

# Memo



**Date:** August 4, 2011  
**To:** Kevin Stewart  
**From:** Markus Ritsch  
**Subject:** July 2011 ALERT Data Analysis

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## I. ALERT Data Source

Raw ALERT data records extracted from the Urban Drainage and Flood Control District's NovaStar base station were analyzed for the period July 1 through July 31, 2011.

## II. General System Analysis Summary

A total of 420,735 ALERT (legacy) data reports were analyzed. Meteorological sensors account for 69 percent, water level sensors 15 percent, and rain sensors 6 percent of the total monthly records.

The system-wide radio traffic loading was 13,572 reports per day with an average hourly loading of 566 reports. The peak hourly traffic loading was 2,123 reports, which occurred on July 7, between 5:00 PM and 6:00 PM. A plot of monthly average and peak hourly traffic loading is provided.

### A. Specific Issues Identified this Month

Performance of the following sensors (Table 1) was questionable this month.

**Table 1. Rain Sensors with Poor Performance Characteristics**

Rain ID	Description	Timer Performance	Event Performance
4300	Big Elk Park	0.31	0.47
4330	Hansen Rain	0.45	0.55
2750	Wx-Castle Rock	0.48	0.96
2280	Kinney Peak	0.56	0.73
870	Murphy Creek GC	0.58	0.43
4270	Cannon Mountain	0.65	0.78
540	Parker/Mississippi	0.68	0.89
3010	EPC at Hwy 105	0.74	0.68
4490	Apple Valley	0.77	0.60
4790	Wx-Button Rock	0.77	0.69
2980	Dakan Rd	0.84	0.58
1479	Unknown sensor ID with excessive reports		
2239	Unknown sensor ID with excessive reports		

### B. Continuous Operation of Base Receiver/Decoder

The ALERT/ALERT2/NS5 receiver/decoder was continuously operational for the entire month.

### III. Rain Sensor Timer Reporting Summary

The following analysis assumes that each rain sensor has a 12-hour timer-reporting interval. The worst performing rain sensors for the month are summarized (Table 2).

**Table 2. Monthly Summary of Sensors with Poor Timer Performance (Sensor ID)**

Jan*	Feb*	Mar*	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*
1520	4710	4490	1700	1700	700	4300					
1440	1440	4270	3060	700	4710	4330					
4470	4470	4330	3030	540	4330	2750					
1460	1460	4510	700	1710	1700	2280					
140	140	1440	3090	500	4270	870					
1570	4490	4810	2970	710	4300	4270					

\*- Only sensors that operate year-round (weather stations and stations in Boulder County) are included for the analysis in these months.

Sensors identified as having poor timer performance in multiple months are shaded with unique colors. A developing trend can thus be identified from the color shading as the year progresses.

### IV. Rain Sensor Event Reporting Summary

#### A. District-Wide Total Tip/Count Statistics

The incrementing reports from all 1-mm rain sensors were analyzed to quantify the District-wide statistical total monthly tip summary (Table 3).

**Table 3. District-Wide Total Tip/Count Statistical Summary**

Statistical Parameter	Value	Comments
Mean	90.87	Only the 1-mm rain sensors were included in the analysis
Median	92	Only the 1-mm rain sensors were included in the analysis
Standard deviation	30.10	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	181.18	Only the 1-mm rain sensors were included in the analysis
Minimum total count	17	ID 2270 (Cub Creek below Blue)
Maximum total count	175	ID 500 (Havana Park – Influenced by irrigation)

#### B. Monthly Average Tip/Count Summary

A monthly summary of the District-wide mean total tip/count is presented (Table 4).

**Table 4. Monthly Summary of District-Wide Mean Total 1-mm Tip/Count**

Year	Jan*	Feb*	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov*	Dec*	Ave
2006	4.62	5.92	18.39	20.47	19.44	13.75	74.03	46.89	24.17	41.13	5.04	16.45	24.19
2007	11.56	5.40	29.75	65.03	68.30	15.87	36.20	46.38	22.13	29.50	6.54	11.29	29.00
2008	4.05	7.38	12.26	20.57	54.82	26.06	16.43	90.20	37.54	19.59	2.82	9.24	25.08
2009	6.33	3.11	11.37	59.26	63.45	68.00	65.00	20.00	27.29	30.24	11.00	5.60	30.89
2010	5.97	11.90	32.54	70.57	39.63	56.04	50.23	31.01	4.18	18.31	8.30	3.31	27.67
2011	6.78	7.45	7.54	33.94	92.68	39.42	90.87						

\*- Only sensors that operate year-round (weather stations and stations in Boulder County) are included for the analysis in these months.

