



September 4, 2014

Robert Cooper, PE
Virginia Department of Environmental Quality
Stormwater BMP Technical Specialist
29 East Main Street
Richmond, 23218

RE: ADS/Stormtech Isolator Row Appeal

Robert,

Per your request, attached is a copy of the raw test data from the City of Charlotte - Cherry Gardens Test Site. I have also excerpted the relevant pages from their final report to make it easy to correlate the raw test data and the data that is presented in the report.

The City of Charlotte study is one of the most comprehensive studies of an installed StormTech Isolator system. The probability plots they have provided take the raw data that you have requested, and put it into a summary that provides statistically meaningful charts that support the stated removal rates of 37.1% TN; 68.1% TP and 89.6% TSS.

I respectfully request the State of Virginia re-evaluate the artificially low removal rate that was granted for the ADS/StormTech Isolator row. The approvals we have elsewhere throughout the Country have been 40% TP (or greater) for this manufactured BMP device. The 30% removal rate that has been published is already causing confusion as it differs dramatically from many existing approvals like our Prince William County approval for 40% TP.

Thanks in advance for your consideration of this request.

Best,

A handwritten signature in blue ink that reads 'Chuck T. Lacey Jr.' The signature is written in a cursive, flowing style.

Chuck T. Lacey, Jr. PE
Engineering Product Manager
301.875.8535

CITY of CHARLOTTE Pilot SCM Monitoring Program

Cherry Gardens Senior Apartments Storm Tech Chambers Stormwater Treatment Structure

Final Monitoring Report

July 2013



Prepared By:

Steve Jadlocki

Kyle Hall, EI

Jeff Price

Charlotte-Mecklenburg Storm Water Services



Parameter	Units	# of paired samples	Influent (median values)	Effluent (median values)	% Reduction	P- Value	Significant at 0.05
Ammonia Nitrogen	mg/L	14	0.32	0.09	71.5%	0.0182	Y
Nitrite + Nitrate	mg/L	14	0.28	0.35	0%	0.9713	N
TKN	mg/L	13	1.10	0.45	59.5%	0.0001	Y
Total Nitrogen	mg/L	13	1.24	0.78	37.1%	0.0001	Y
Total Phosphorus	mg/L	14	0.19	0.06	68.1%	0.0001	Y
SSC	mg/L	13	98.0	5.90	94%	0.0017	Y
TSS	mg/L	14	54.0	5.60	89.6%	0.0001	Y
Turbidity	NTU	13	18.0	6.85	61.9%	0.0001	Y
Chromium	ug/L	14	2.11	*	*	*	*
Copper	ug/L	14	10.20	9.50	0%	0.6047	N
Lead	ug/L	14	1.55	*	*	*	*
Zinc	ug/L	14	54.50	13.0	76.1%	0.0001	Y
* Data set contained too many non-detect values to accurately calculate summary statistics or provide statistical analysis							

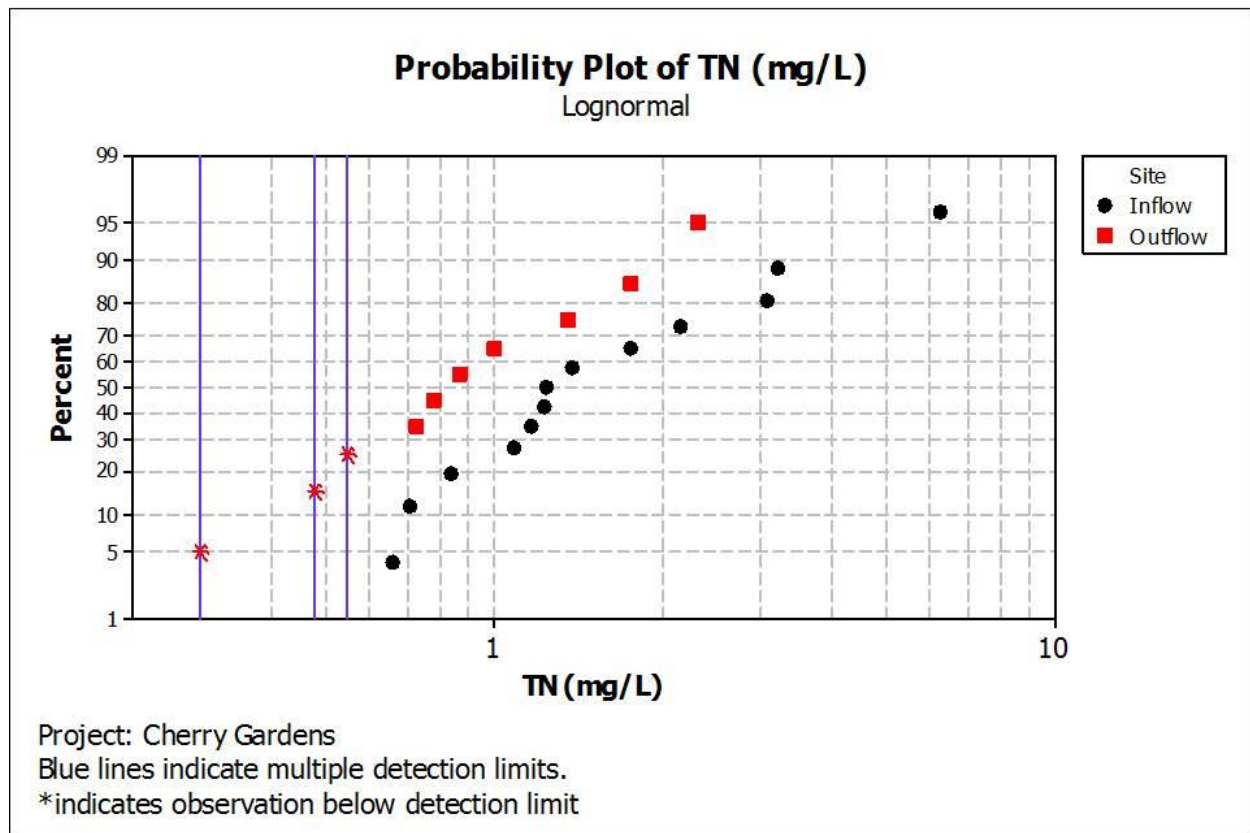
Figure 6: Cherry Gardens Apartments – Storm Tech Chambers - Data Analysis Results

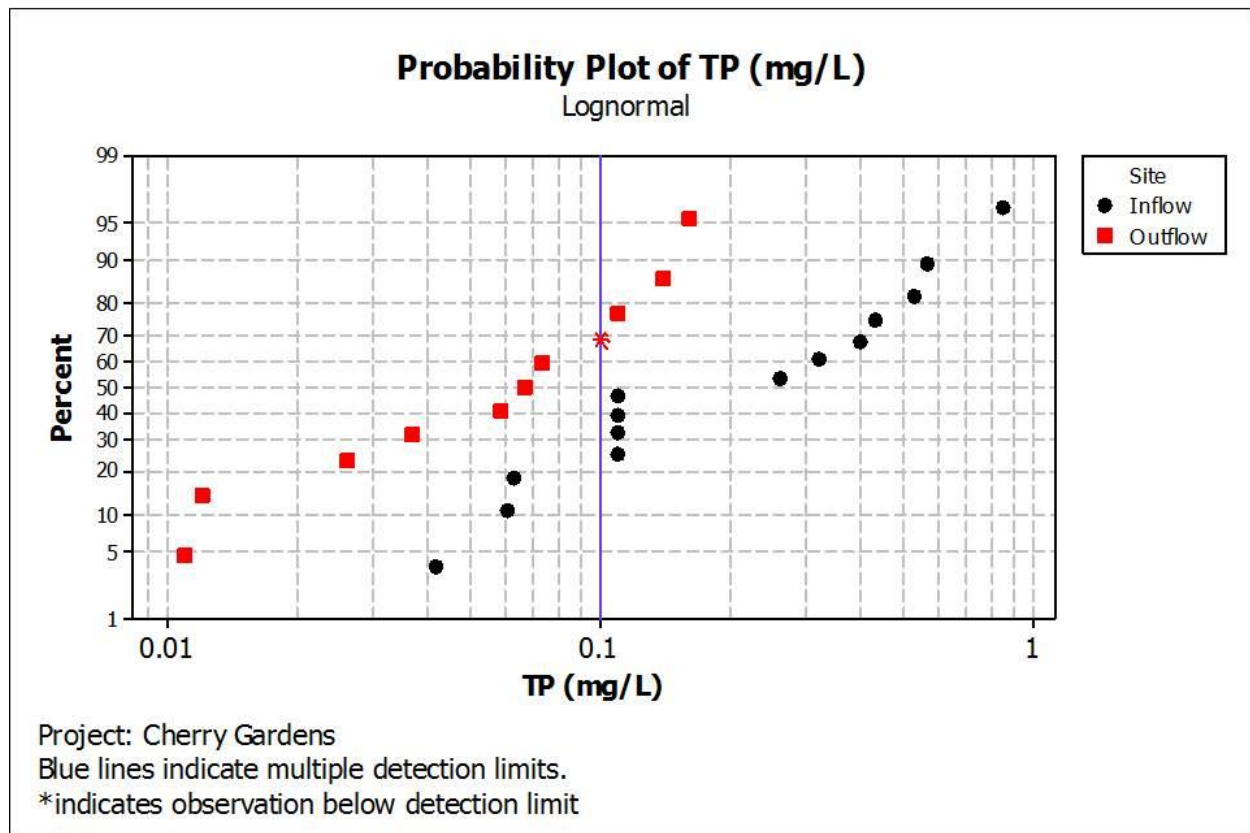
CONCLUSIONS

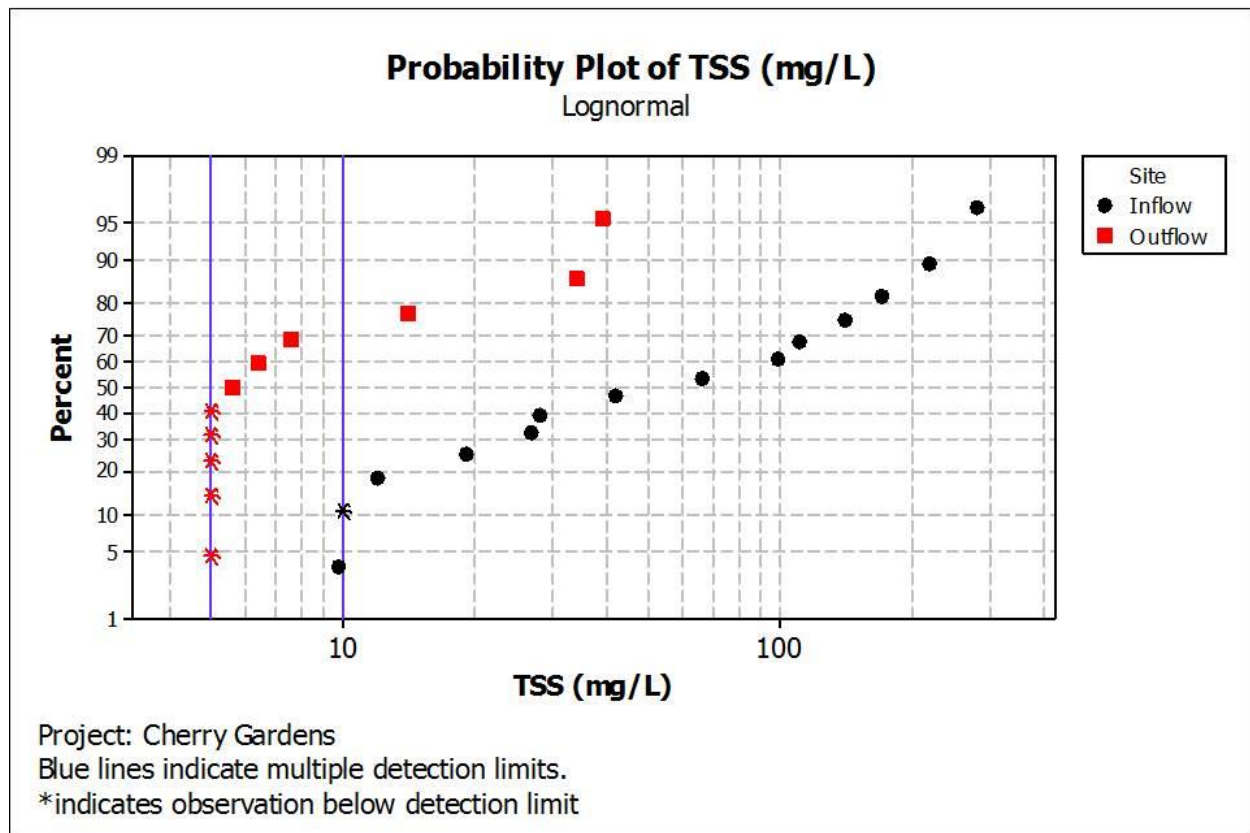
The results of the data analysis for the Storm Tech Chambers SCM showed statistically significant event mean concentration reductions of the median values of various parameters, including Ammonia Nitrogen by 71.5%; TKN by 59.5%; Total Nitrogen by 37.1%; Total Phosphorus by 68.1%; Suspended Sediment Concentration (SSC) by 94%; TSS by 89.6%; Turbidity by 61.9%; and Zinc by 76.1%. While all parameter data collected and analyzed under the Pilot SCM Program is vital for water quality management efforts, one of the most important parameters for evaluating SCM performance is Total Suspended Solids (TSS) and the percent removal efficiency thereof. This is because the City's NPDES MS4 Stormwater permit requires that SCMs (BMPs) be capable of achieving a target removal efficiency of 85% for TSS and data evaluated under the Pilot SCM Program can assist in determining whether or not a particular SCM is approved for use within the City's Local BMP manual.

For this particular study site, the Storm Tech Chambers showed excellent removal of TSS at a statistically significant event mean concentration reduction of 89.6%. It should be noted that the watershed draining to the SCM was very small at 0.41 acres and produced a median inflow volume of 821 cf for monitored events. In addition, landscaped areas around the site parking lot likely would have produced increased input of sediments to the parking lot during heavy rain events due to their graded slopes toward the parking lot, and thus raising median influent TSS values. Mulch materials were noted on the parking lot surface during several site visits during the study period, which would support this assumption.

While this study yielded a positive result in the evaluation of TSS removal, more performance monitoring study of the Storm Tech Chambers SCM will be needed within the City's Pilot SCM program to adequately determine the performance capabilities of this SCM within other varying watershed sizes and land use types.







