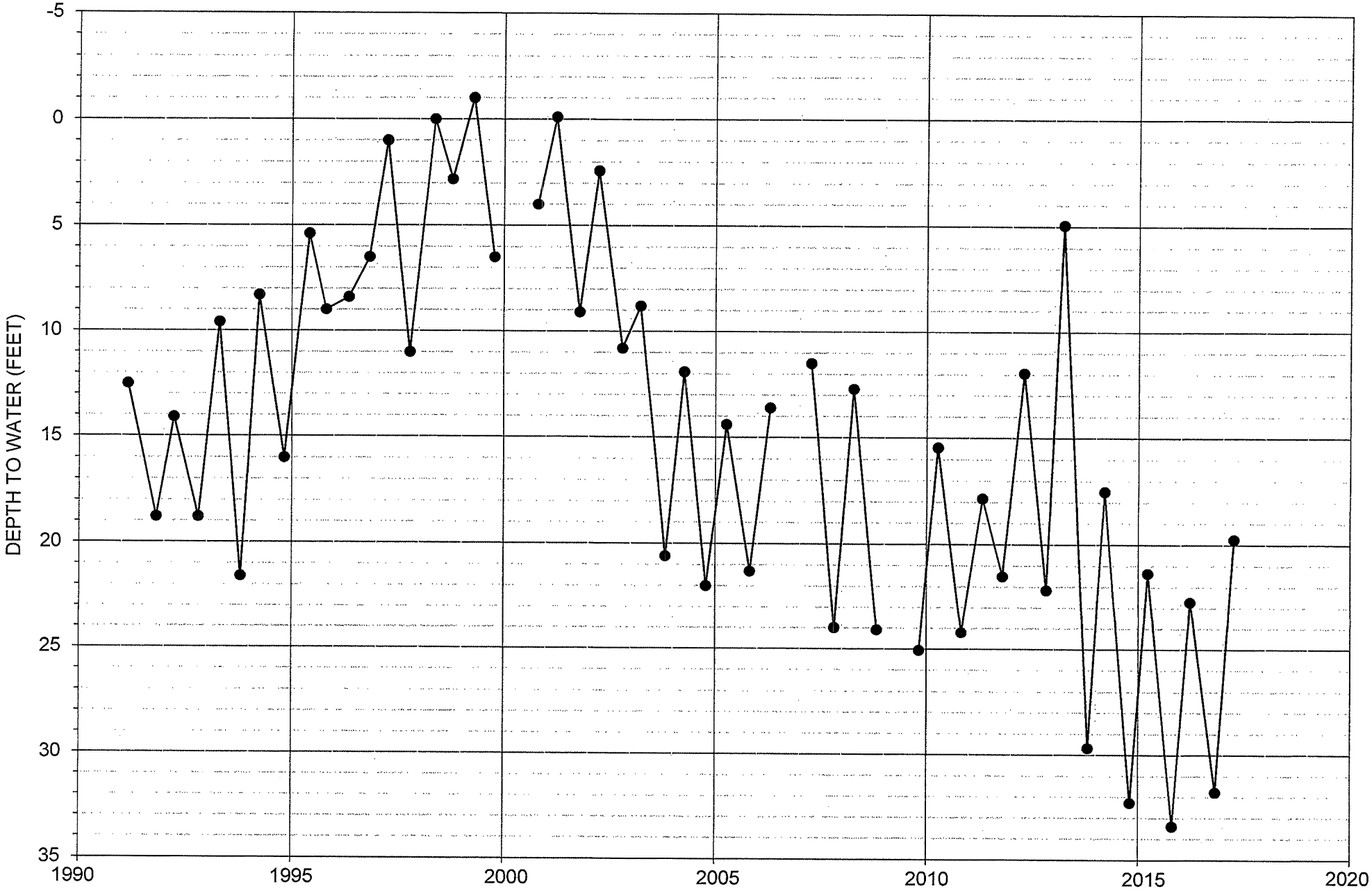
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-28L001



WