SEWER FLOW MONITORING RESULTS
FOR
COVINGTON ESTATES
ROUTE 300
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

PREPARED BY:

NEW HORIZON ENGINEERING
P.O. BOX 452
156 ORANGE AVENUE
WALDEN, NY 12586

JULY 2002

New Horizon Design & Engineering Consultants, PLLC

156 Orange Avenue
P.O. Box 452
Walden, NY 12586
Phone (845) 778-4313
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Town of New Windsor
Wastewater Treatment Facility
PO Box 4653, 145 Caesars Lane
New Windsor, NY 12553

July 16, 2002

Attention: John Egitto

RE: Sewer Flow Monitoring @ Continental Manor
Covington Estates, Route 300
Town of New Windsor, New York

Dear John,

As requested we have completed the sewer flow monitoring in Continental Manor in order to evaluate if sufficient capacity exists in the existing system for the proposed (In District) 124 unit townhouse community of Covington Estates. As discussed with your office the monitoring took place at MH-6 in the Continental Manor Complex. This Manhole is the last one in the Continental Manor Complex, prior to the sewer leaving the site and paralleling the railroad tracks to the northeast. This location permitted us to evaluate all of the sewer flows generated by Continental Manor.

The monitoring commenced on June 5th and was completed on July 6th to provide a full months worth of data to be evaluated. Average daily flows varied anywhere from 0.549 mgd to 0.222 mgd during the beginning of July. Peak hourly flows reached as high as 0.761 mgd on 6/7/02 after nearly 2 ½ inches of rain fell in a 24 hour period after above normal rainfall for April and May. This flow was utilized in our examination of the existing system along with Covingtons proposed factored peak hourly flow of 0.200 mgd for a total of 0.961 mgd. All of the lines through Continental Manor starting with MH 12, were evaluated and found to be sufficient in size. The worst case scenario occurred from MH 7 – MH 6 where only 61% of the available capacity was being utilized. Evaluating the entire system based on the 0.961 mgd is a very conservative approach in the front of the system since a large portion of the flow is developed by Continental Manor.

Based on the results of the monitoring at Continental Manor we believe it is apparent that adequate capacity exists in the existing system for the connection of Covington Estates. I have attached our calculations and detailed monitoring data for your review. If you should have any questions or comments please feel free to contact my office.

Sincerely,

David R. Tilton, P.E.

Cc: David Weinberg, LMCB
Town of New Windsor Planning Board
Richard McGoey, P.E., MHE
Mark Edsall,, P.E., MHE

Camo POLLUTION CONTROL, INC.

Operation of Water and Wastewater Treatment Systems

TOWN OF NEW WINDSOR WASTEWATER TREATMENT FACILITY
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OUR NEW ADDRESS
1610 Route 376
Wappingers Falls, NY 12590
(845) 463-7310 Fax: (845) 463-7303

M-E-M-O-R-A-N-D-U-M

TO: Mark Edsall, MH&E
FROM: John P. Egitto, Operations Engineer
DATE: November 13, 2001
RE: Covington Estates

I have reviewed the conceptual sewer plan for the above proposed subdivision and offer the following:

1. The plan calls for tying into the existing 12" sewer main at an estimated 50,000 GPD additional flow.

2. Due to this high volume, flow monitoring should be performed at this location in order to determine the total available capacity.

3. Flow monitoring should be performed to include wet weather flows, and results submitted to this department.

If you have any questions or should you require any further information, please contact me at (845) 561-2550.

Wm.

SEWER PIPE CAPACITY ANALYSIS

NEW HORIZON ENGINEERING

156 Orange Avenue
Walden, NY 12586

SEWER FLOW CALCULATIONS WORKSHEET

DATE 7/15/2002

SHEET 1 OF 1

PROJECT TITLE: COVINGTON ESTATES

LOCATION: TOWN OF NEW WINDSOR, NEW YORK

CALCULATED BY: DRT

PEAK DAILY FLOW

PEAK AVERAGE DAILY FLOW OBTAINED SATURDAY, 6/7/02 AFTER 2.3" + RAINFALL, Q FOR DAY EQUALED 548,955 GALLONS

REACH # CONTINENTAL MANOR	PIPE DIA (IN)	MATERIAL	n	SLOPE (%)	MANNING'S Q (CFS)	MANNING'S Q(MGD)	EXISTING PEAK Q (MGD)	COVINGTON PEAK Q (MGD)	PROPOSED PEAK Q (MGD)	% CAPACITY
MH 12 - MH 11	12	PVC	0.013	0.49%	2.50	1.62	0.549	0.050	0.599	37.0%
MH 11 - MH 10A	12	PVC	0.013	0.47%	2.45	1.58	0.549	0.050	0.599	37.8%
MH 10A - MH 10	12	PVC	0.013	0.58%	2.72	1.76	0.549	0.050	0.599	34.1%
MH 10 - MH 9	12	PVC	0.013	0.63%	2.84	1.83	0.549	0.050	0.599	32.7%
MH 9 - MH 8	12	PVC	0.013	4.89%	7.90	5.11	0.549	0.050	0.599	11.7%
MH 8 - MH 7	12	PVC	0.013	3.50%	6.69	4.32	0.549	0.050	0.599	13.9%
MH 7 - MH 6	12	PVC	0.013	0.47%	2.45	1.58	0.549	0.050	0.599	37.8%

PEAK HOURLY FLOW

PEAK HOURLY FLOW OBTAINED SATURDAY, 6/7/02 FROM 1:00PM TO 2:00 PM AFTER 2.3" + RAINFALL, Q FOR PEAK HOUR EQUALED 0.761 MGD

REACH # CONTINENTAL MANOR	PIPE DIA (IN)	MATERIAL	n	SLOPE (%)	MANNING'S Q (CFS)	MANNING'S Q(mgd)	EXISTING PEAK Q (MGD)	*COVINGTON PEAK Q (MGD)	PROPOSED PEAK Q (MGD)	% CAPACITY
MH 12 - MH 11	12	PVC	0.013	0.49%	2.50	1.62	0.761	0.200	0.961	59.4%
MH 11 - MH 10A	12	PVC	0.013	0.47%	2.45	1.58	0.761	0.200	0.961	60.7%
MH 10A - MH 10	12	PVC	0.013	0.58%	2.72	1.76	0.761	0.200	0.961	54.6%
MH 10 - MH 9	12	PVC	0.013	0.63%	2.84	1.83	0.761	0.200	0.961	52.4%
MH 9 - MH 8	12	PVC	0.013	4.89%	7.90	5.11	0.761	0.200	0.961	18.8%
MH 8 - MH 7	12	PVC	0.013	3.50%	6.69	4.32	0.761	0.200	0.961	22.2%
MH 7 - MH 6	12	PVC	0.013	0.47%	2.45	1.58	0.761	0.200	0.961	60.7%
Min Slope Check	12	PVC	0.013	0.20%	1.60	1.03	0.761	0.200	0.961	93.0%

***Applied peaking factor of 4.0 to Covingtons proposed average daily design flow.**

SUMMARY OF SEWER FLOW MONITORING RESULTS

American Sigma InSight 4.200

Month Report - JUN 2

Channel: Flow 1
Site Id: 78898800
Description: new windsor

Date		Maximum Time	Maximum (mgd)	Minimum Time	Minimum (mgd)	Total (gal) (x1000)
05/JUN/02	Wed	12:10pm	0.476	11:30pm	0.254	176.594
06/JUN/02	Thu	09:00pm	0.688	12:40am	0.221	427.443
07/JUN/02	Fri	10:40am	0.738	11:50pm	0.432	548.955
08/JUN/02	Sat	01:20pm	0.841	01:50am	0.377	523.564
09/JUN/02	Sun	10:20am	0.682	12:00am	0.373	498.452
10/JUN/02	Mon	07:00am	0.521	04:00am	0.357	341.336