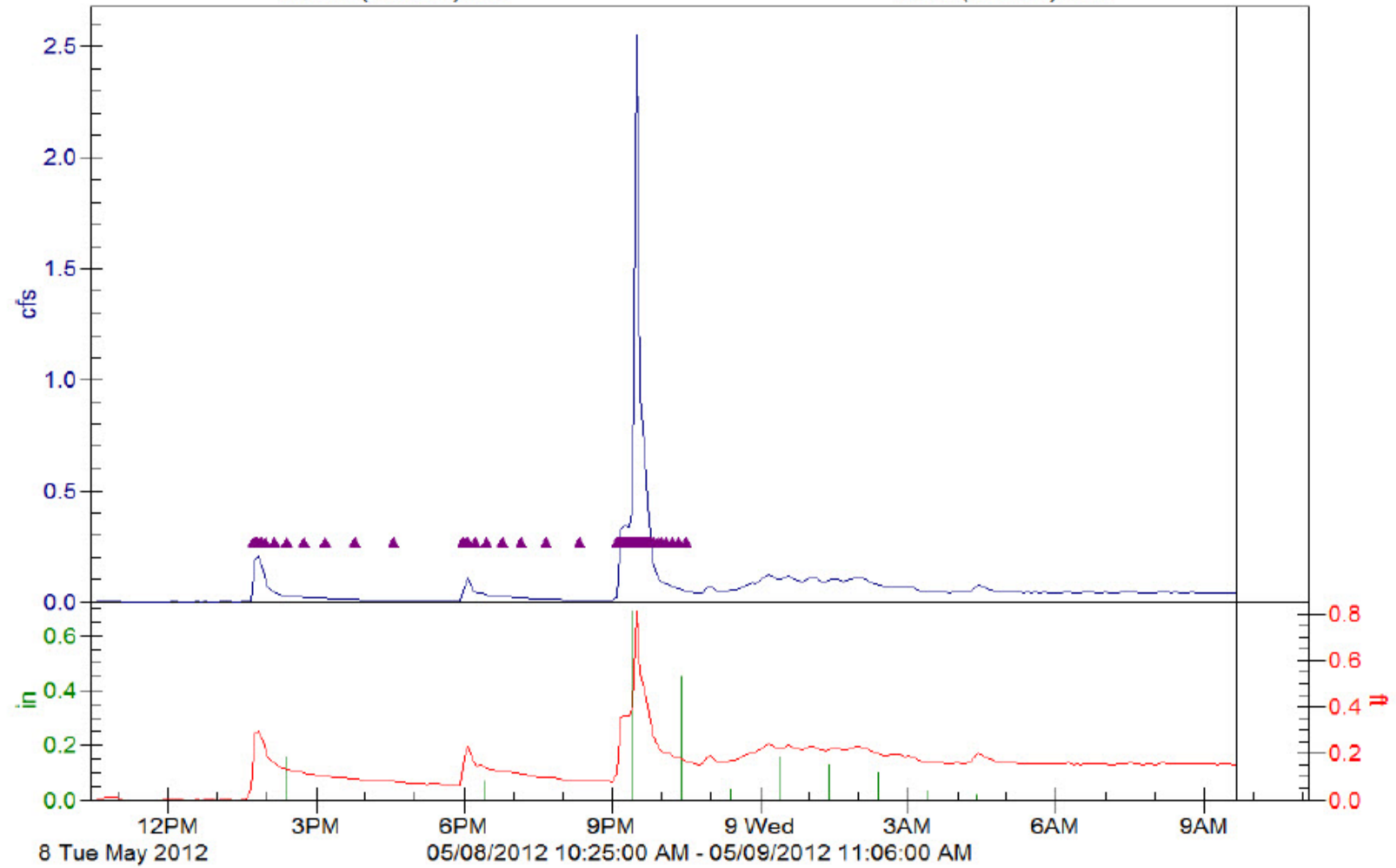
Cherry Gardens Influent CGI

Discharge (5038.87 cfs):0.04

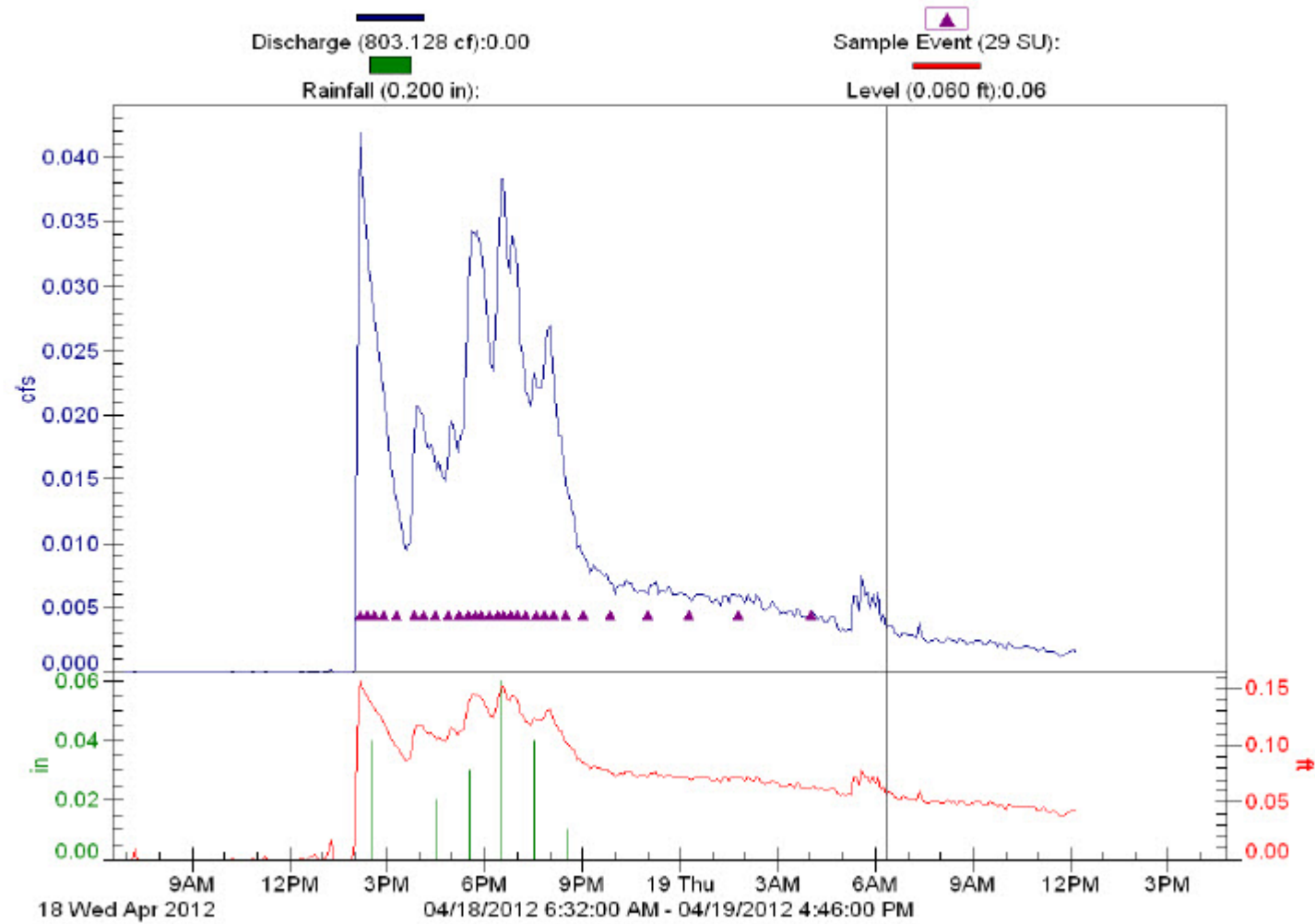
Rainfall (1.850 in):0.00

Sample Event (90 SU):

Level (0.140 ft):0.15



Cherry Gardens Influent CGI



Cherry Gardens Influent

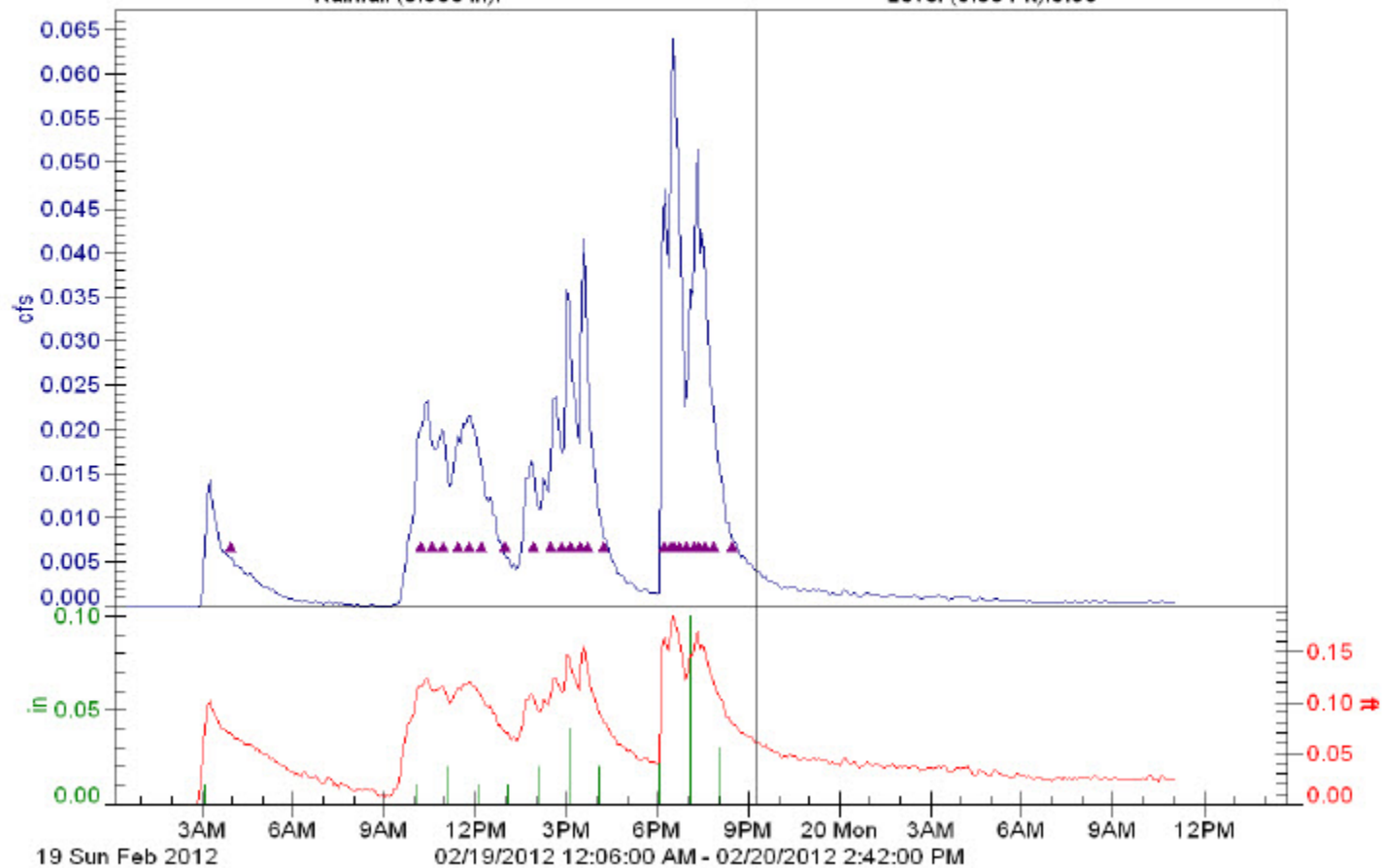
CGI

Discharge (804.094 cfs):0.00

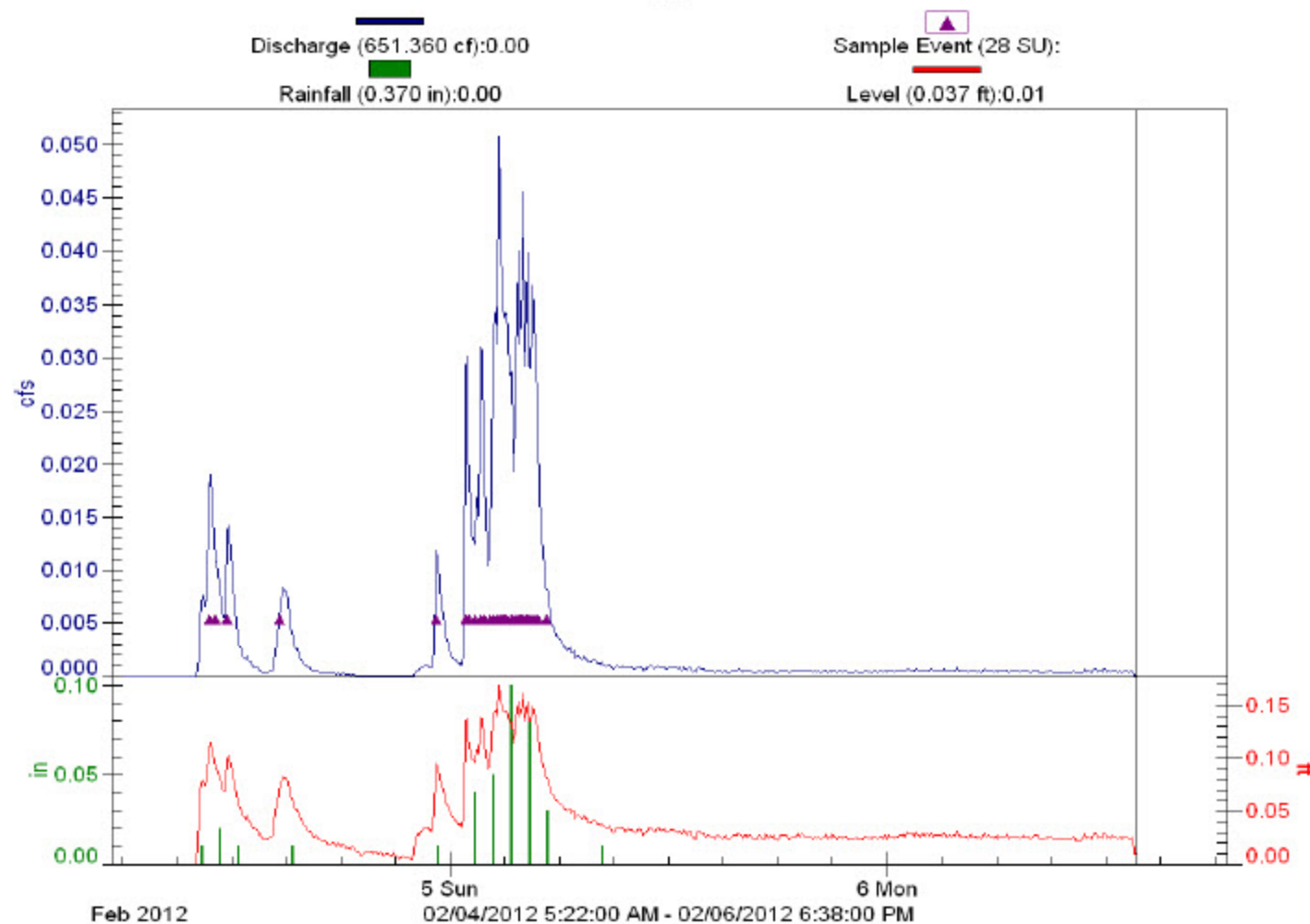
Sample Event (25 SU):

Rainfall (0.300 in):