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-30R001

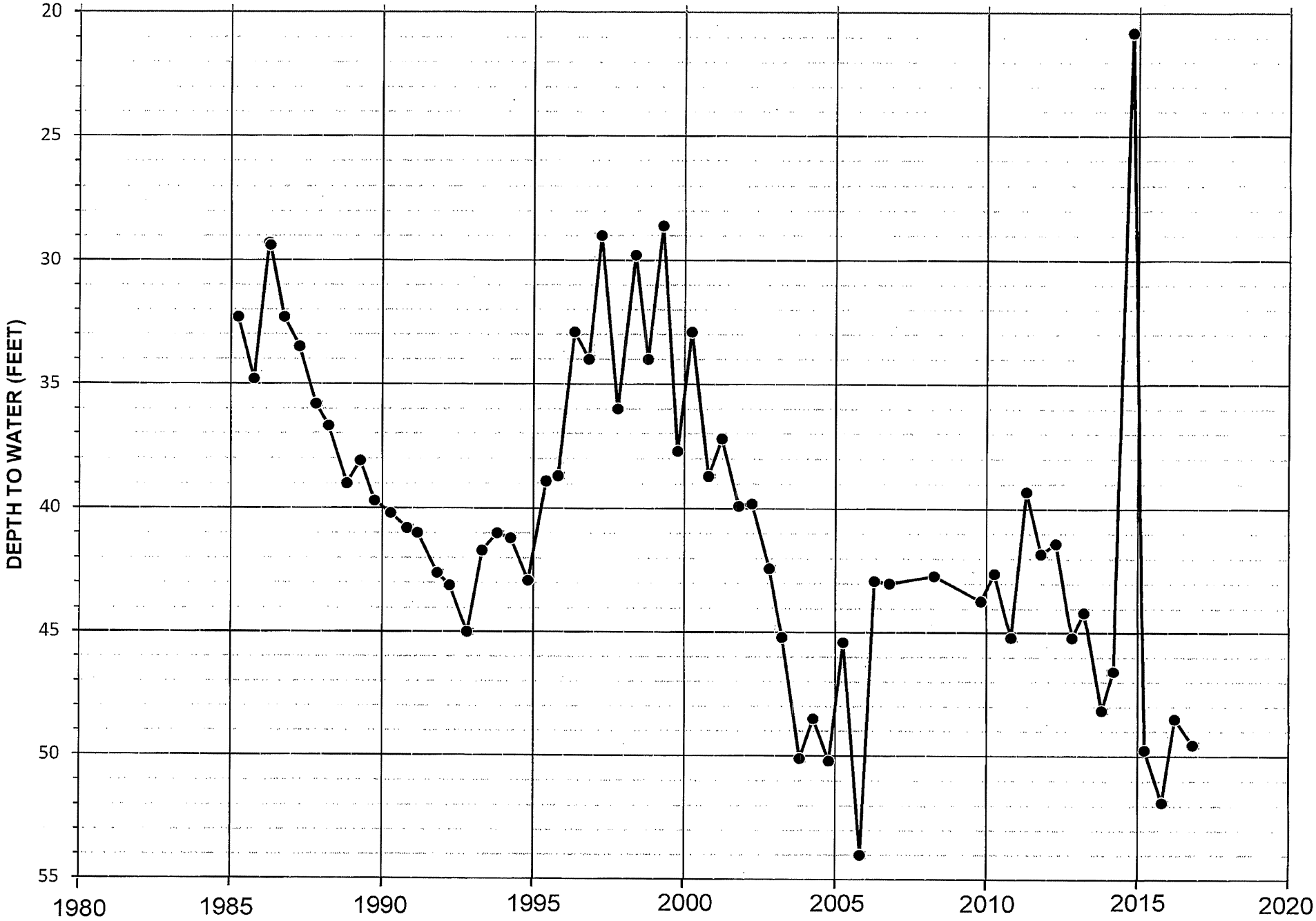


WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-32Q001