### C. Sensors with a Jump of Six or More in the Sequential Count

Several sensors experienced a large jump in the sequential tip count (Table 5).

**Table 5. Sensors with a Jump of 6 or More in Sequential Count**

Sensor Description	Sensor ID	Comment
Murphy Creek GC	870	Missing data between July 6 and July 8.
Big Elk Park	4300	Missing data between July 7 and July 8.
Heavy rainfall was experienced on the evening of July 7. Missing reports were observed at numerous stations.		

### D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 87.1 percent. A total of 13,772 incrementing reports were received and a total of 15,811 reports were expected. The total loss of incrementing reports for the month was approximately 12.9 percent. Those sensors with the worst event transmission performance are summarized (Table 6).

**Table 6. Monthly Summary of Sensors with the Most Missed Tips**

Jan*	Feb*	Mar**	Apr	May	Jun	Jul	Aug	Sep	Oct**	Nov*	Dec*
1420	1350	2820	1700	1620	2280	870					
1460	950	2970	1620	1660	4300	4300					
4470	1320	710	2930	810	4330	4330					
4330	1330	4330	2990	650	4270	2980					
2710	840	870	4330	940	2980	4490					
1640	1720	1200	2950	1900	310	4790					

\*-Only sensors that are operational year-round (weather stations and stations in Boulder County) are included for the analysis in these months. \*\*-Due to Spring start-up Fall shut-down the performance values in these months are not accurate.

Sensors identified as having poor event performance in multiple months are shaded with unique colors. A developing trend can thus be identified from the color shading as the year progresses.

## V. Heavy Radio Traffic Analysis

Periods exceeding 700 messages per hour were analyzed independently in an attempt to quantify data loss rates from rain sensors using the sequential tip count series.

### A. The Heaviest Hourly Traffic Periods This Month

The hourly periods of highest radio traffic this month are shown (Table 7). Each hour exceeding 700 reports was analyzed to quantify the number of missing rain reports for that hour.

**Table 7. Heavy Radio Traffic Periods**

Day	Hr	Expected	Received	Total Load	Loss
6	16	49	48	715	2.04%
6	18	126	119	736	5.56%
7	16	507	429	1171	15.38%
7	17	1217	976	2120	19.80%
7	18	444	345	1356	22.30%
7	19	172	163	1111	5.23%
7	20	115	106	970	7.83%
7	21	162	154	1078	4.94%
7	22	88	91	905	0.00%
7	23	42	46	835	0.00%
8	13	104	97	770	6.73%
8	14	39	38	821	2.56%
8	19	278	249	993	10.43%
8	20	21	21	777	0.00%
8	21	11	11	728	0.00%
9	16	87	79	734	9.20%
9	17	198	185	1034	6.57%
10	16	167	156	947	6.59%
10	17	70	65	879	7.14%
10	19	144	119	754	17.36%
11	16	111	105	754	5.41%
11	17	176	175	938	0.57%
11	18	198	191	1057	3.54%
12	21	854	727	1763	14.87%
12	22	238	185	1182	22.27%
12	23	172	158	997	8.14%
13	0	88	85	937	3.41%
13	18	359	296	977	17.55%
13	19	36	30	705	16.67%
13	20	51	51	732	0.00%
13	21	283	261	1128	7.77%
13	22	322	288	1270	10.56%
13	23	140	124	983	11.43%
14	0	18	17	800	5.56%
14	13	147	132	774	10.20%
14	14	122	114	812	6.56%
14	15	429	377	1406	12.12%
14	16	21	22	956	0.00%
14	17	41	41	874	0.00%
15	20	46	44	736	4.35%
19	16	103	97	745	5.83%
19	17	309	283	1120	8.41%
19	18	146	136	1118	6.85%
26	18	187	174	948	6.95%

## VI. Unknown Device Analysis – Received Data Log

The ALERT IDs present in the audio signal received by the decoder are compared against a list of “active” device IDs that are defined within NovaStar. Those IDs received by the decoder that are not defined within NovaStar are considered to be “unknown” and may be the result of radio noise or problems with the telemetry system. The reception of “unknown” device reports for the month is summarized (Table 8).