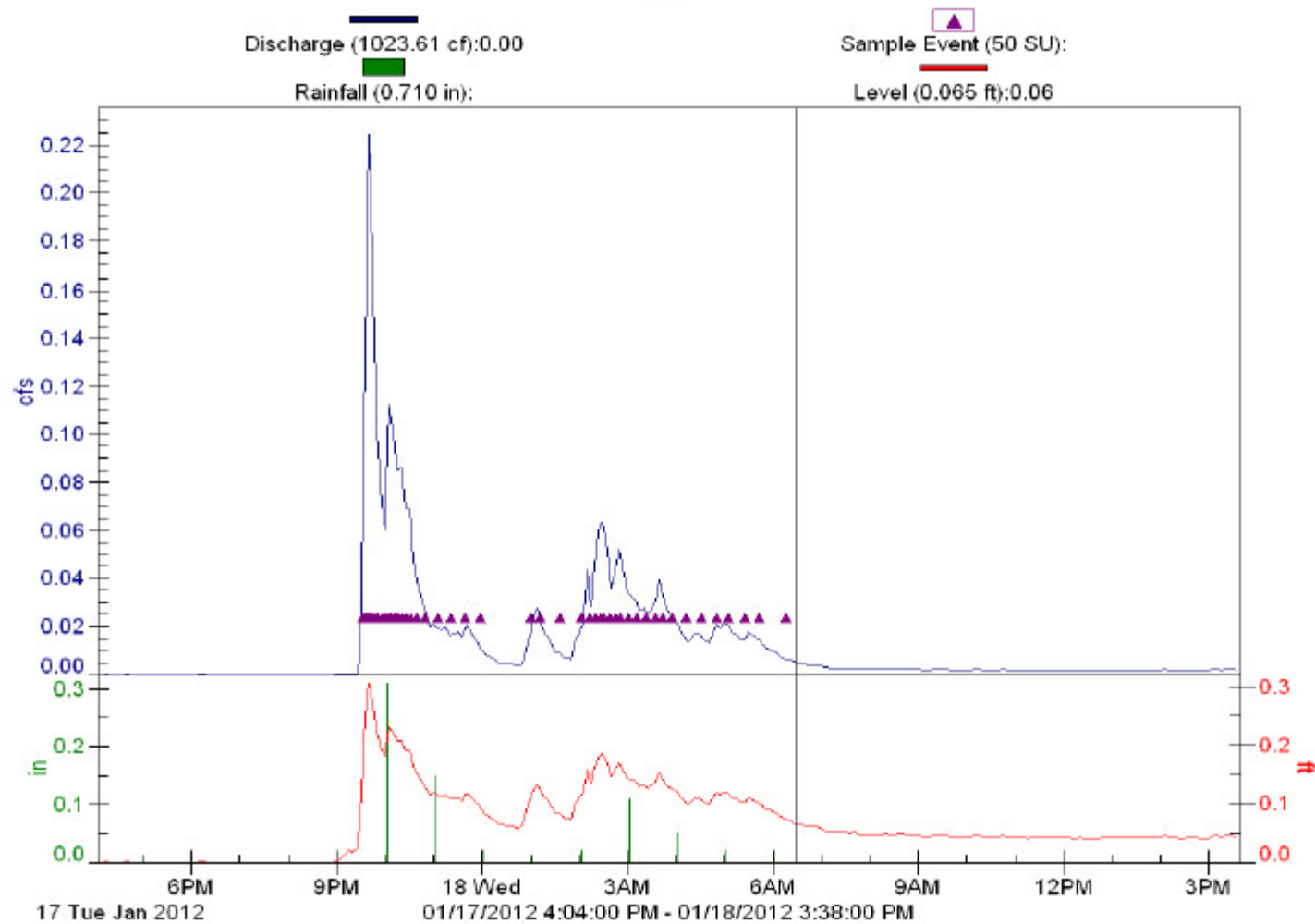
Level (0.054 ft):0.06



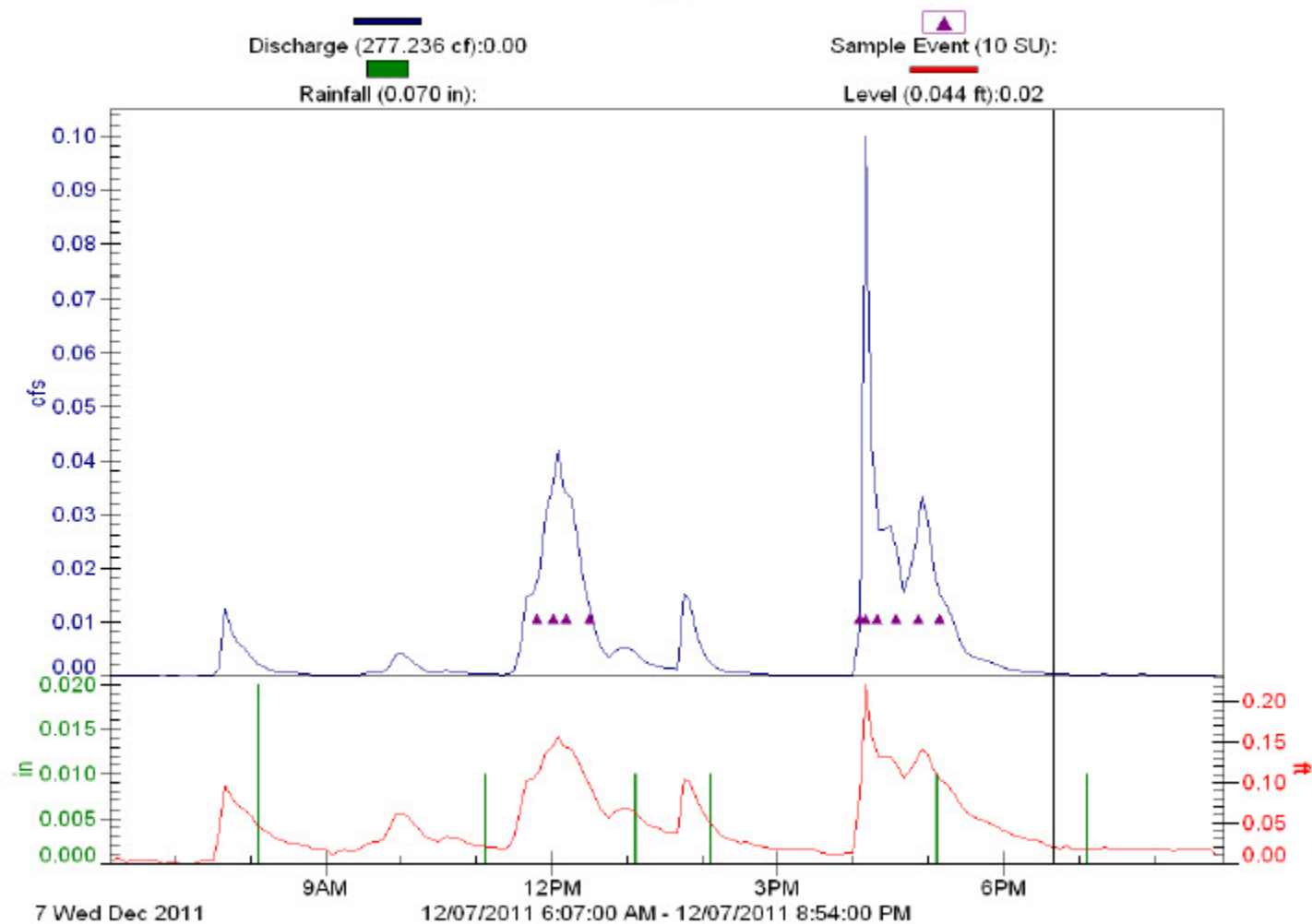
Cherry Gardens Influent CGI



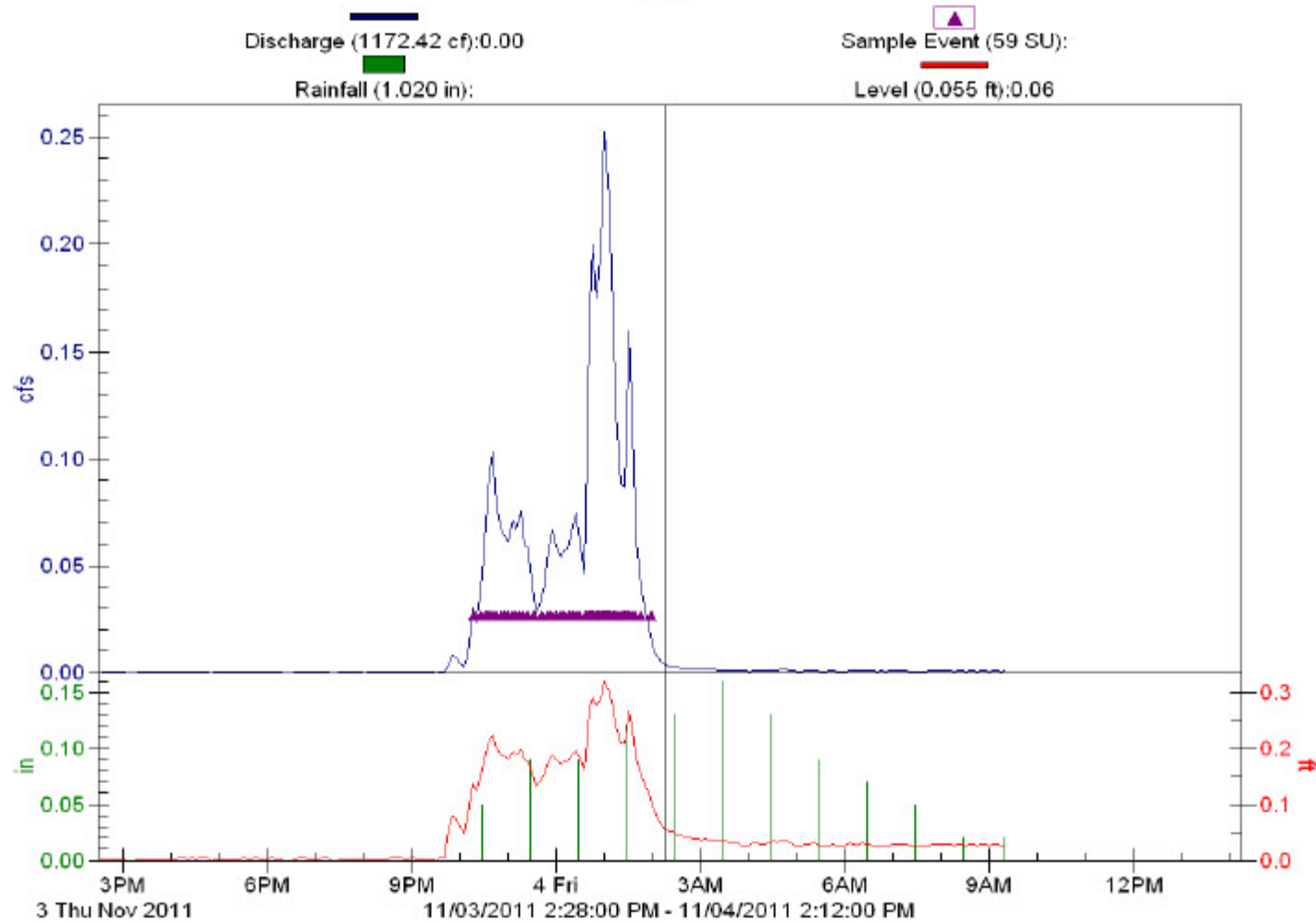
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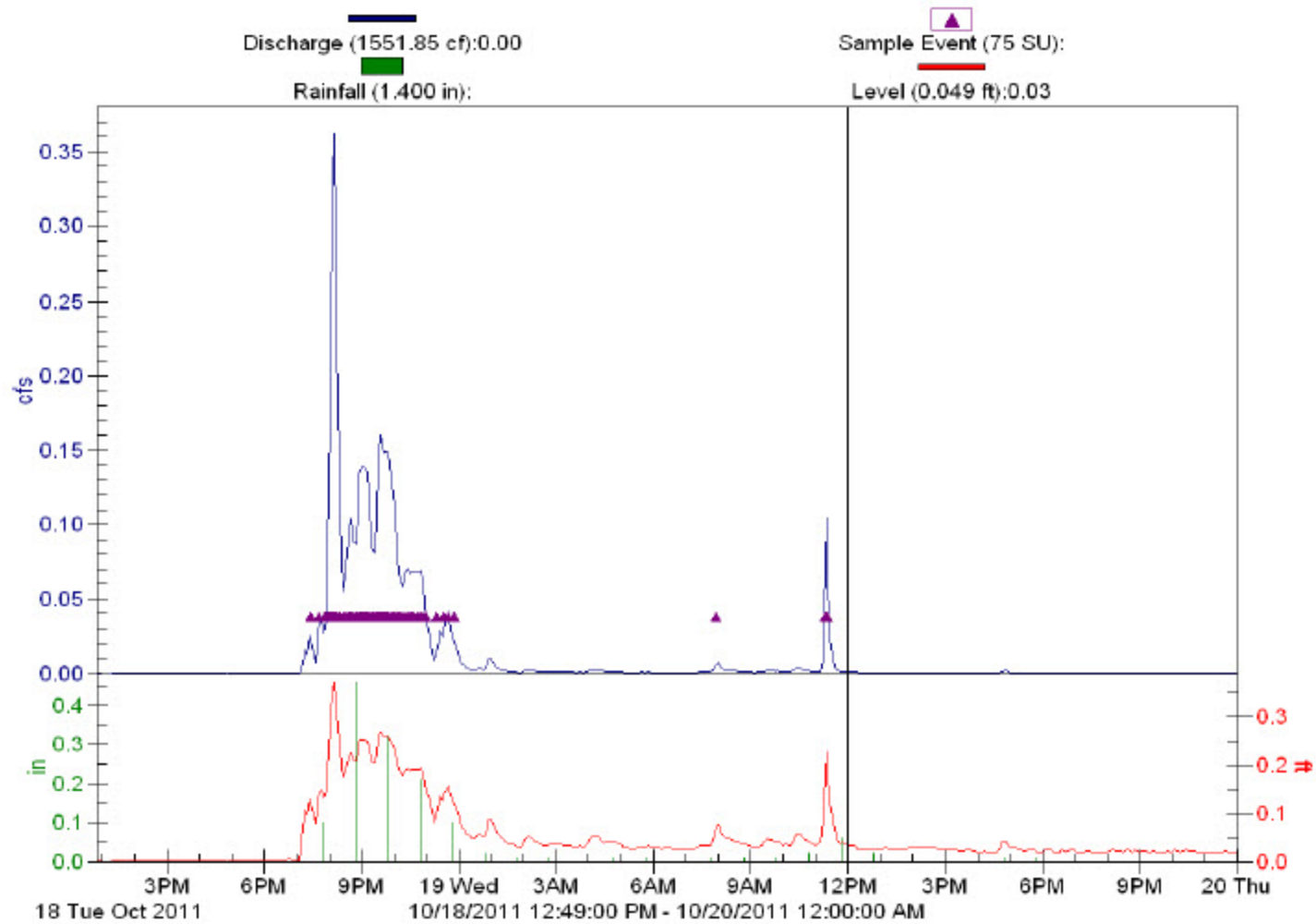
Cherry Gardens Influent CGI