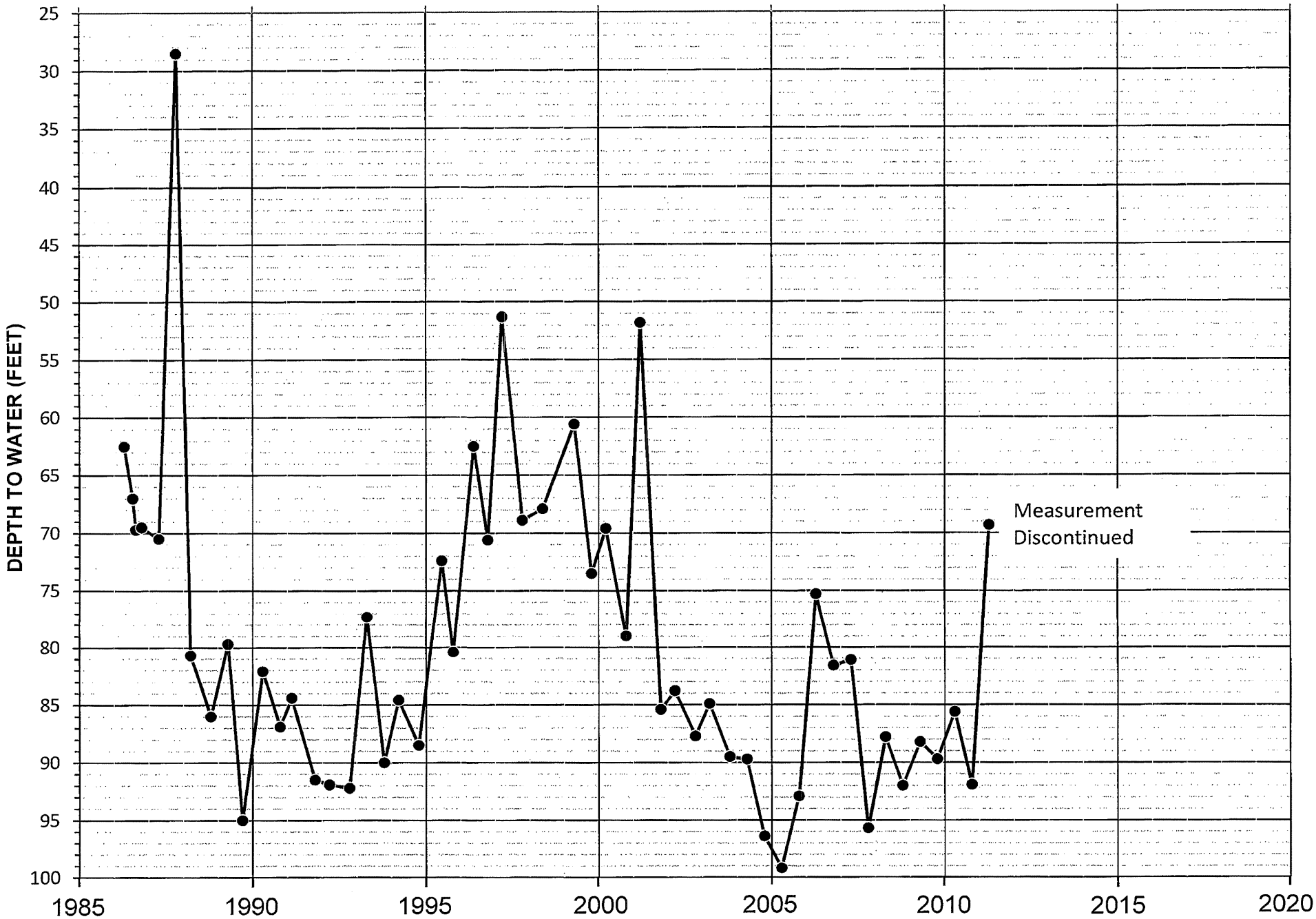


WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-33A002