**Table 8. Summary of Unknown IDs**

Description	Quantity
Total number of unknown IDs (IDs without a device definition)	328
Total reports from unknown IDs	489
Unknown IDs with only a single received report (potential noise)	255
Total reports from all IDs – RecData Log entire month	420,735
Unknown reports as a fraction of total reports	0.12%

The total number of reports from unknown sensors is very small relative to the total reports received for the month. Shown below (Table 9) are the total reports received from unknown sensor IDs for each month of the year.

**Table 9. Monthly Summary of Total Reports from Unknown IDs**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	1,220	1,474	1,276	1,174	721	5,707	610	1,738	442	533	2,857	6,396
2011	1,231	2,165	3,065	1,254	2,051	439	489					

The fraction of reports from unknown sensors relative to the total number of reports is shown below (Table 10).

**Table 10. Monthly Percent of Unknown Sensor Reports**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	0.42%	0.56%	0.38%	0.32%	0.20%	1.61%	0.17%	0.49%	0.13%	0.16%	0.93%	1.88%
2011	0.39%	0.73%	0.90%	0.37%	0.58%	0.12%						

Any month shaded in yellow has an excessive number of reports from unknown sensors.

A number of “unknown” sensors had multiple reports, which may indicate the existence of a transmitter that is sending information on an ID that is not currently defined within NovaStar. The unknown IDs with multiple reports including the number of reports received by each are shown (Table 11).

**Table 11. Reports Received by Unknown IDs**

Unknown Sensor ID	Total Reports
1479	16
2239	16
1631	10
4457	9
4521	8
4063	7
4031	5
4397	5
4409	5
717	4
741	4
3015	4
4091	4
4093	4
149	3
297	3
632	3
684	3
1369	3
1599	3
2259	3
2309	3
2359	3
4014	3
4061	3
4094	3
4361	3
4406	3
109	2
237	2
409	2
509	2
609	2
621	2
652	2
675	2
681	2
687	2
696	2
759	2
764	2
789	2
1049	2
1547	2
1612	2

1835	2
2083	2
2176	2
2222	2
2229	2
2269	2
2604	2
2700	2
4011	2
4062	2
4081	2
4082	2
4088	2
4346	2
4392	2
4431	2
4573	2
4597	2
4599	2
4607	2
4699	2
4799	2
4837	2
4842	2
4851	2
4859	2
4862	2
5752	2

The “unknown” device reports are analyzed temporally to understand when they are received during the day (Table 12). The goal of this analysis is to determine a pattern of occurrence that may correspond to a source of noise in the system, such as the use of a wireless microphone nearby.

**Table 12. Temporal Distribution of Received Reports**

Hour (AM)	Reports	Hour (PM)	Reports
0:00-00:59	7	12:00-12:59	30
1:00-1:59	7	1:00-1:59	19
2:00-2:59	8	2:00-2:59	26
3:00-3:59	17	3:00-3:59	30
4:00-4:59	6	4:00-4:59	38
5:00-5:59	6	5:00-5:59	51
6:00-6:59	9	6:00-6:59	28
7:00-7:59	11	7:00-7:59	17
8:00-8:59	11	8:00-8:59	30
9:00-9:59	30	9:00-9:59	24
10:00-10:59	28	10:00-10:59	17
11:00-11:59	30	11:00-11:59	16

## VII. Sensors with Invalid Reports

The following precipitation sensors had a large number of invalid reports (bit flip/contention errors/random decode):

Sensor ID	Description	Apr 2011	May 2011	Jun 2011	Jul 2011			
140	Wx-Blue Mountain	0	4	1	0			
500	Havana Park	0	6	1	1			
630	Temple Pond at DTC	0	7	0	1			
650	Iilff Pond	0	4	0	2			
760	Mission Viejo Park	0	5	0	1			
810	Granby Ditch @ 6th	0	4	0	1			
920	Wx-Aurora Town Hall	0	7	1	0			
940	Sampson Gulch	0	8	0	0			
1010	Denver West	0	5	0	0			
1460	Wx-Urban Farm	0	5	1	0			
1480	Third Creek at DIA	0	0	0	5			
1520	Wx-Marston Lake North	2	4	1	0			
1530	Bear Creek at Lowell	2	10	0	0			
1710	Shop Creek	0	5	4	0			
1920	Wx-Brighton	3	3	1	2			
2190	Wx-Squaw Mountain	0	8	0	1			
3010	EPC at Hwy 105	2	2	3	7			
3020	West Creek Wx	2	1	3	1			
4330	Hansen Rain	0	5	4	2			
4850	Porphory Mtn	0	0	0	4			