Peak Day

Month Summary

Maximum:	0.841	(mgd)	08/JUN/02	01:20p.m.
Minimum:	0.221	(mgd)	06/JUN/02	12:40a.m.
Average:	0.464	(mgd)		
Total:	2516.344	(gal)	x1000	

American Sigma InSight 4.200

Month Report - JUN 2

Channel: Flow 1
Site Id: 78898800
Description: new windsor

Date		Maximum Time	Maximum (mgd)	Minimum Time	Minimum (mgd)	Total (gal) (x1000)
10/JUN/02	Mon	07:50pm	0.481	11:50pm	0.360	92.191
11/JUN/02	Tue	06:40am	0.509	11:10pm	0.320	410.925
12/JUN/02	Wed	05:50pm	0.492	01:40am	0.279	378.086
13/JUN/02	Thu	07:30pm	0.504	01:10am	0.274	368.513
14/JUN/02	Fri	08:20pm	0.676	04:10am	0.258	461.499
15/JUN/02	Sat	10:40am	0.718	01:20am	0.384	524.265
16/JUN/02	Sun	08:50am	0.731	04:20am	0.339	462.405
17/JUN/02	Mon	10:10am	0.574	04:30am	0.314	409.594
18/JUN/02	Tue	07:00am	0.544	12:50am	0.276	374.989
19/JUN/02	Wed	04:30pm	0.432	02:40am	0.255	354.561
20/JUN/02	Thu	11:20am	0.461	04:10am	0.235	333.292
21/JUN/02	Fri	08:00am	0.415	04:10am	0.222	311.791
22/JUN/02	Sat	11:00am	0.394	04:00am	0.211	291.639
23/JUN/02	Sun	11:10am	0.431	03:50am	0.191	297.973
24/JUN/02	Mon	10:40am	0.444	03:20am	0.183	148.874

Month Summary

Maximum:	0.731 (mgd)	16/JUN/02	08:50a.m.
Minimum:	0.183 (mgd)	24/JUN/02	03:20a.m.
Average:	0.379 (mgd)		
Total:	5220.598 (gal)	x1000	

□

American Sigma InSight 4.200

Month Report - JUN 2

Channel: Flow 1
Site Id: 78898800
Description: new windsor

Date		Maximum Time	Maximum (mgd)	Minimum Time	Minimum (mgd)	Total (gal) (x1000)
24/JUN/02	Mon	08:30pm	0.472	11:20pm	0.255	154.142
25/JUN/02	Tue	11:20am	0.447	02:30am	0.177	304.268
26/JUN/02	Wed	11:20am	0.422	02:30am	0.166	314.292
27/JUN/02	Thu	02:00pm	0.441	03:30am	0.231	322.260
28/JUN/02	Fri	06:00pm	0.426	02:30am	0.201	308.897
29/JUN/02	Sat	03:50pm	0.415	03:10am	0.175	283.939
30/JUN/02	Sun	11:30am	0.410	04:20am	0.161	270.262

Month Summary

Maximum:	0.472 (mgd)	24/JUN/02	08:30p.m.
Minimum:	0.161 (mgd)	30/JUN/02	04:20a.m.
Average:	0.304 (mgd)		
Total:	1958.058 (gal) x1000		

Month Report - JUL 2

Channel: Flow 1
Site Id: 78898800
Description: new windsor

Date		Maximum Time	Maximum (mgd)	Minimum Time	Minimum (mgd)	Total (gal) (x1000)
01/JUL/02	Mon	09:00am	0.370	02:40am	0.145	266.054
02/JUL/02	Tue	10:10pm	0.376	02:50am	0.136	254.350
03/JUL/02	Wed	07:30am	0.345	01:50am	0.161	246.246
04/JUL/02	Thu	10:30am	0.404	04:10am	0.137	222.921
05/JUL/02	Fri	08:50am	0.398	02:20am	0.143	242.416
06/JUL/02	Sat	09:20am	0.332	04:00am	0.130	86.374

Month Summary

Maximum:	0.404 (mgd)	04/JUL/02	10:30a.m.
Minimum:	0.130 (mgd)	06/JUL/02	04:00a.m.
Average:	0.238 (mgd)		
Total:	1318.360 (gal) x1000		

□

American Sigma InSight 4.200

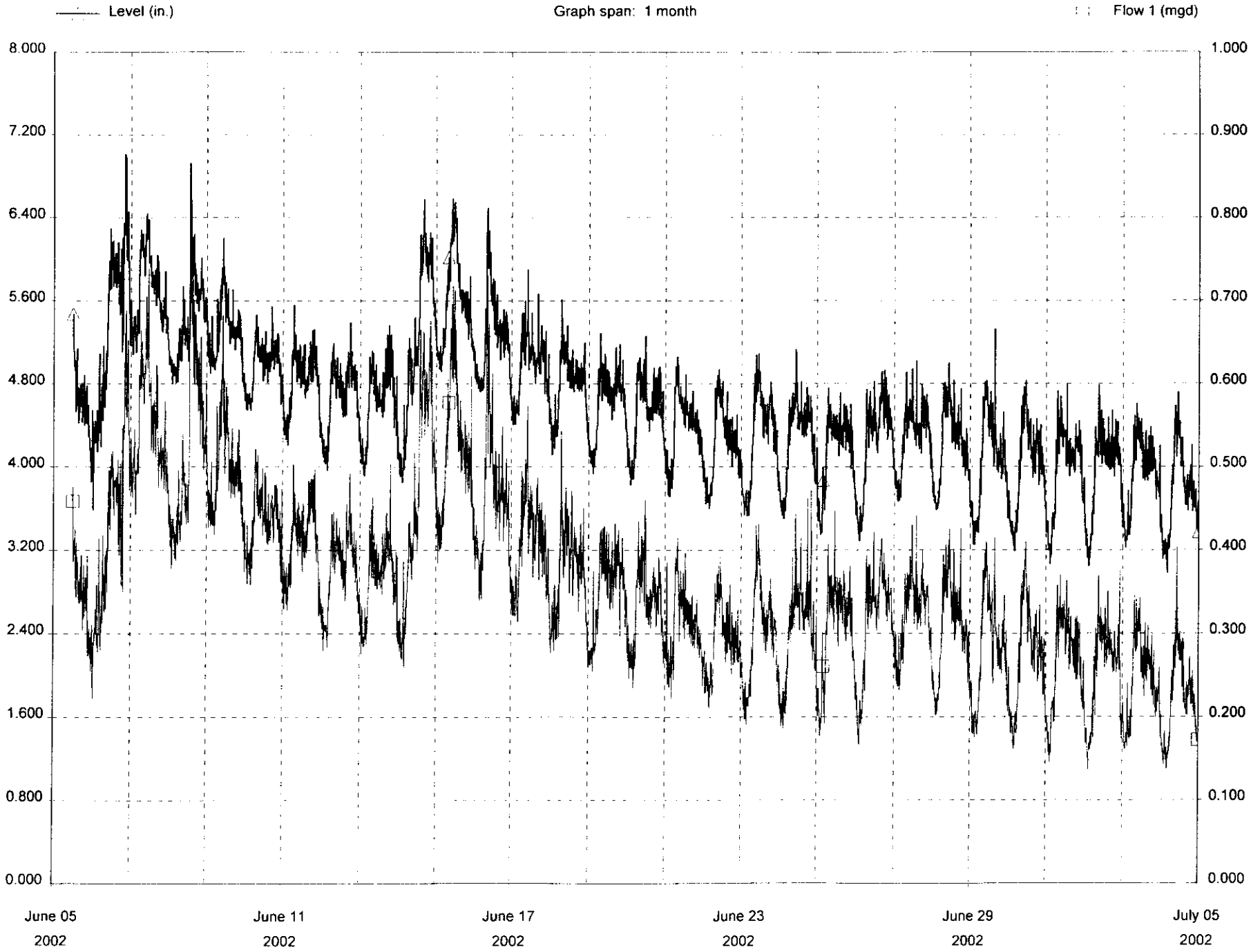
Date	Time	Flow 1 (mgd)
08/JUN/02	11:00a.m.	0.483
08/JUN/02	11:10a.m.	0.448
08/JUN/02	11:20a.m.	0.430
08/JUN/02	11:30a.m.	0.456
08/JUN/02	11:40a.m.	0.447
08/JUN/02	11:50a.m.	0.454
08/JUN/02	12:00p.m.	0.457
08/JUN/02	12:10p.m.	0.479
08/JUN/02	12:20p.m.	0.449
08/JUN/02	12:30p.m.	0.432
08/JUN/02	12:40p.m.	0.434
08/JUN/02	12:50p.m.	0.472
08/JUN/02	01:00p.m.	0.519
08/JUN/02	**01:10p.m.**	**0.794**
08/JUN/02	**01:20p.m.**	**0.841**
08/JUN/02	**01:30p.m.**	**0.804**
08/JUN/02	**01:40p.m.**	**0.691**
08/JUN/02	**01:50p.m.**	**0.752**
08/JUN/02	**02:00p.m.**	**0.736**
08/JUN/02	**02:10p.m.**	**0.712**
08/JUN/02	02:20p.m.	0.701
08/JUN/02	02:30p.m.	0.705
08/JUN/02	02:40p.m.	0.671
08/JUN/02	02:50p.m.	0.686
08/JUN/02	03:00p.m.	0.728