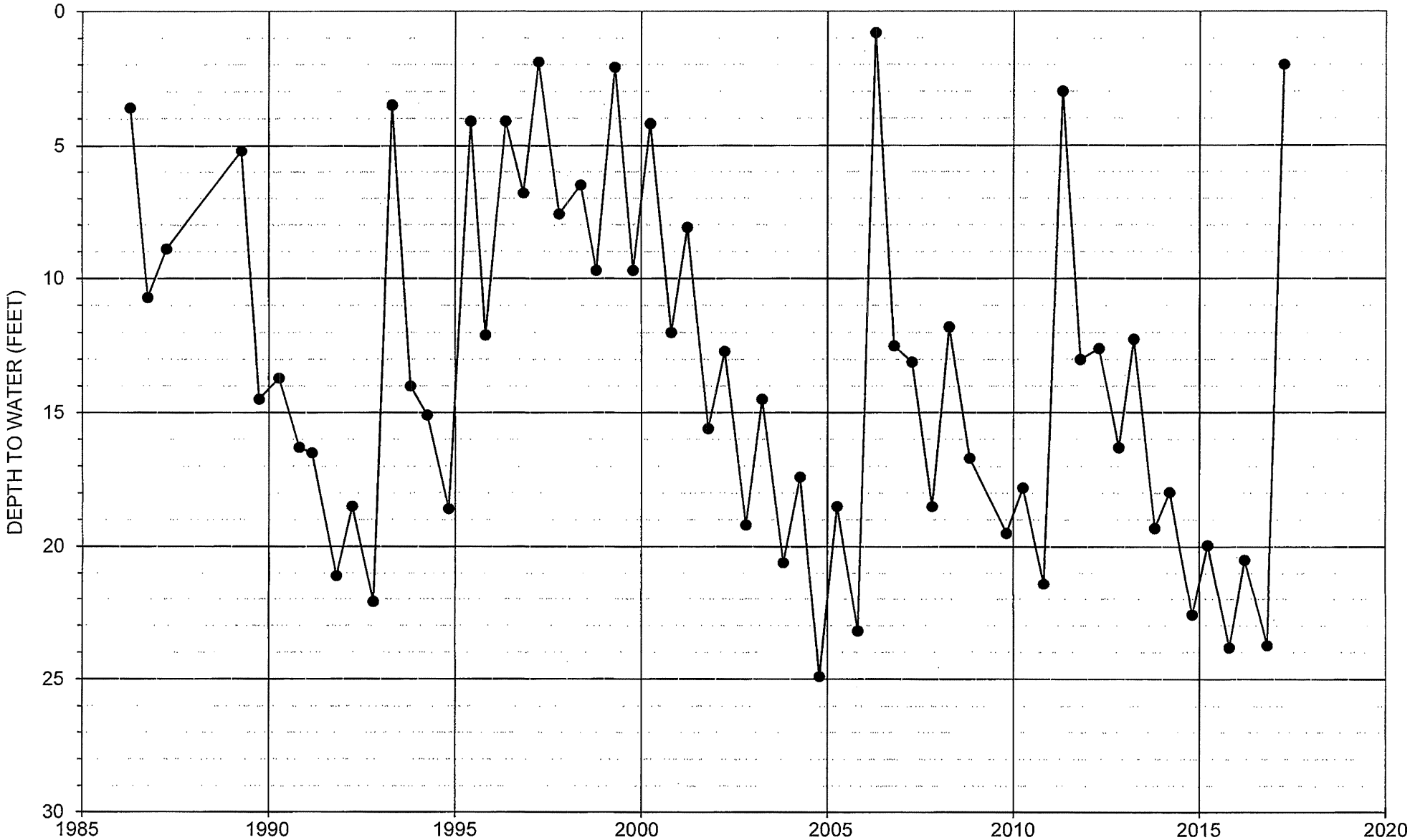
Chilcoot Sub-basin



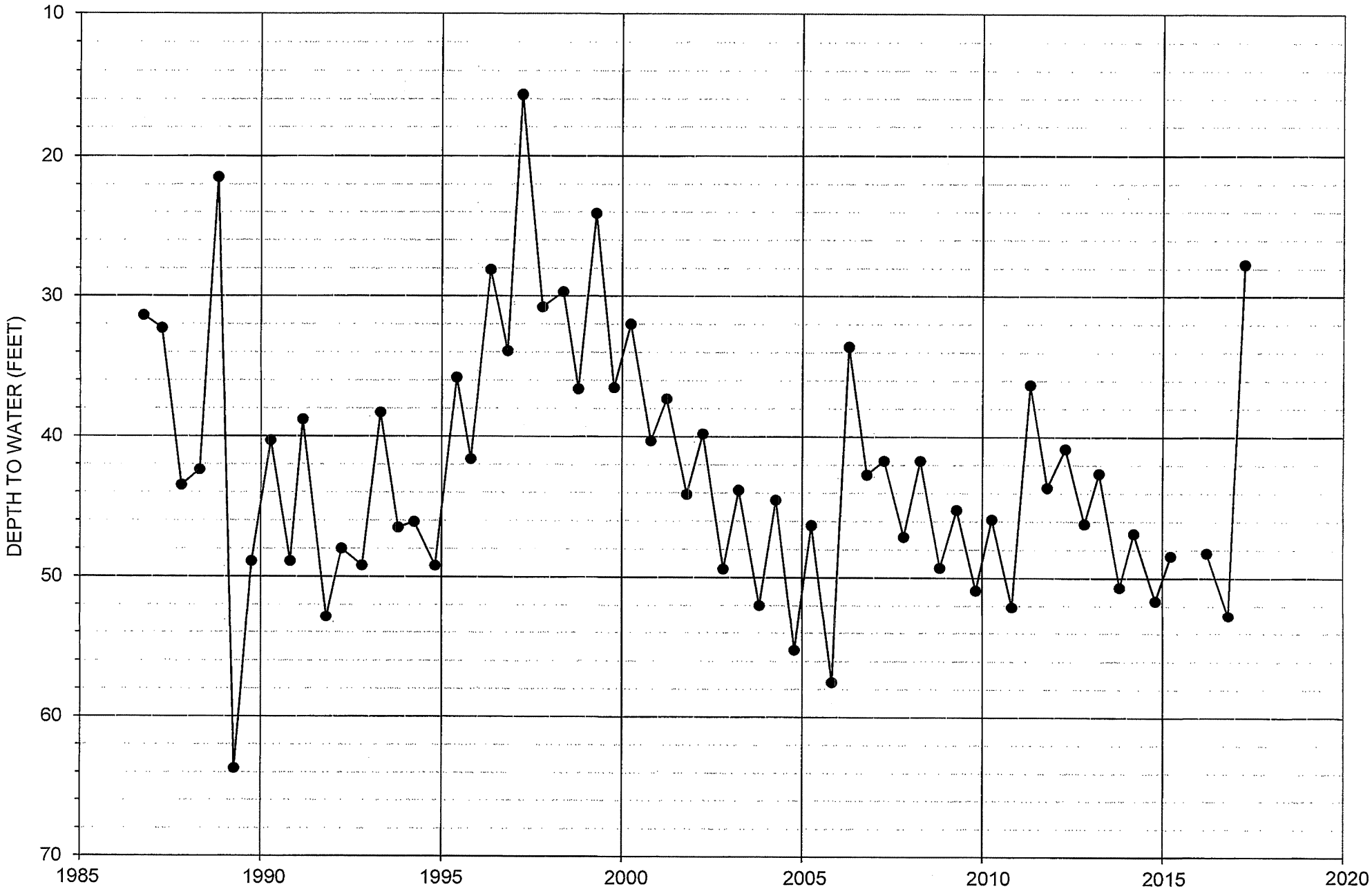
WATER-LEVEL ELEVATIONS FOR WELL T22N/R16E-01A002