Cherry Gardens Influent CGI



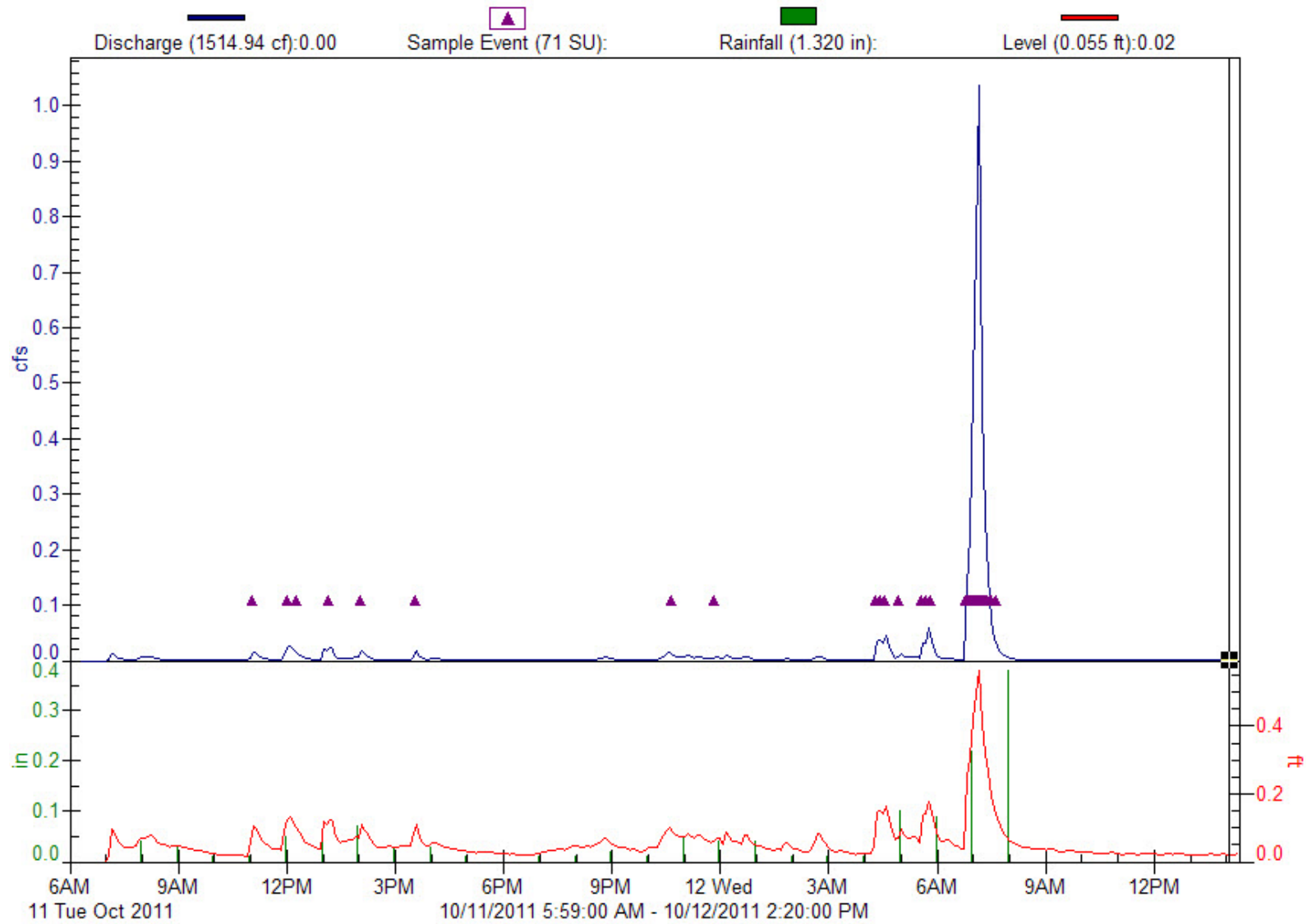
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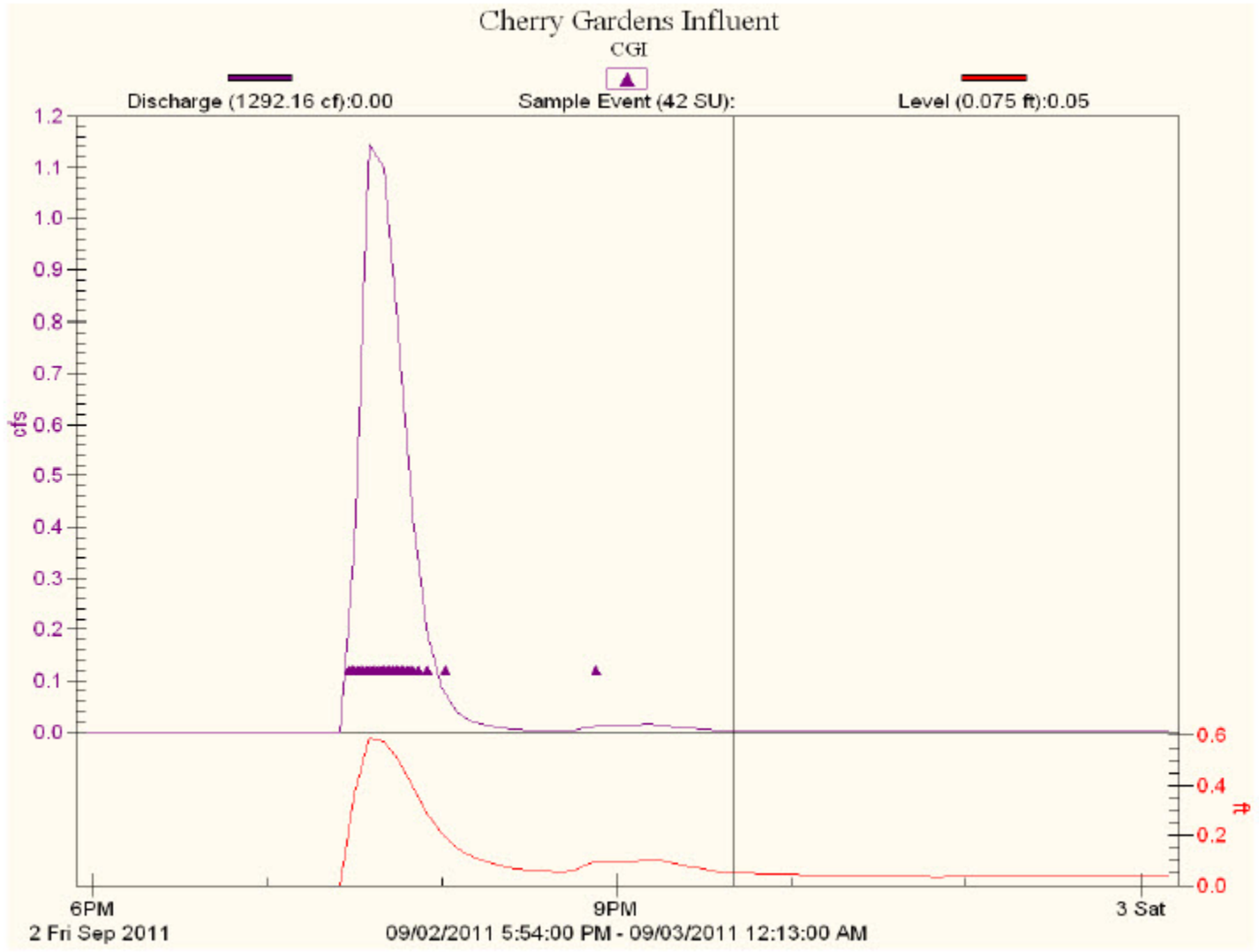


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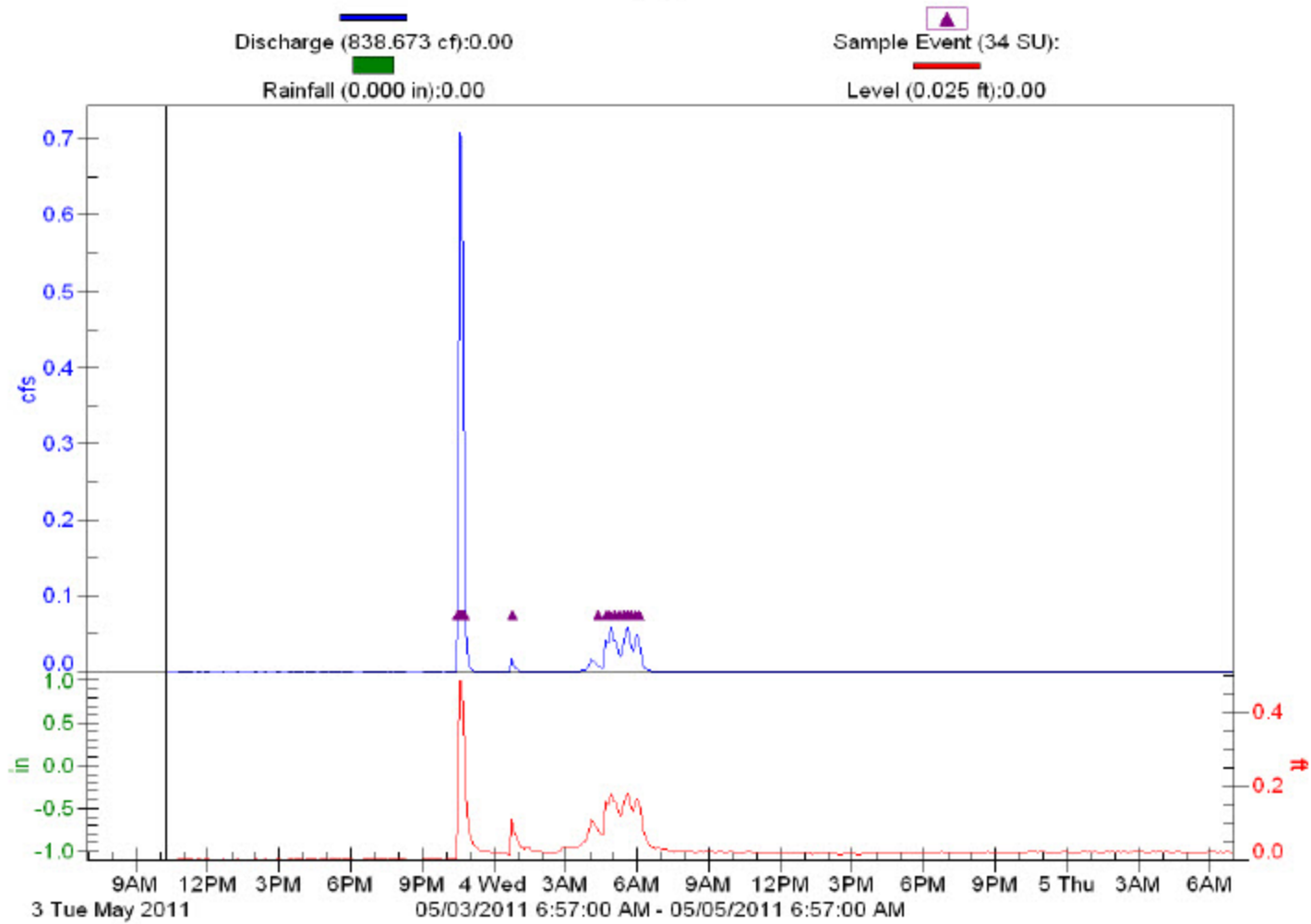
Cherry Gardens Influent