Peak Hourly Flow = 0.761 MGD

DETAILED SEWER FLOW MONITORING RESULTS

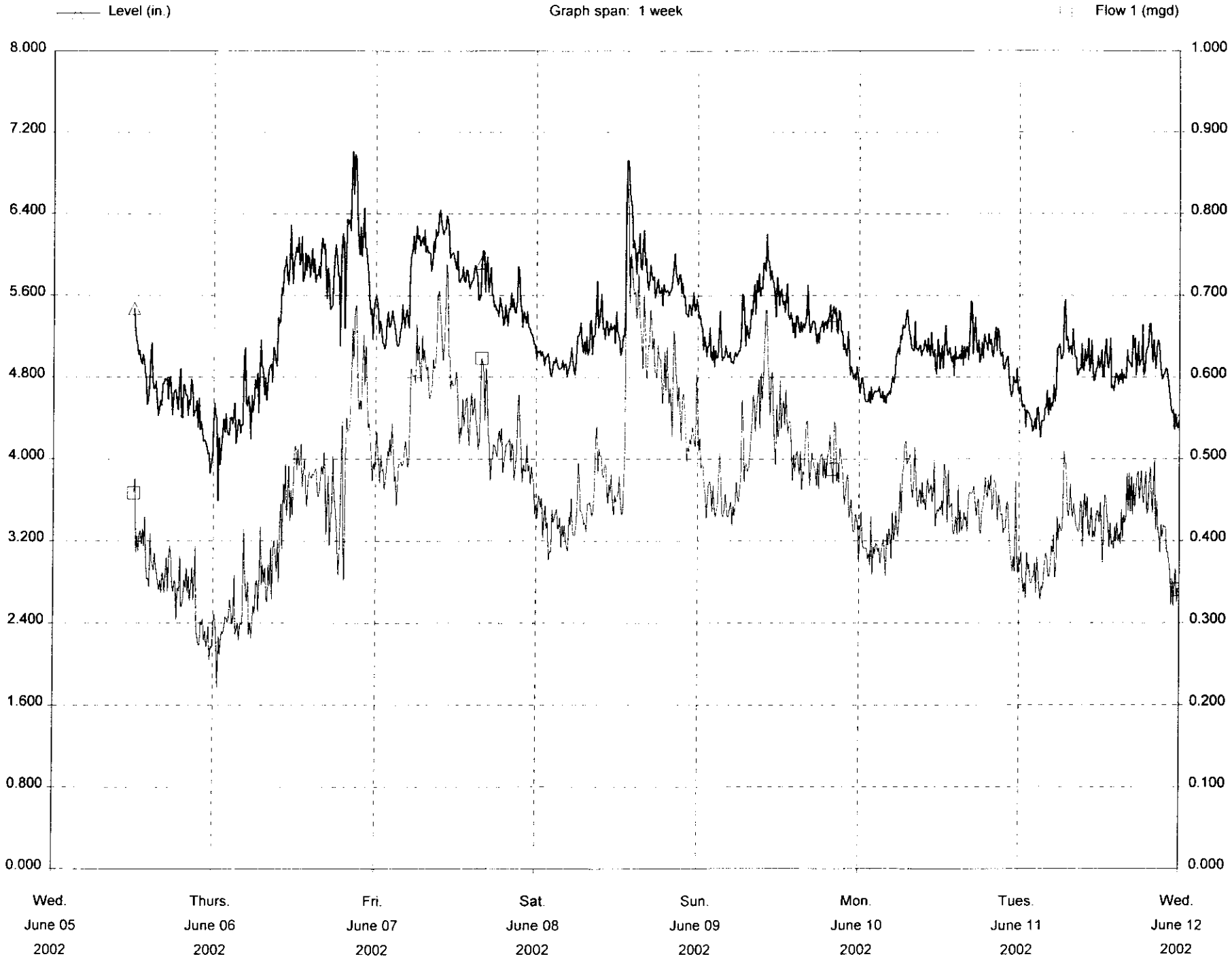
new windsor

Site Id: 78898800 File name: 78898800.000



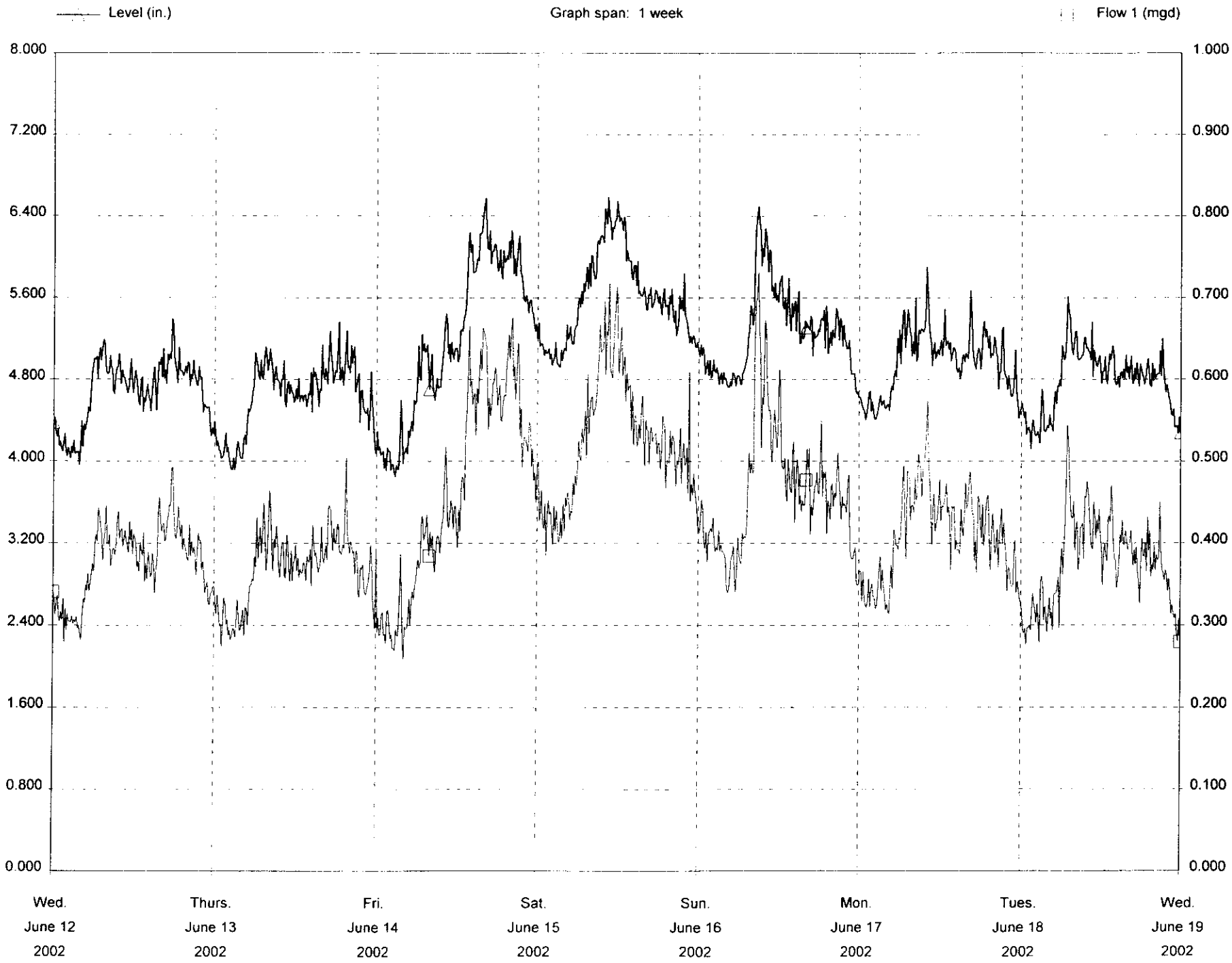
new windsor

Site Id: 78898800 File name: 78898800.000



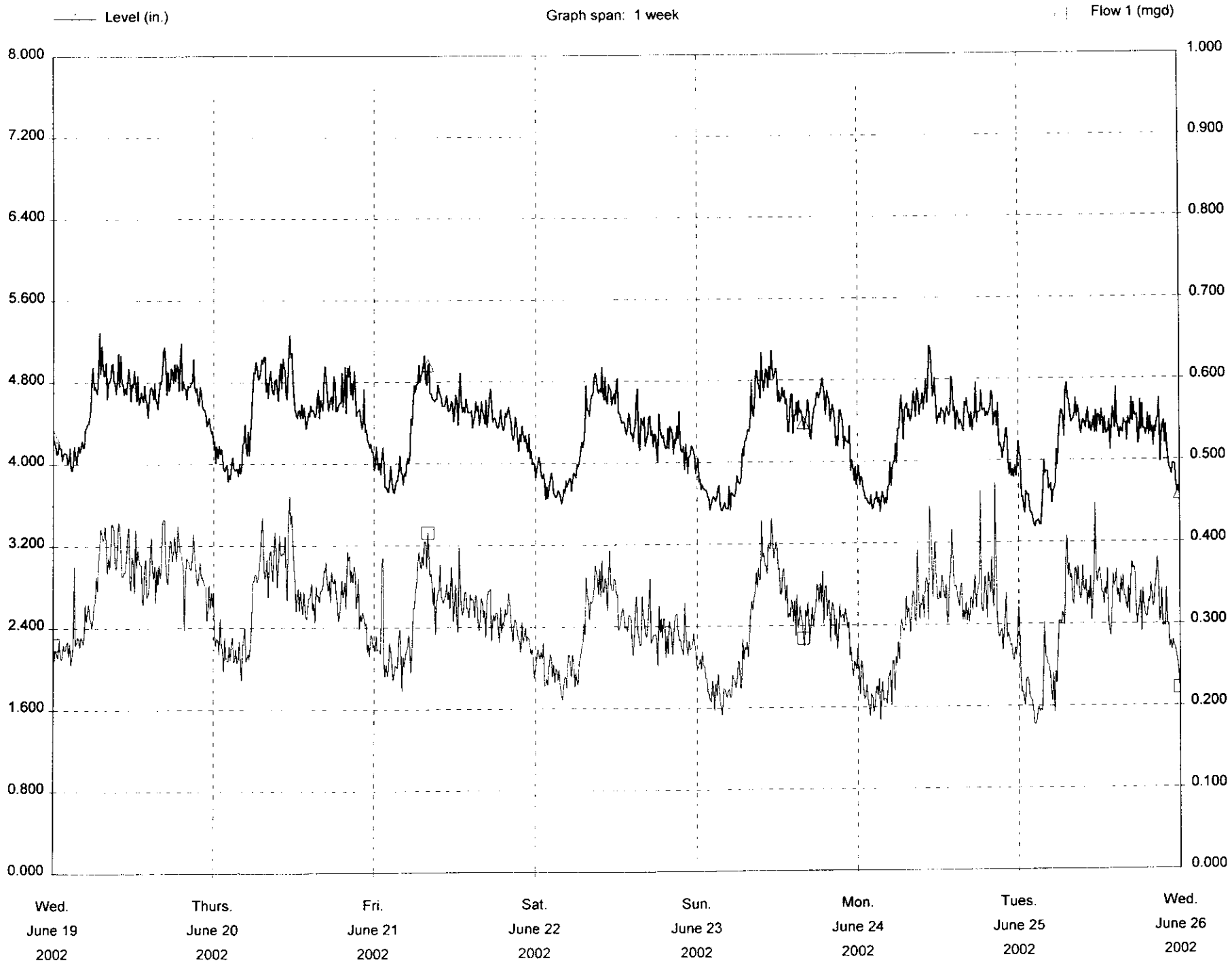
new windsor

Site Id: 78898800 File name: 78898800.000



new windsor

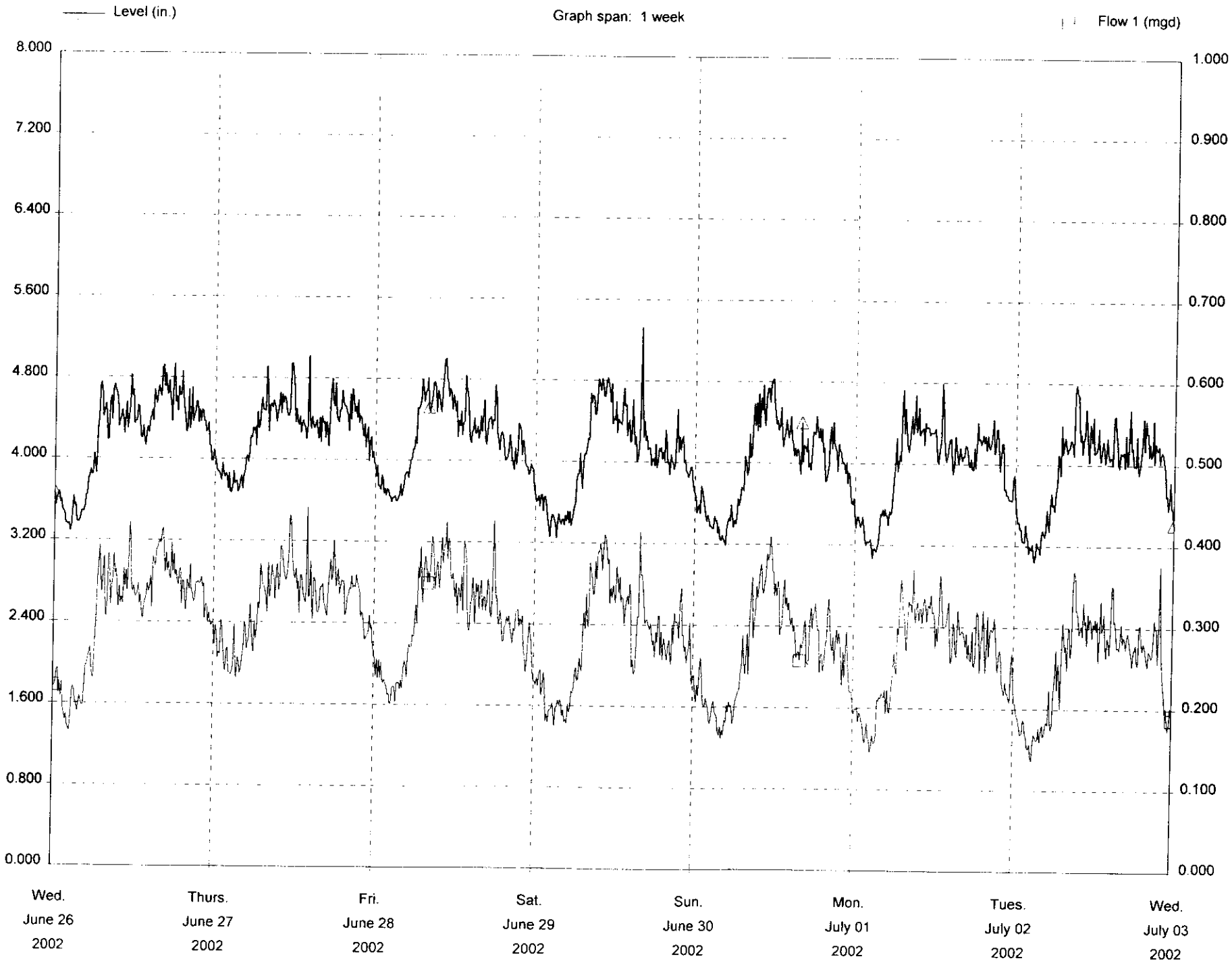
Site Id: 78898800 File name: 78898800.000



new windsor