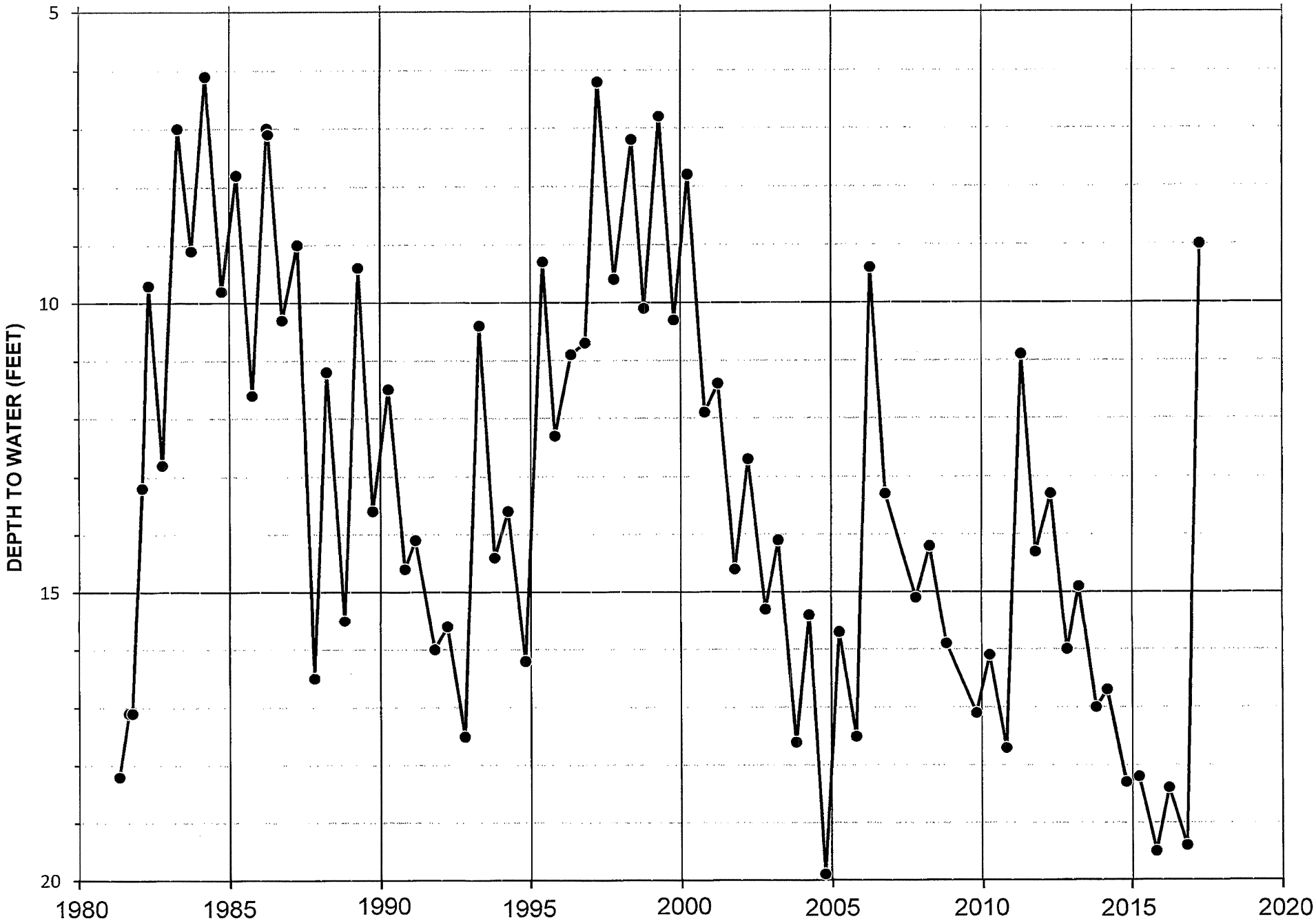
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-36D002