CGI

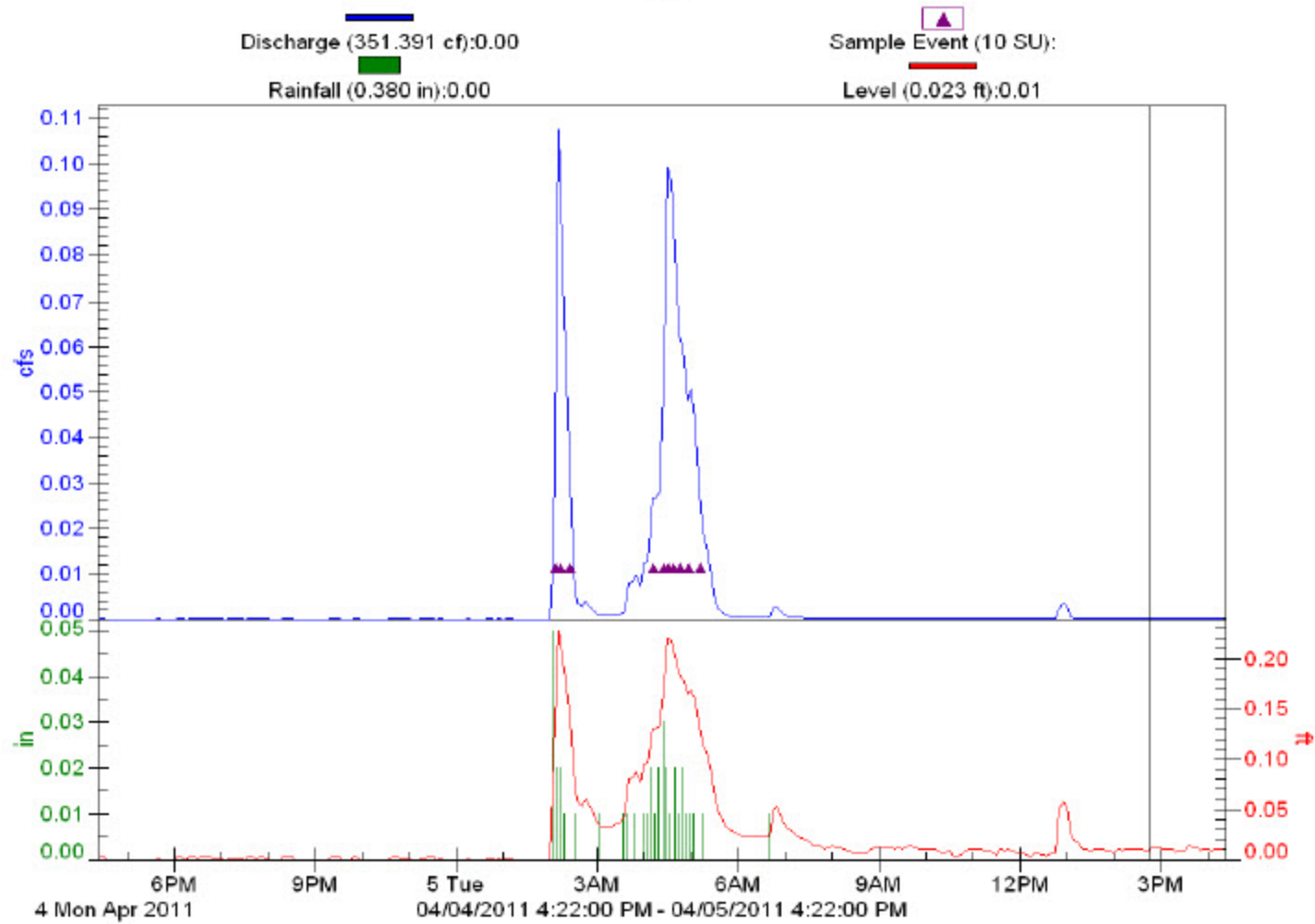


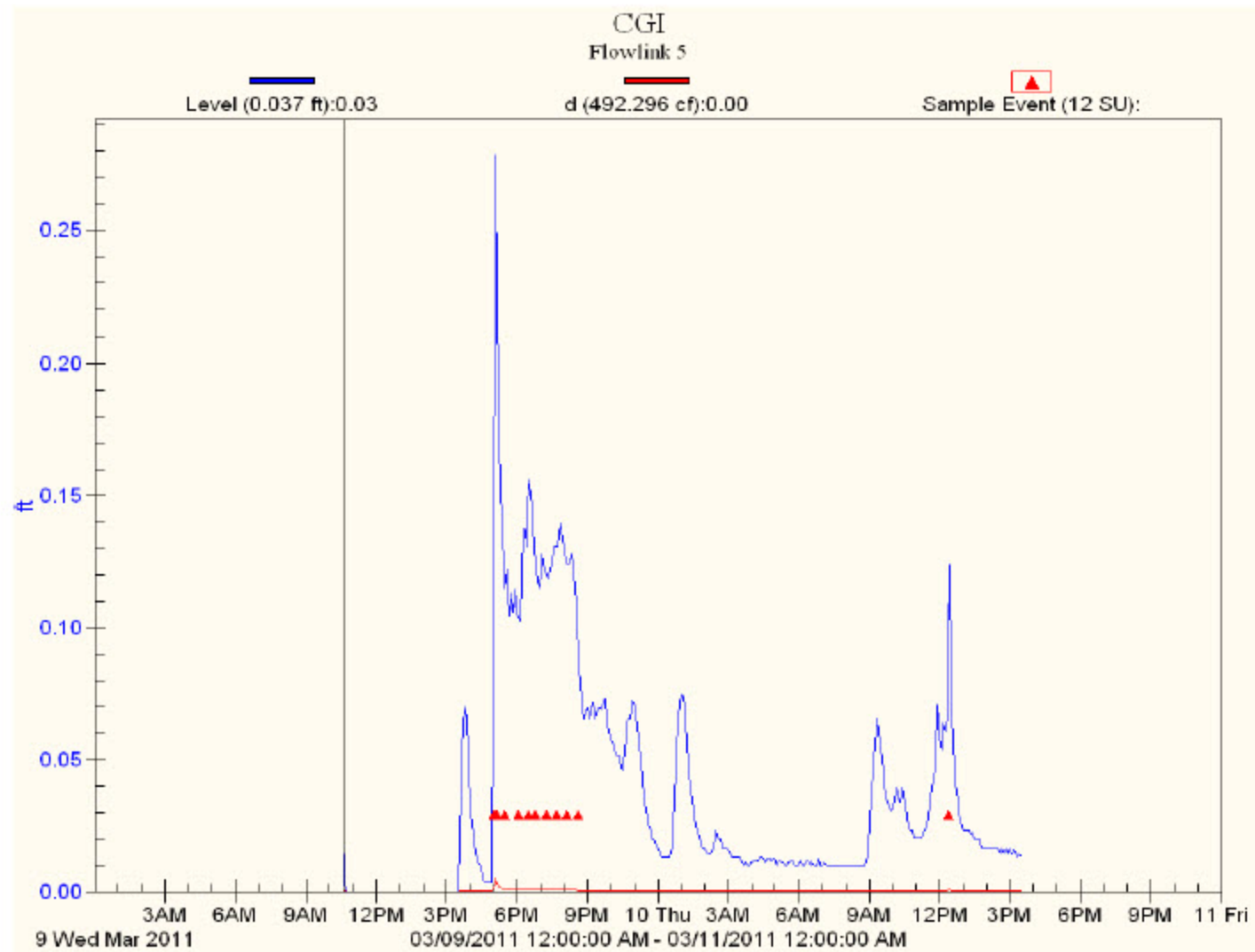


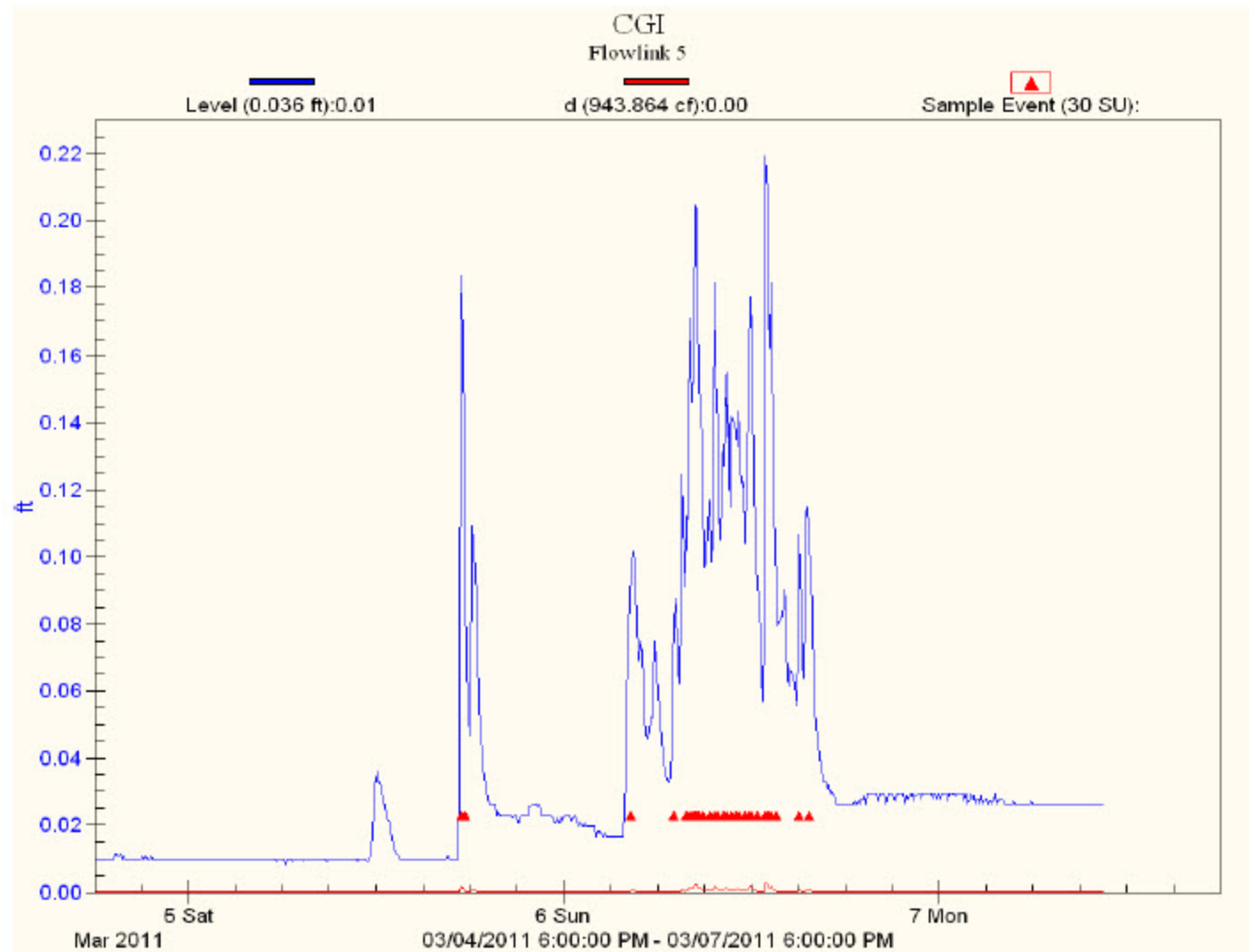
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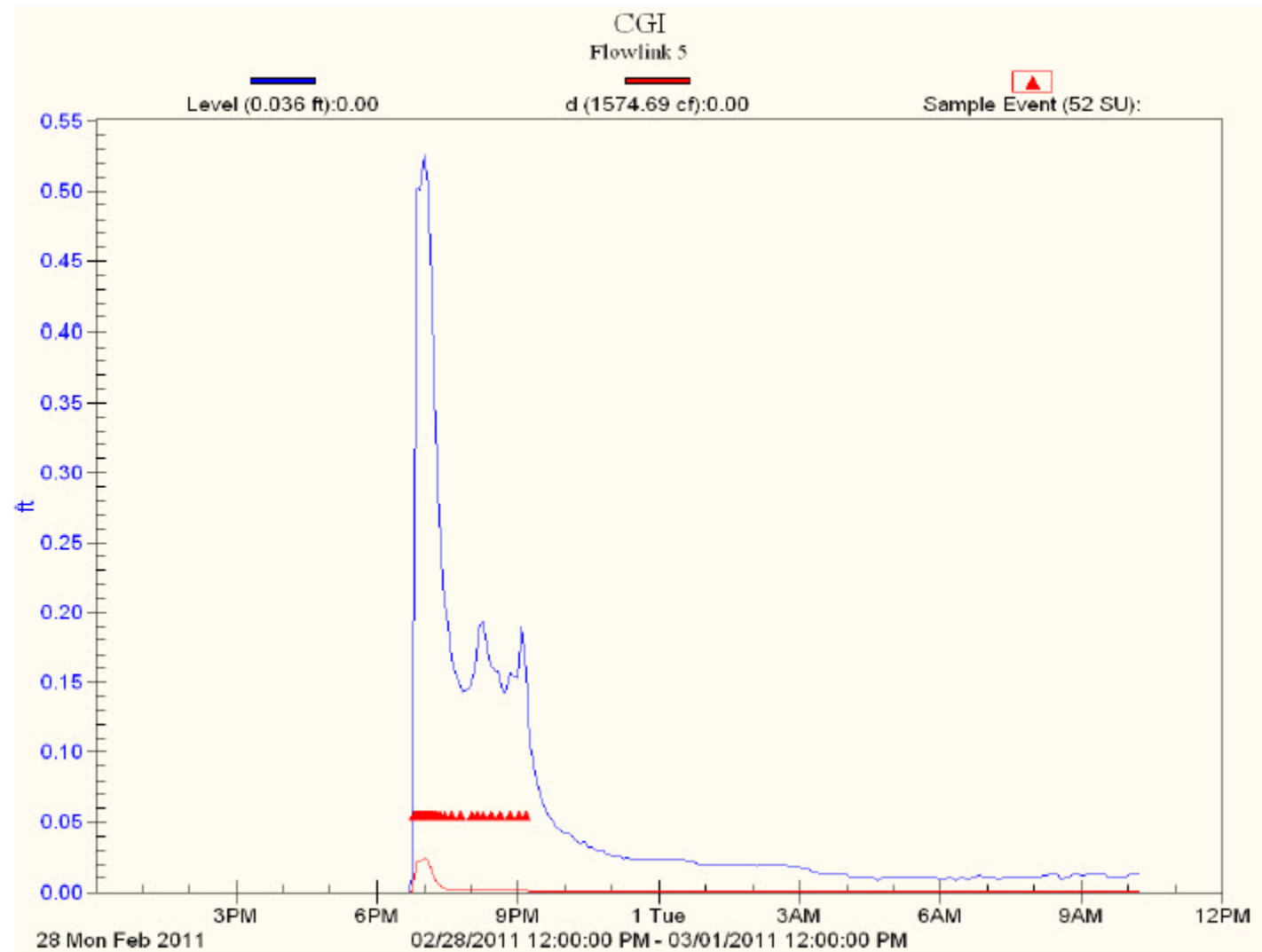


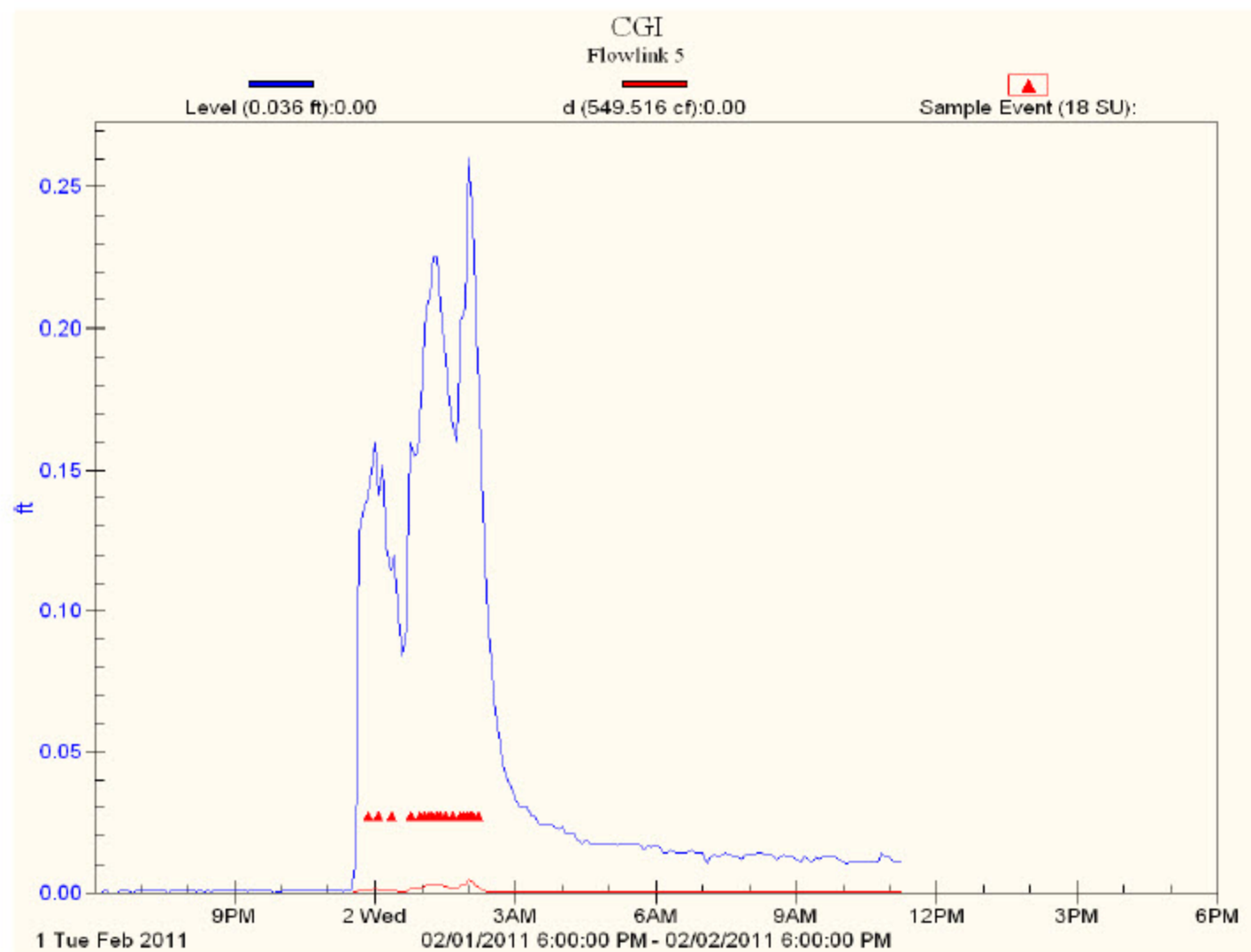
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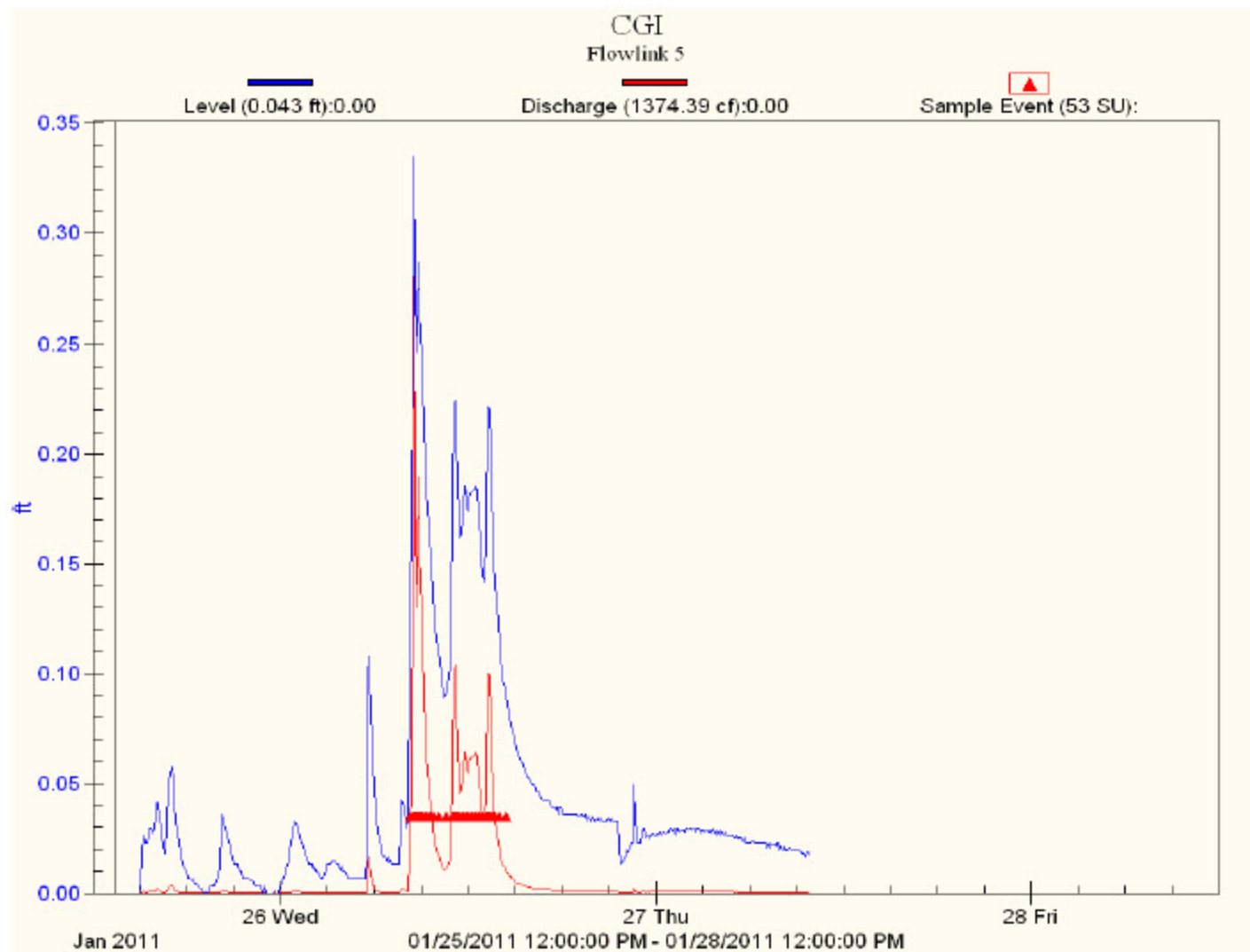