Site Id: 78898800 File name: 78898800.000

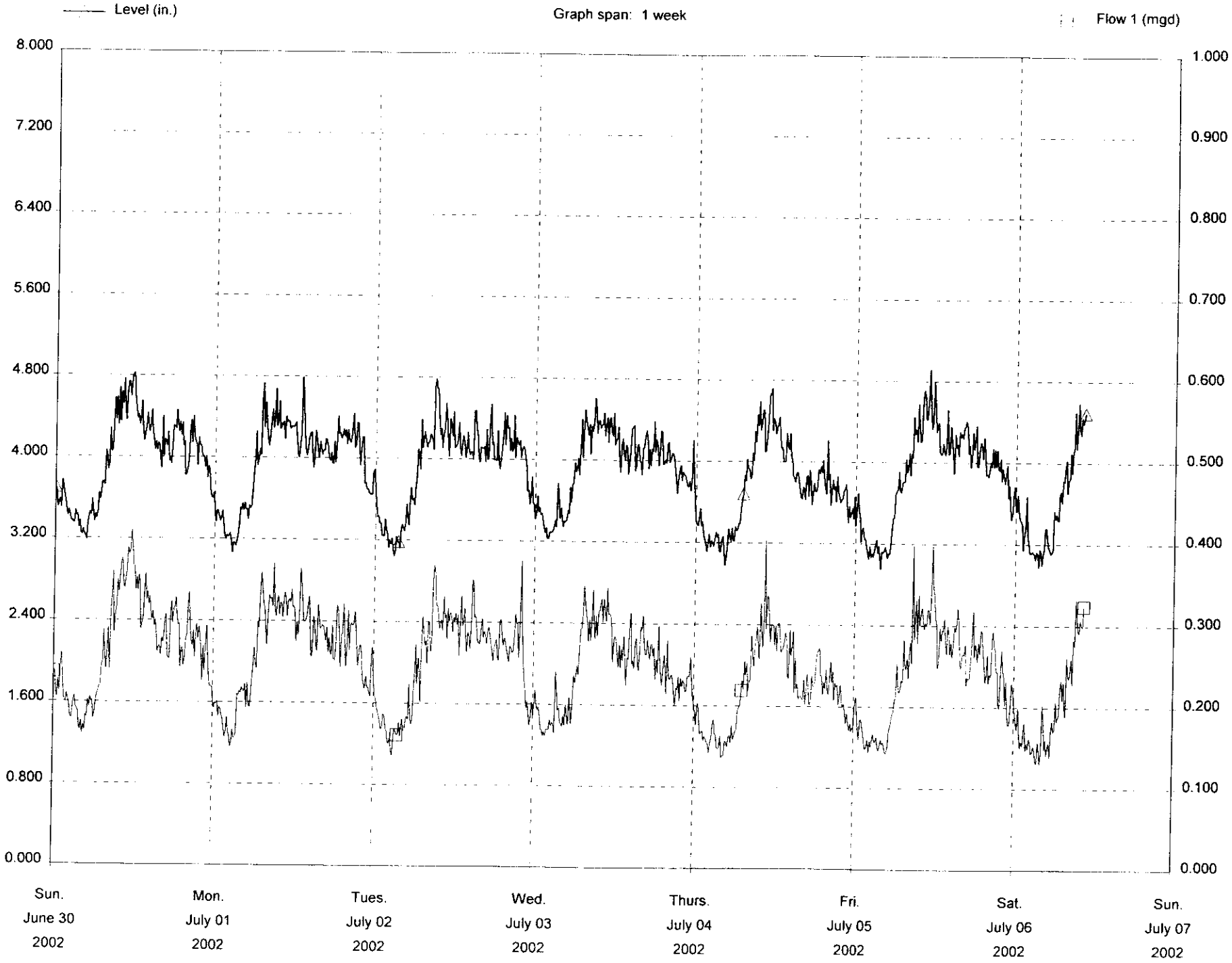
Graph span: 1 week



new windsor

Site Id: 78898800 File name: 78898800.000

Graph span: 1 week



PRECIPITATION DATA

Camo POLLUTION CONTROL, INC.

Operation of Water and Wastewater Treatment Systems

TOWN OF NEW WINDSOR WASTEWATER TREATMENT FACILITY
P.O. BOX 4653, CEASARS LANE
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(845) 565-0626 - Fax

1610 ROUTE 376
WAPPINGERS FALLS, NY 12590
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Fax (845) 463-7306

Here's the fax...

and nothin' but the fax!

of pages including cover 1

Fax Transmission

RECIPIENT: Rusty Tilton

ADDRESS: New Horizon

FAX NUMBER OF RECIPIENT: 778-4669

SENDER: John P. Egitto

DATE TRANSMITTED: 7/12/02

TELEPHONE NUMBER OF SENDER: (845) 561-2550

FAX NUMBER OF SENDER: (845) 565-0626

Here's a message... (or see attached)

Total Precipitation for June 2002 = 4.8 inches
Total Precipitation from July 1st - 12th = .34 inches.