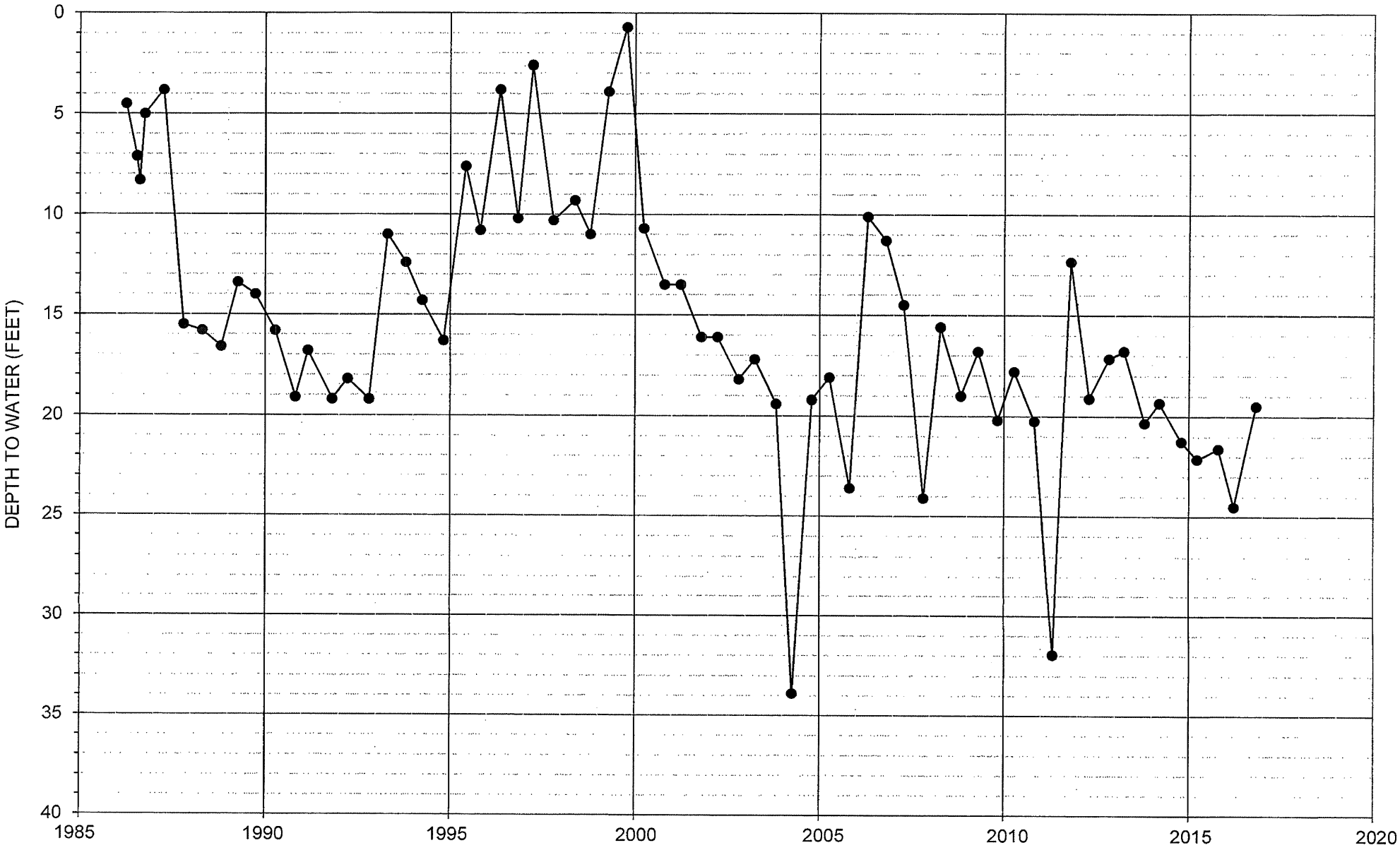
WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-36L003



WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-36L004



WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-36N002



WATER-LEVEL HYDROGRAPH FOR WELL T23N/R16E-36R001