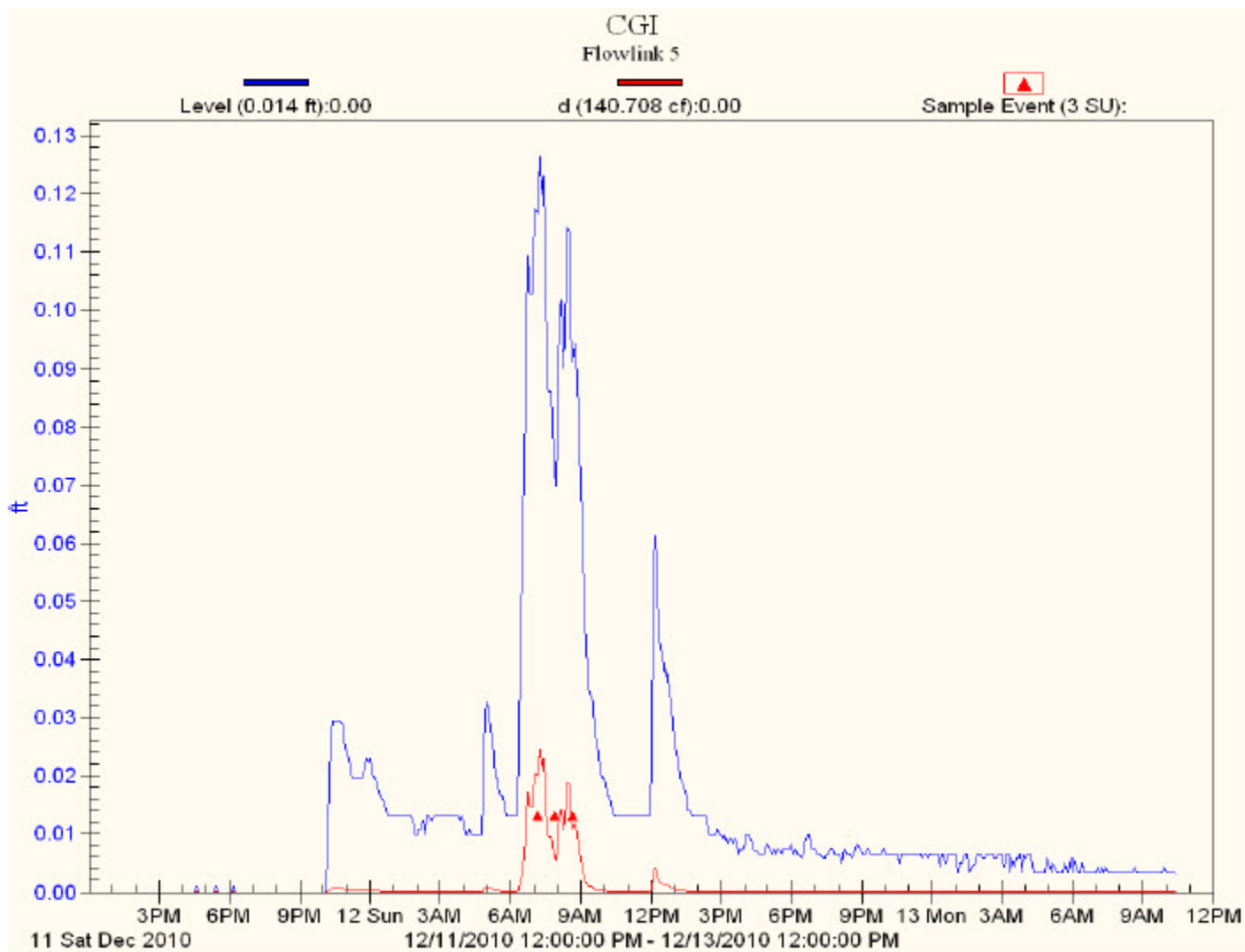


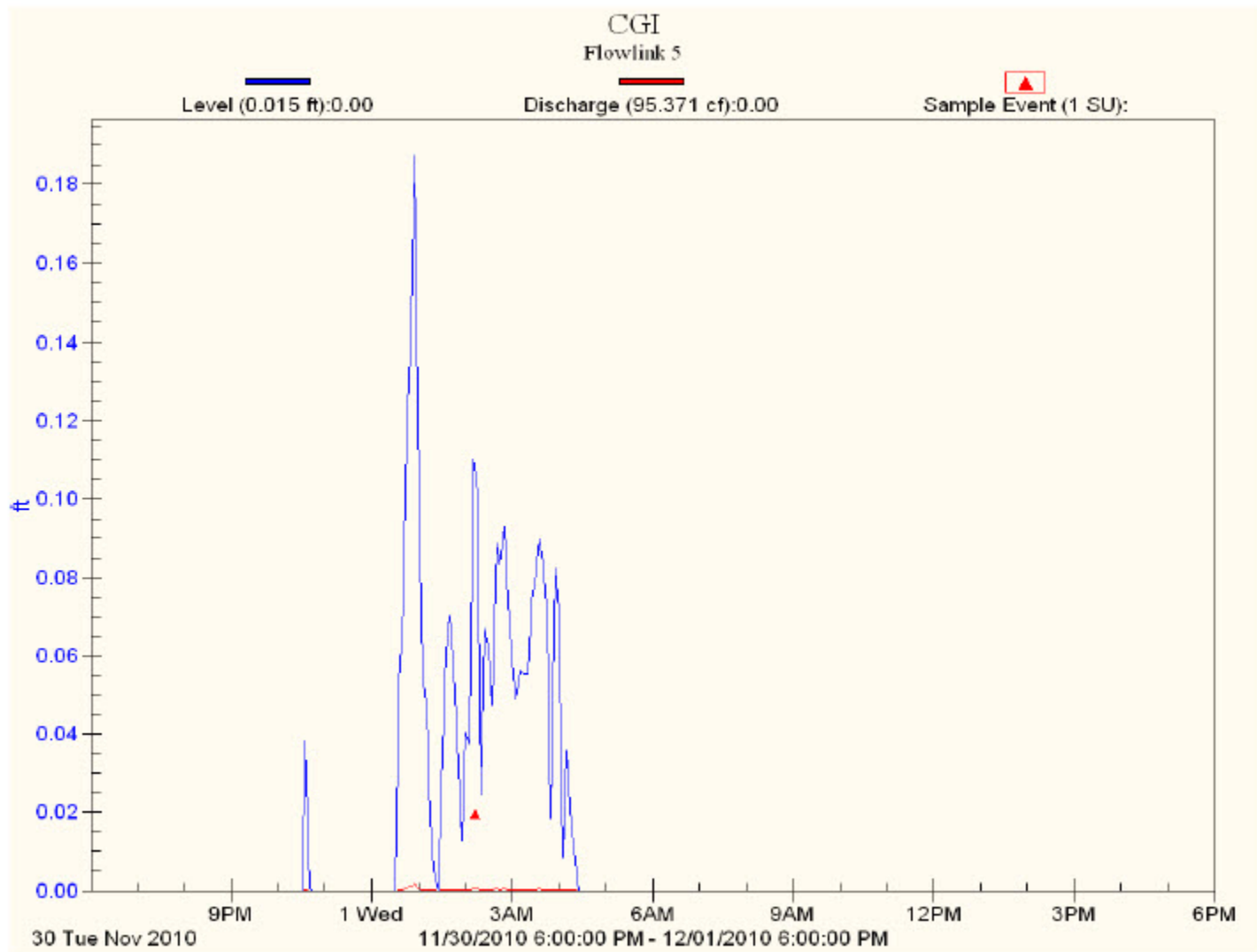




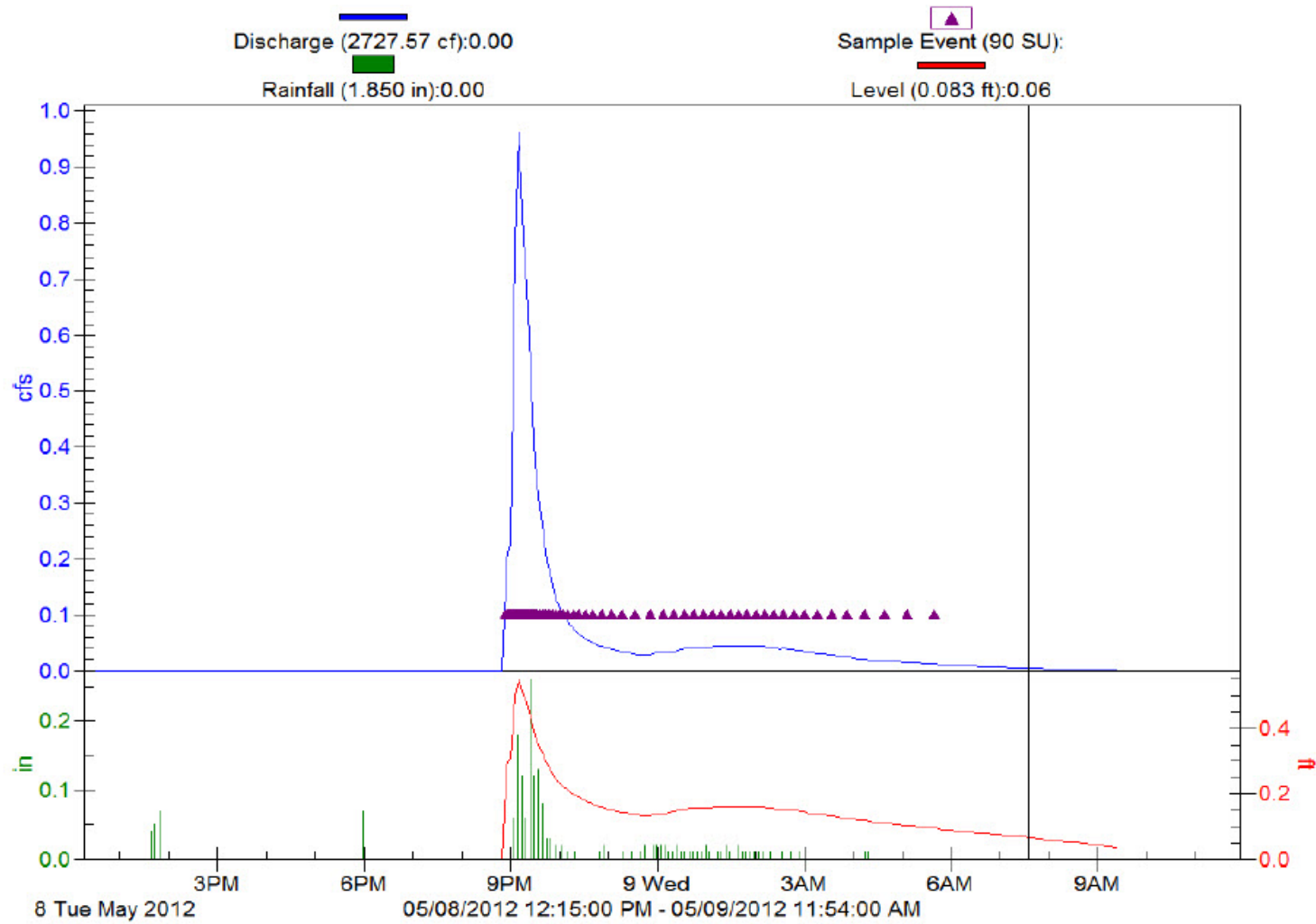






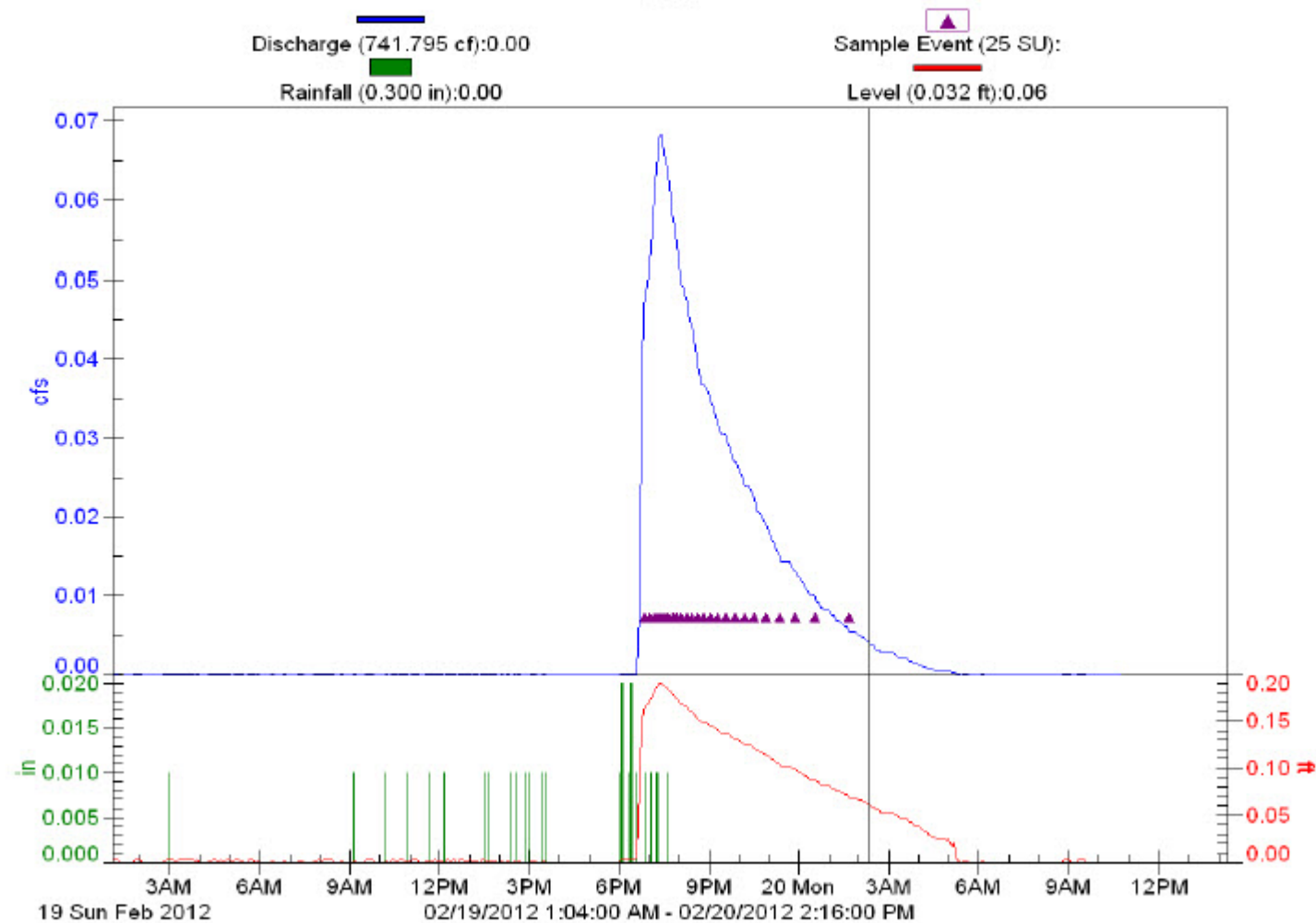


Cherry Gardens Effluent CGE



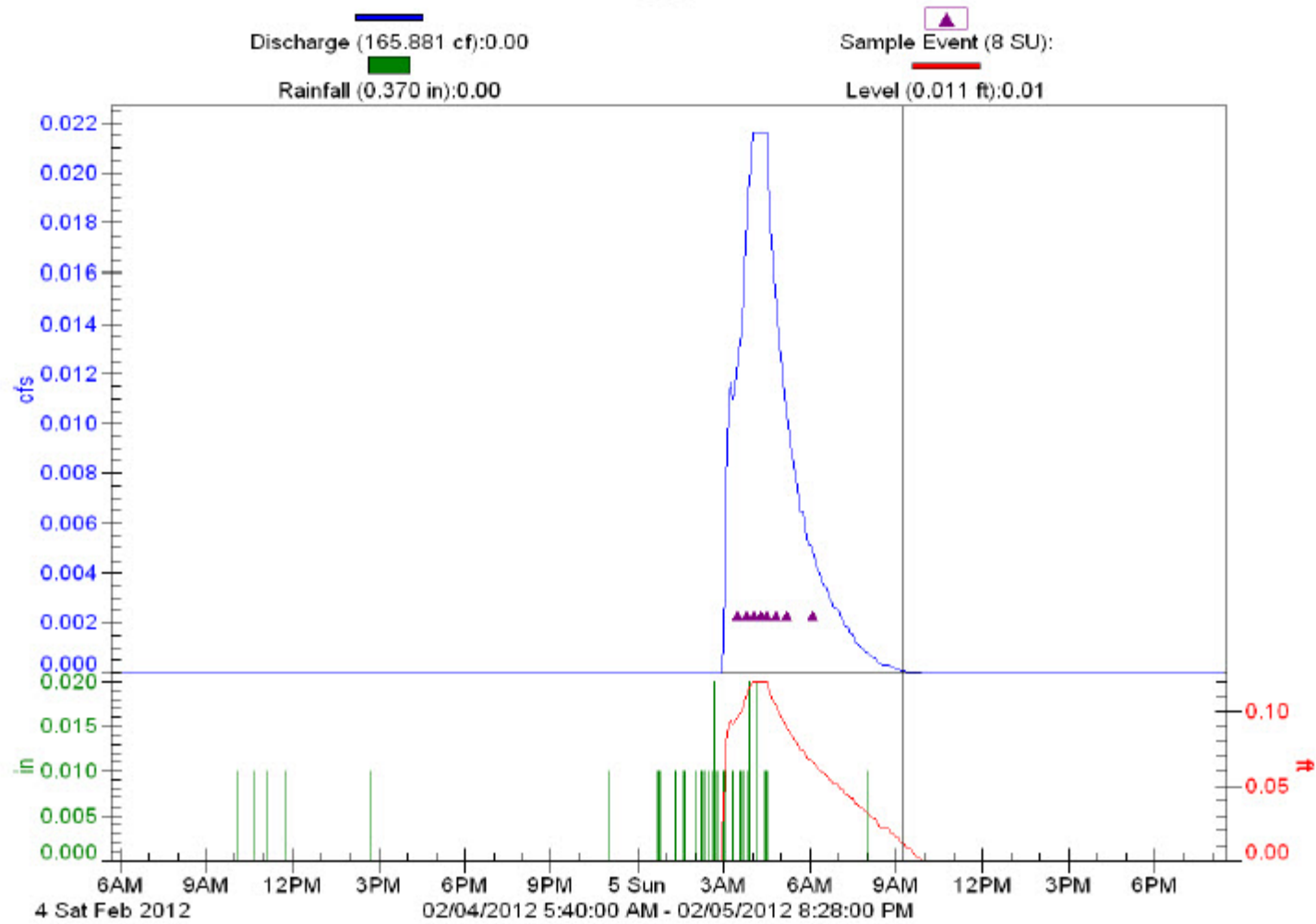