Daily Climate Data - National Weather Service

MGJ June 2002 - Montgomery, NY

Total Daily Precipitation

	Dy	MxT	MnT	AvT	HDDay	AvDP	1HrP	TPcpn	WxType	PDir	AvSp	Dir	MxS	SkyC	MxR	MnR	Av
	1	85	50	68		51.3	0.01	0.01	F	280	6.4	260	36*	0.1	100	26	100
	2	73	51	62	3	46.2		0.00		300	9.8	280	32	0.3	90	34	100
	3	73	45*	59	6	41.4		0.00		290	4.5	330	20	0.3	80	30	101
	4	73	47	60	5	50.7		0.00		170	6.4	160	23	6.2	83	51	102
2.3"+	5	88	59	74		67.3	0.42	1.11	RTFH	190	9.4	310	24	5.6	100	65	101
	6	71	57	64	1	62.4	0.28	1.23	RF	030	8.7	030	22	8.7	100	87	101
	7	73	52	63	2	55.3	0.08	0.06	RF	030	8.8	060	20	3.6	100	49	102
	8	75	48	62	3	53.9		0.00	F	180	4.6	190	13	1.9	100	57	102
	9	86	50	68		60.5		0.00		190	4.9	190	10	0.4	100	46	101
	10	81	55	68		59.7		0.00	F	020	3.1	040	12	0.0	100	53	101
	11	91	58	75		65.8		0.00	FH	230	6.2	260	18	0.0	100	47	101
1.4"+	12	85	60	73		68.2	0.16	0.25	RTFH	220	8.8	250	23	3.0	97	65	100
	13	65	55	60	5	58.3	0.01	0.01	F	070	3.1	110	9	9.6	100	81	101
	14	61	56	59	6	58.5	0.16	0.81	RF	050	5.2	050	10	10.0	100	93	100
	15	62	54	58	7	56.7	0.05	0.13	RF	050	4.6	030	9	10.0	100	87	100
	16	76	54	65		58.2	0.05	0.06	RTF	200	6.3	210	23	3.7	100	62	100
	17	78	50	64	1	54.0	0.08	0.15	RWF	240	6.4	280	24	2.2	100	45	101
	18	78	48	63	2	55.0		0.00	F	210	5.4	230	10	1.1	100	46	101
	19	81	53	67		58.0		0.00	F	200	3.3	360	7	0.6	100	45	102
	20	83	53	68		60.0	0.01	0.01	FH	190	3.3	150	9	0.6	100	43	103
	21	85	55	70		62.2		0.00	F	190	5.6	190	12	0.0	100	48	102
	22	88	60	74		66.5	0.00	T	TFH	210	5.5	030	33	0.7	100	48	102
	23	88	66	77		68.5	0.00	T	RFH	230	6.4	210	14	1.3	100	59	102
	24	88	65	77		67.9		0.00	F	220	3.8	310	8	0.6	100	50	101
	25	85	67	76		66.2		0.00		180	3.2	240	16	3.4	93	60	101
	26	91*	68	80		71.1	0.02	0.02	RTFH	190	5.7	250	30	0.2	100	60	101
	27	89	70	80		71.7	0.05	0.10	RTFH	210	9.6	220	22	0.6	100	61	100
	28	86	64	75		65.0		0.00	F	300	6.8	290	12	0.7	100	50	100
	29	85	58	72		61.4		0.00		060	2.6	040	9	0.0	100	43	101
	30	88	58	73		64.6	0.01	0.01		220	3.4	220	12	0.6	100	46	102
	mo	80.4	56.2	68.3	41	60.2		3.96			5.7			2.5			

Description of Data

The climate data contained here is obtained from hourly observations used in operational forecasting. It is not official because of potential gaps in the data due to problems with communications etc. and because of potential errors which are not later corrected. The acquisition of this information is totally automated.

But inspite of this in most cases it is resonably accurate and many daily climate observations here are not available elsewhere on the internet.

The data begins with the end of May 1997. Each day of the month has an entry on one line. Data for a day for most of the parameters is for the period midnight to midnight EST (1 AM to 1 AM EDT). But total precipitation uses the period 1 AM to 1 AM EST (2 AM to 2 AM EDT). Before about June 23 1997 precipitation was from 8 PM to 8 PM EST. Data between September 11, 1997 and September 17 1997 is incomplete due to problems with the computer that acquires the data, it mainly affects maximum temperatures and data that occurred during the daylight hours.

The following abbreviations are used:
Dy: Day of Month
Mxt: The highest temperature of the day.
Mnt: The lowest temperature of the day.
AvT: The average daily temperature (the sum of MxT and MnT divided by 2.
HrlyT: The average of the hourly temperatures for each hour of the day. In most cases it is about the same as AvT.
HDDay: The heating degree days. This is obtained by subtracting AvT from 65. Negative values are set to zero.
AvDP: The average of the dew point for each hour of the day.
1HrP: The maximum precipitation that fell in one hour during the day. If 0.00 is shown it indicates a Trace.
Tpcpn: The total precipitation for the day. T indicates a trace. 0.00 indicates either 0 precipitation fell or that the total for the day is missing.