# VIII. Rainfall Alarms and Intensity Analysis

The following rainfall rate alarms from the Urban Drainage and Flood Control District ALERT Web Server were identified this month.

Urban Drainage and Flood Control District  
ALERT Web Server

Historical alarm log: All alarm actions

TYPE and cause	ID/Tag	Name	Date	Time
Rainfall rate alarm	2980	Dakan Road	07/29/2011	15:37:35
Rainfall rate alarm	2910	East Cherry Cre	07/26/2011	18:08:31
Rainfall rate alarm	5740	Trail Creek	07/26/2011	16:35:38
Rainfall rate alarm	4140	Logan Mill	07/19/2011	18:17:52
Rainfall rate alarm	4130	Swiss Peaks	07/19/2011	18:06:11
Rainfall rate alarm	4080	BC Twin Sisters	07/19/2011	18:03:58
Rainfall rate alarm	1520	Marston Lake No	07/19/2011	17:51:28
Rainfall rate alarm	1310	LDC at 64th	07/19/2011	17:51:15
Rainfall rate alarm	4080	BC Twin Sisters	07/19/2011	15:56:46
Rainfall rate alarm	4080	BC Twin Sisters	07/19/2011	15:48:47
Rainfall rate alarm	4080	BC Twin Sisters	07/19/2011	15:48:47
Rainfall rate alarm	4080	BC Twin Sisters	07/19/2011	15:48:47
Rainfall rate alarm	4080	BC Twin Sisters	07/19/2011	15:43:21
Rainfall rate alarm	4260	Taylor Mountain	07/17/2011	17:35:11
Rainfall rate alarm	4240	Sunset	07/17/2011	16:09:21
Rainfall rate alarm	4240	Sunset	07/17/2011	16:09:21
Rainfall rate alarm	4240	Sunset	07/17/2011	16:09:21
Rainfall rate alarm	4240	Sunset	07/17/2011	15:49:19
Rainfall rate alarm	4240	Sunset	07/17/2011	15:49:19
Rainfall rate alarm	4240	Sunset	07/17/2011	15:49:19
Rainfall rate alarm	4190	Slaughterhouse	07/16/2011	15:20:10
Rainfall rate alarm	4850	Porphyry Mtn	07/16/2011	15:19:59
Rainfall rate alarm	4850	Porphyry Mtn	07/16/2011	15:19:59
Rainfall rate alarm	4850	Porphyry Mtn	07/16/2011	15:19:59
Rainfall rate alarm	4150	Gold Hill	07/16/2011	15:18:17
Rainfall rate alarm	4100	BC Filter Plant	07/14/2011	17:07:00
Rainfall rate alarm	4090	BC Magnolia	07/14/2011	17:03:28
Rainfall rate alarm	4090	BC Magnolia	07/14/2011	17:03:28
Rainfall rate alarm	4090	BC Magnolia	07/14/2011	17:03:28
Rainfall rate alarm	4090	BC Magnolia	07/14/2011	16:56:43
Rainfall rate alarm	2960	Indian Creek	07/14/2011	15:47:36
Rainfall rate alarm	1460	Urban Farm	07/14/2011	15:37:11
Rainfall rate alarm	540	Parker/Mississi	07/14/2011	15:34:30
Rainfall rate alarm	1460	Urban Farm	07/14/2011	15:33:58
Rainfall rate alarm	650	Iliff Pond	07/14/2011	15:30:00
Rainfall rate alarm	650	Iliff Pond	07/14/2011	15:29:26
Rainfall rate alarm	610	Harvard @ Jacks	07/14/2011	15:24:23
Rainfall rate alarm	610	Harvard @ Jacks	07/14/2011	15:23:34
Rainfall rate alarm	620	Quincy/Highline	07/14/2011	15:23:05
Rainfall rate alarm	620	Quincy/Highline	07/14/2011	15:20:58
Rainfall rate alarm	1500	Powers Park	07/14/2011	15:15:50
Rainfall rate alarm	1500	Powers Park	07/14/2011	15:15:29
Rainfall rate alarm	1500	Powers Park	07/14/2011	15:06:33
Rainfall rate alarm	2250	Rosedale	07/14/2011	14:07:30
Rainfall rate alarm	4200	Lazy Acres	07/14/2011	14:02:57