Cherry Gardens Effluent

CGE

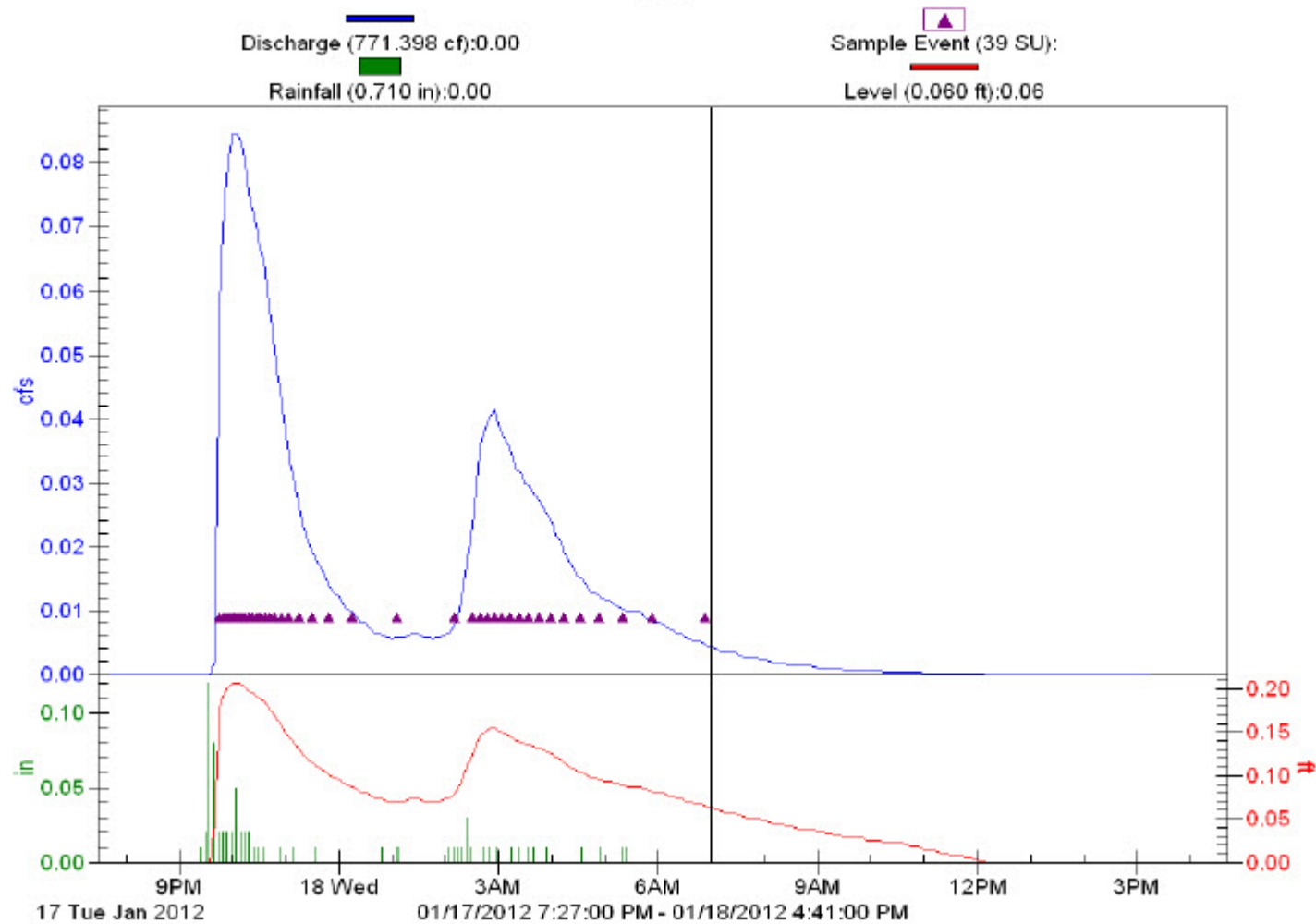


Cherry Gardens Effluent

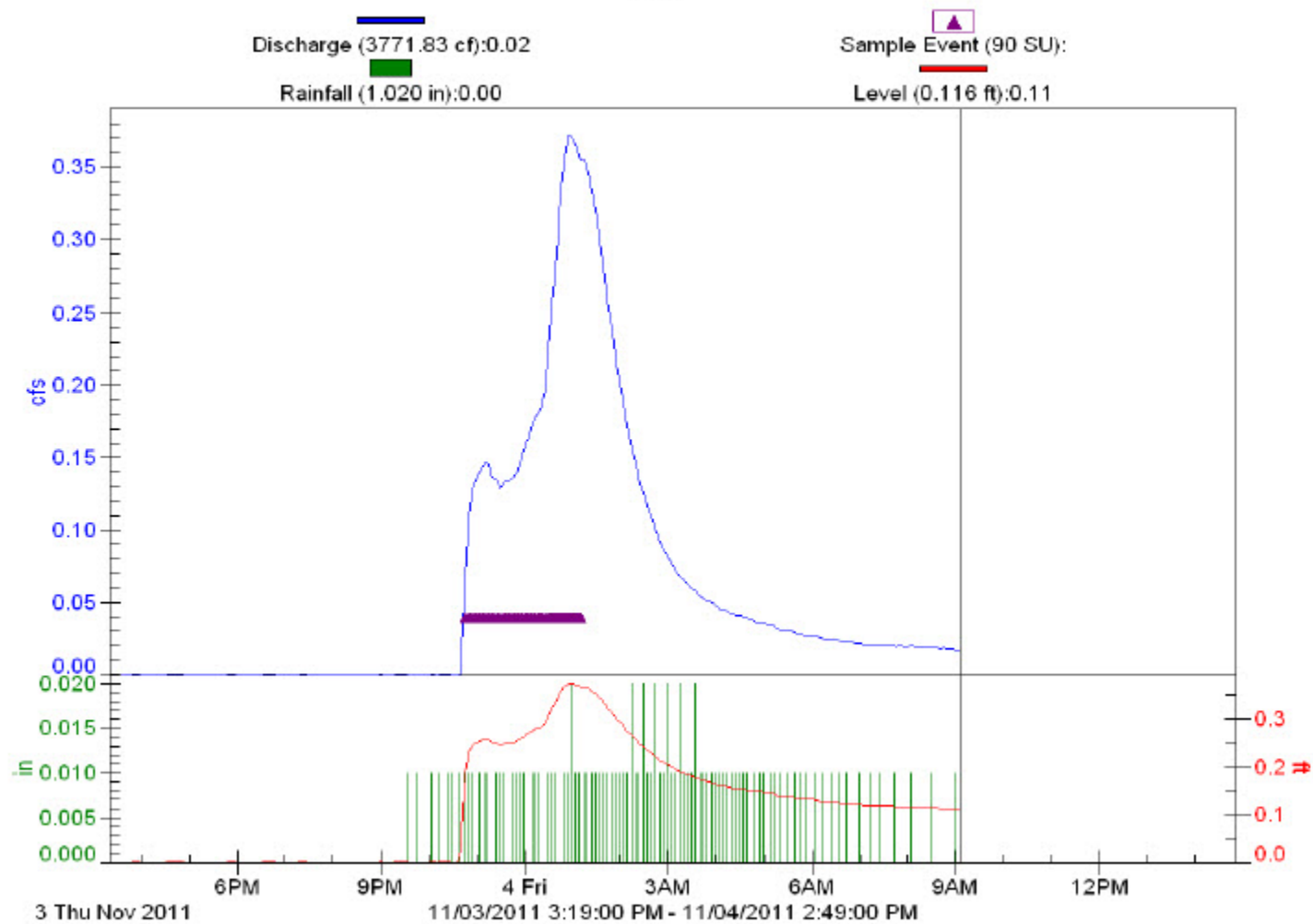
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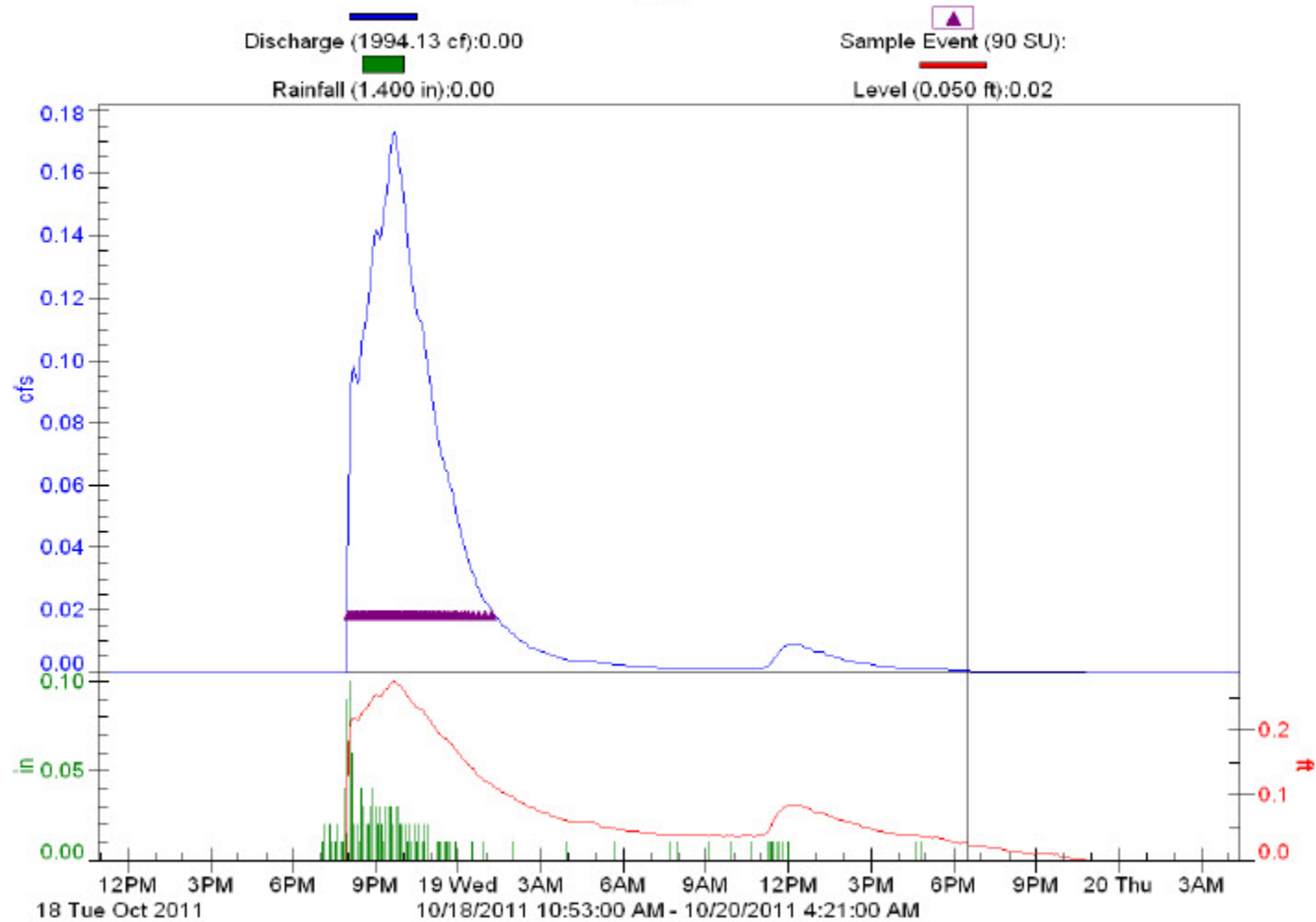
Cherry Gardens Effluent CGE