WxType The type of weather, if any, that occurred. The following abbreviations are used:

```
R Rain
T Thunderstorm
F Fog
L Drizzle
W Showers
H Haze
K Smoke
Z Freezing
B Blowing
S Snow
I Ice
A Hail
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PDir: The prevailing wind direction in degrees (360 is north, 090 is east, 180 is south, 270 is west) averaged over 36 points of the compass.
AvSp: The average wind speed in miles an hour.
MxS: The maximum wind speed gust or peak wind in miles an hour.
Dir: The direction that occurred with the peak gust.

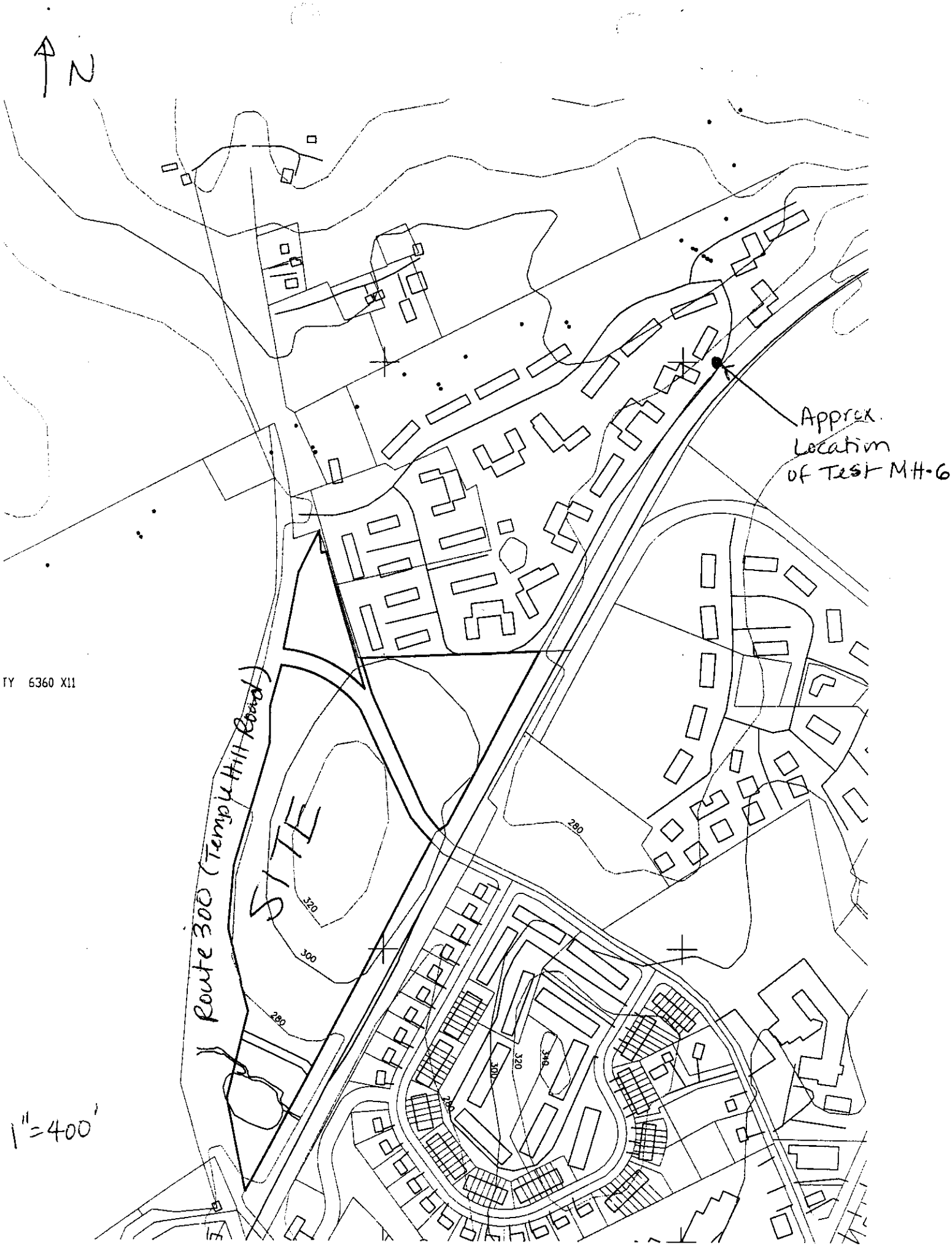
SkyC: The total sky cover is tenths. 10.0 indicates total cloud cover through the entire day. 0.0 indicates nearly clear. High thin clouds may not be included in the total sky cover for some locations.
MxR: The maximum relative humidity for the day.
MnR: The minimum relative humidity for the day.
AvSLP: The average sea level pressure for the day.

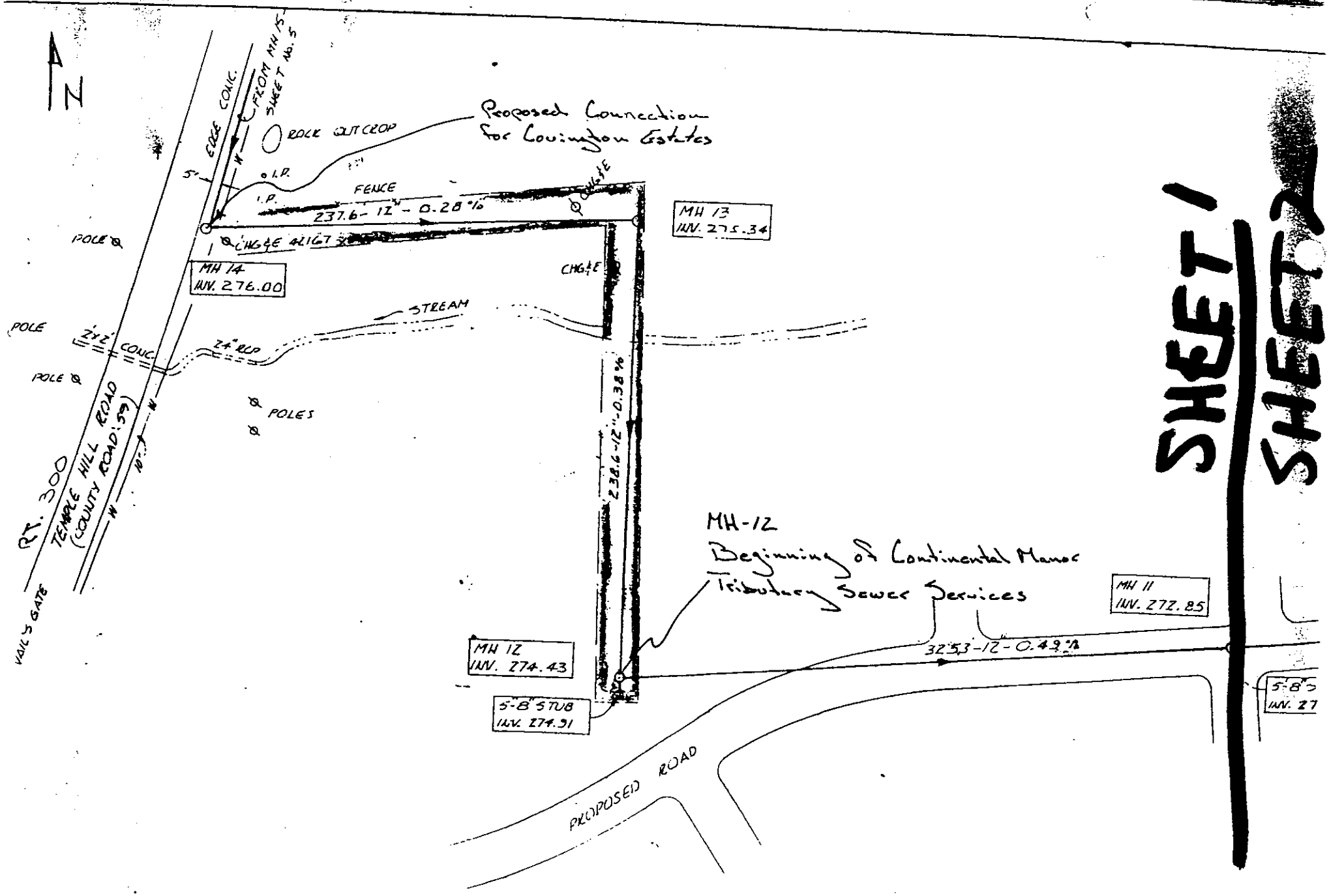
A * to the right of a value indicates it is an extreme for the month.

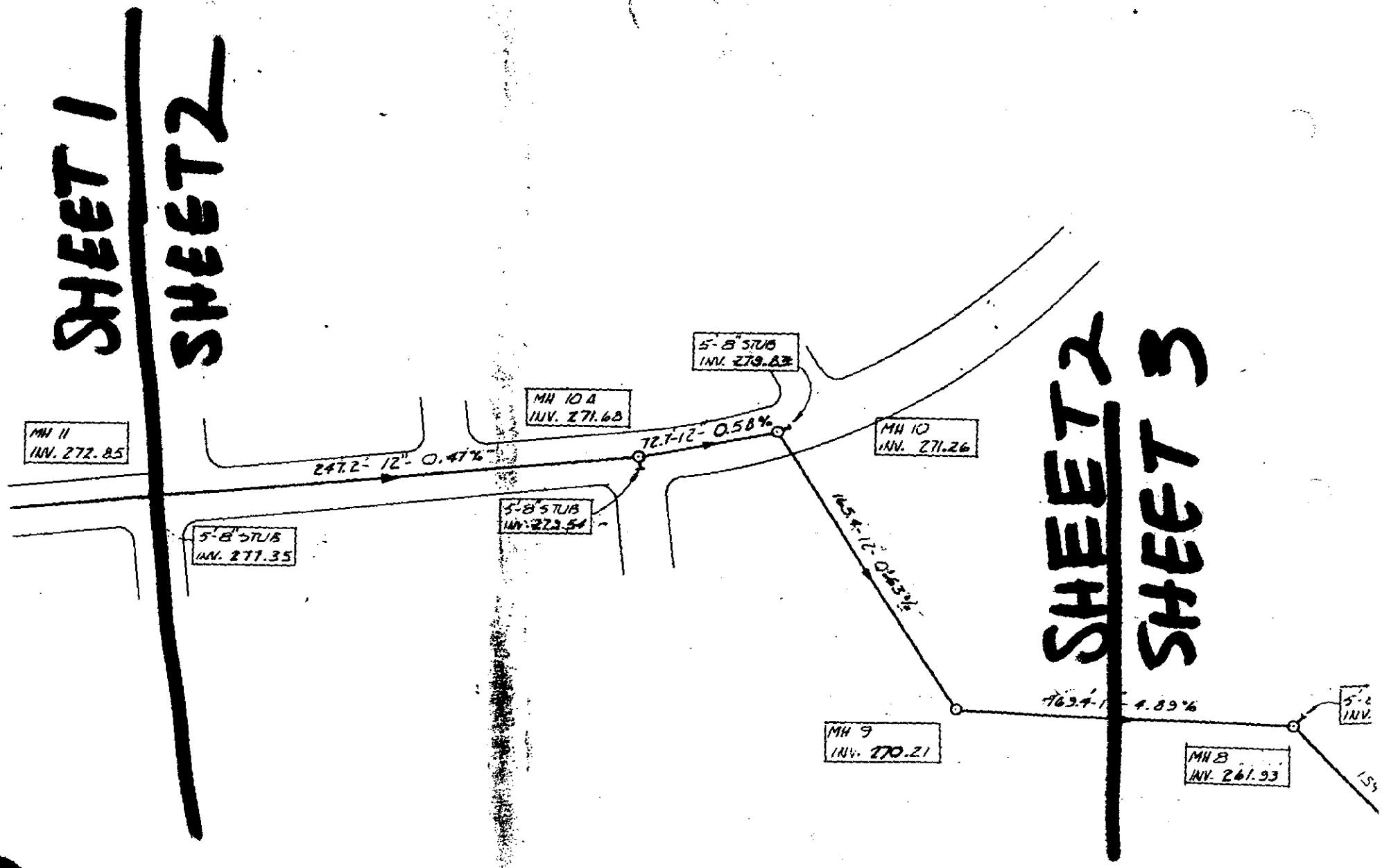
Near the bottom if each monthly file is a line that starts with "mo". This contains averages or totals of selected daily values through the last day of the month that is available. For instance under the MxT column it is the average maximum temperature from the first of the month (if it is available) through the last day of the month (or the previous day if it is a current month.

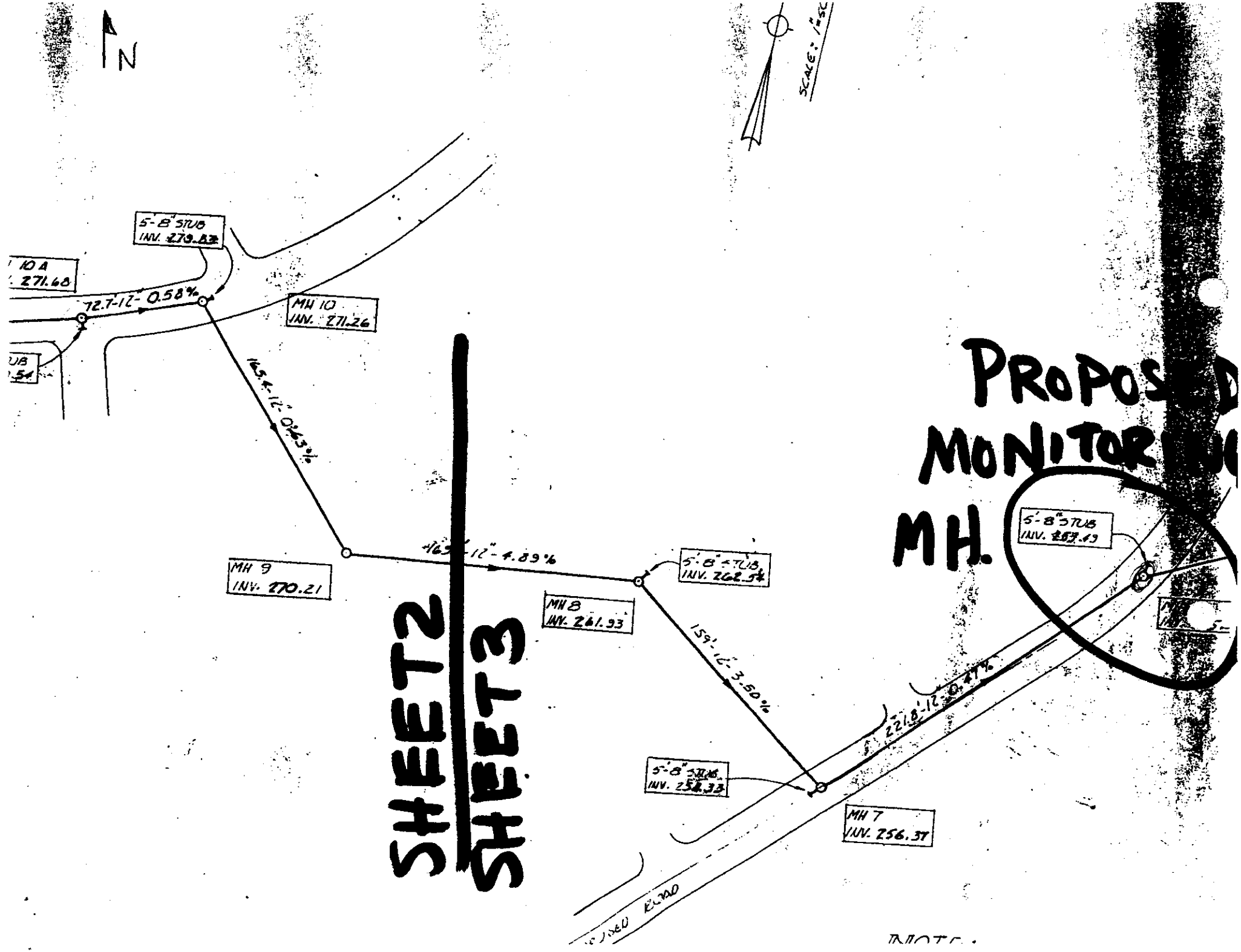