Cherry Gardens Effluent CGE



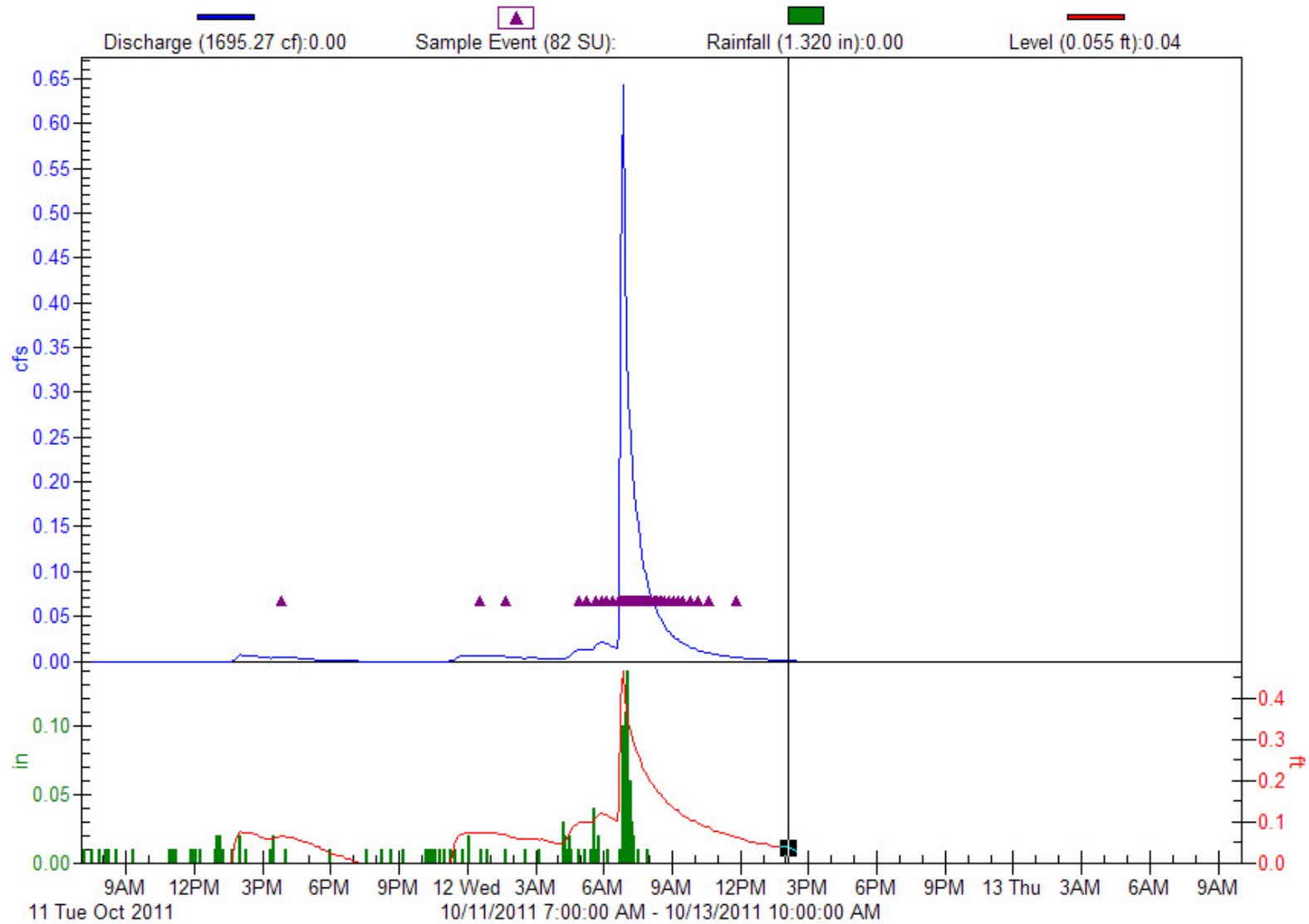
Cherry Gardens Effluent CGE



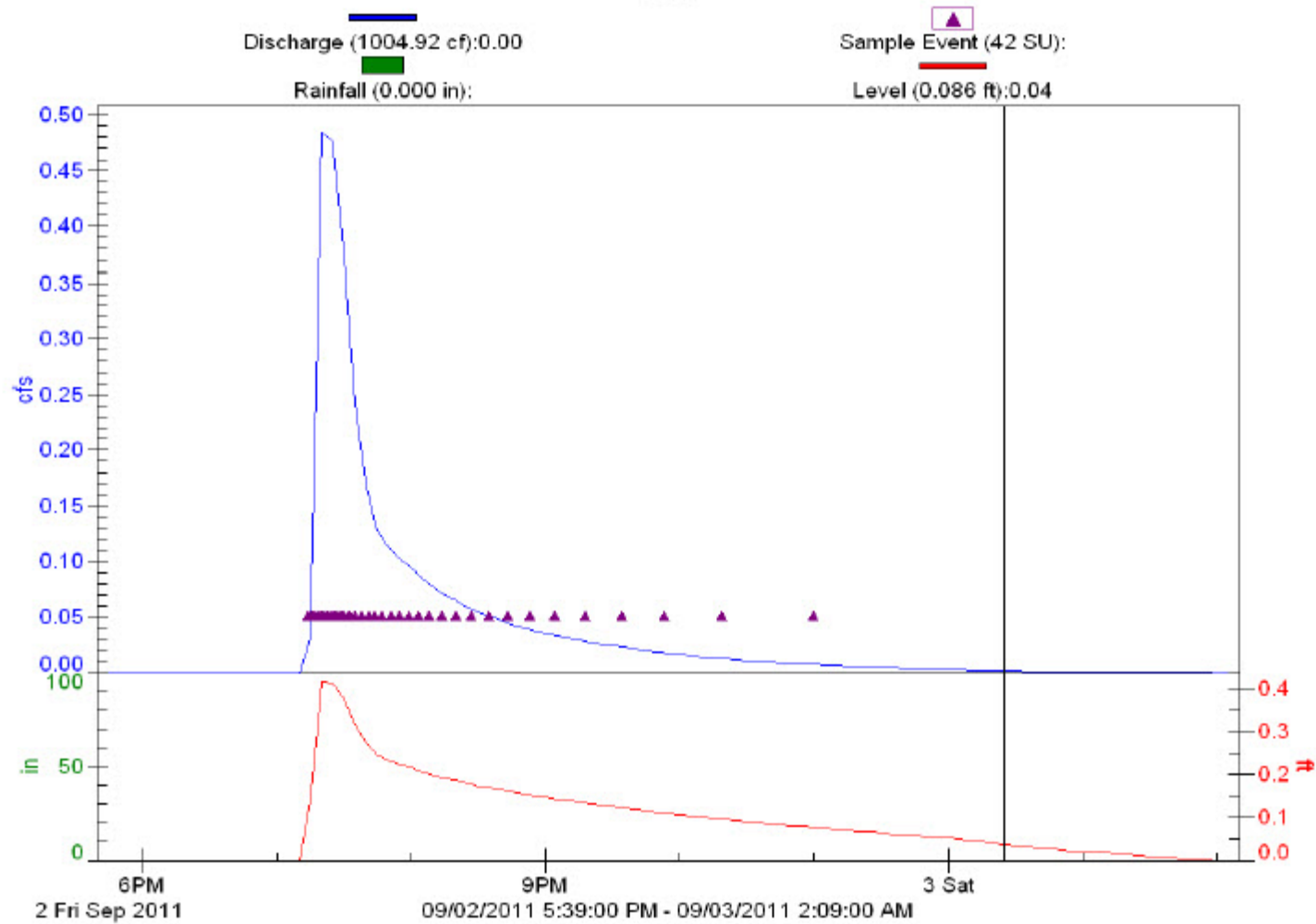
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Cherry Gardens Effluent

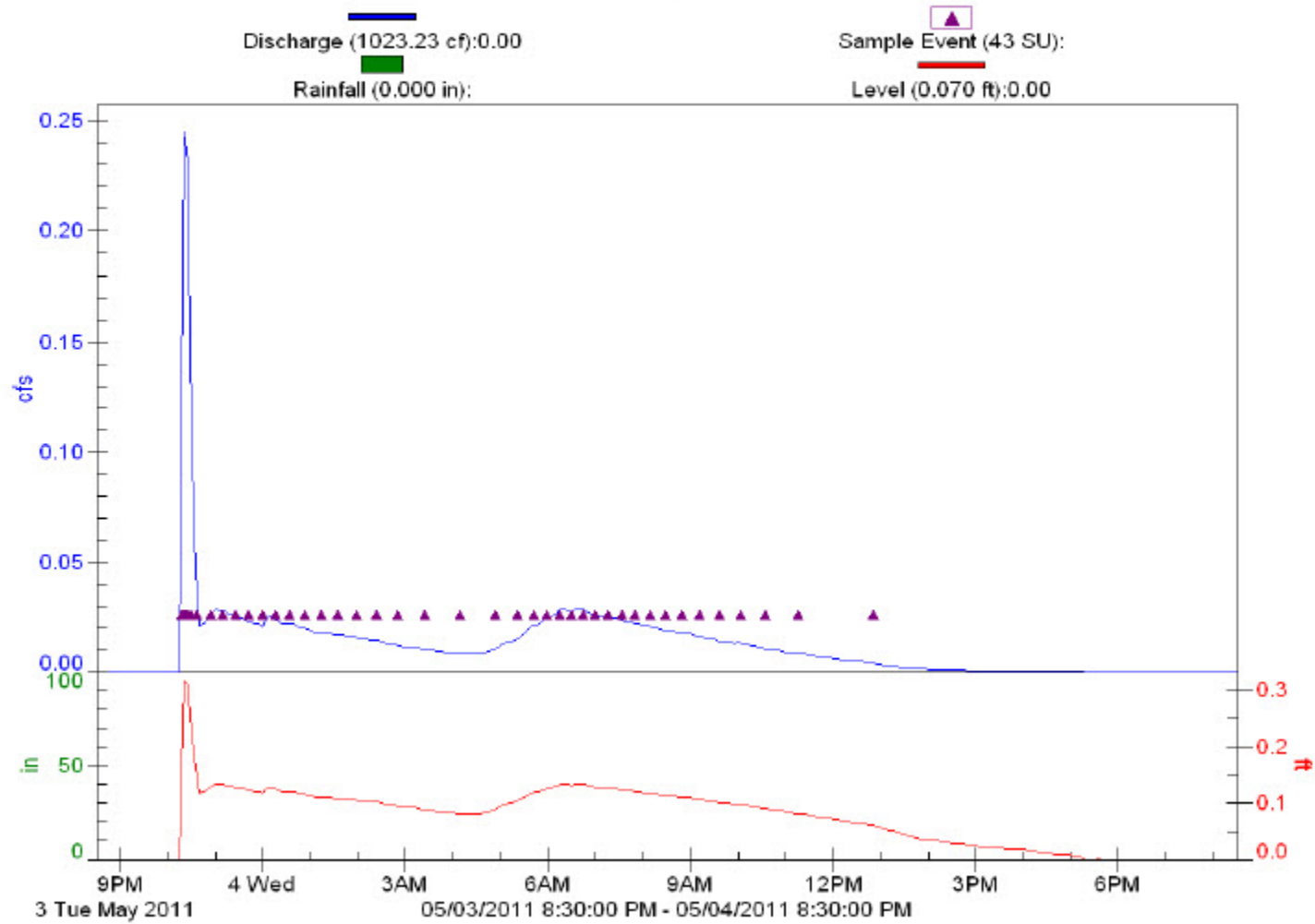
CGE



Cherry Gardens Effluent CGE



Cherry Gardens Effluent CGE



Cherry Gardens Effluent CGE