A final line may follow the "mo" line and will start with "dp". It is not available for all locations and will not be shown when not available. The "dp" line contains the deparature of data on the "mo" line from normal. It is either the deparature from normal for the entire month, or in cases where the month is not yet complete it is the deparature from normal for the month to date.

LOCATION & EXISTING PIPE LAYOUT PLANS


N
Approx. Location of Test MH-6
TY 6360 X11
Route 300 (Temple Hill Road)
SITE
320
300
280
280
320
300
280
340
1"=400'


N
FROM MH 15
SHEET No. 5
EDGE CONC.
ROCK OUTCROP
Proposed Connection
for Covington Estates
I.P.
I.P.
FENCE
237.6-12"-0.28%
CHG&E
CHG&E
MH 13
INV. 275.34
POLE
CHG&E
MH 14
INV. 276.00
CHG&E
STREAM
POLE
2'x2' CONC.
24" RCP
POLE
POLES
RT. 300
TEMPLE HILL ROAD
(COUNTY ROAD 59)
238.6-12"-0.38%
MH-12
Beginning of Continental Manor
Tributary Sewer Services
MH 11
INV. 272.85
MH 12
INV. 274.43
32.53-12"-0.49%
5-8" STUB
INV. 274.31
5-8" S
INV. 27
PROPOSED ROAD
VAIL'S GATE
SHEET 1
SHEET 2


SHEET 1
SHEET 2
SHEET 2
SHEET 3
MH 11
INV. 272.85
5'-8" STUB
INV. 277.35
247.2'-12"-0.47%
MH 10 A
INV. 271.68
5'-8" STUB
INV. 273.54
72.7'-12"-0.58%
5'-8" STUB
INV. 279.83
MH 10
INV. 271.26
145.4'-12"-0.43%
MH 9
INV. 270.21
463.4'-1"-4.89%
MH 8
INV. 261.93


N
SCALE: 1"=50'
5'-8" STUB
INV. 279.83
10 A
271.68
72.7'-12"-0.58%
MH 10
INV. 271.26
145.4'-12"-0.63%
MH 9
INV. 270.21
+/-65'-12"-4.89%
5'-8" STUB
INV. 262.54
MH 8
INV. 261.93
159'-12"-3.50%
5'-8" STUB
INV. 258.33
MH 7
INV. 256.37
221.8'-12"-0.47%
5'-8" STUB
INV. 257.49
PROPOSED
MONITOR
MH.
SHEET 2
SHEET 3