Rainfall rate alarm	4140	Logan Mill	07/14/2011	13:59:52
Rainfall rate alarm	4160	Sunshine	07/14/2011	13:56:52
Rainfall rate alarm	4730	Sugarloaf	07/14/2011	13:50:51
Rainfall rate alarm	4730	Sugarloaf	07/14/2011	13:50:51
Rainfall rate alarm	4730	Sugarloaf	07/14/2011	13:50:51
Rainfall rate alarm	2250	Rosedale	07/14/2011	13:24:44
Rainfall rate alarm	4160	Sunshine	07/14/2011	13:09:15
Rainfall rate alarm	4160	Sunshine	07/13/2011	23:24:46
Rainfall rate alarm	2840	Sulphur Gulch	07/13/2011	23:08:06
Rainfall rate alarm	1920	Brighton	07/13/2011	23:03:48
Rainfall rate alarm	2730	Salisbury Park	07/13/2011	23:03:45
Rainfall rate alarm	2840	Sulphur Gulch	07/13/2011	23:03:41
Rainfall rate alarm	2840	Sulphur Gulch	07/13/2011	22:51:05
Rainfall rate alarm	710	Horseshoe Park	07/13/2011	21:34:25
Rainfall rate alarm	710	Horseshoe Park	07/13/2011	21:33:13
Rainfall rate alarm	2330	Morrison	07/13/2011	21:06:57
Rainfall rate alarm	710	Horseshoe Park	07/13/2011	21:06:53
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	19:06:37
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	19:06:37
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	19:06:37
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	19:06:37
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	19:00:13
Rainfall rate alarm	4160	Sunshine	07/13/2011	18:55:02
Rainfall rate alarm	4160	Sunshine	07/13/2011	18:55:02
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	18:53:34
Rainfall rate alarm	4230	Golden Age	07/13/2011	18:51:07
Rainfall rate alarm	4230	Golden Age	07/13/2011	18:51:07
Rainfall rate alarm	4230	Golden Age	07/13/2011	18:51:07
Rainfall rate alarm	4160	Sunshine	07/13/2011	18:50:15
Rainfall rate alarm	4140	Logan Mill	07/13/2011	18:48:43
Rainfall rate alarm	4850	Porphyry Mtn	07/13/2011	18:46:56
Rainfall rate alarm	4850	Porphyry Mtn	07/13/2011	18:46:56
Rainfall rate alarm	4850	Porphyry Mtn	07/13/2011	18:46:56
Rainfall rate alarm	4150	Gold Hill	07/13/2011	18:46:47
Rainfall rate alarm	4180	Gold Lake	07/13/2011	18:44:17
Rainfall rate alarm	4730	Sugarloaf	07/13/2011	18:43:57
Rainfall rate alarm	4730	Sugarloaf	07/13/2011	18:43:57
Rainfall rate alarm	4730	Sugarloaf	07/13/2011	18:43:57
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:43:10
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:43:10
Rainfall rate alarm	4130	Swiss Peaks	07/13/2011	18:42:39
Rainfall rate alarm	4200	Lazy Acres	07/13/2011	18:41:44
Rainfall rate alarm	4850	Porphyry Mtn	07/13/2011	18:37:35
Rainfall rate alarm	4850	Porphyry Mtn	07/13/2011	18:37:35
Rainfall rate alarm	4850	Porphyry Mtn	07/13/2011	18:37:35
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:36:34
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:33:47
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:33:47
Rainfall rate alarm	4160	Sunshine	07/13/2011	18:32:56
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:32:17
Rainfall rate alarm	4150	Gold Hill	07/13/2011	18:28:18
Rainfall rate alarm	4190	Slaughterhouse	07/13/2011	18:26:14
Rainfall rate alarm	4160	Sunshine	07/13/2011	18:22:14
Rainfall rate alarm	4150	Gold Hill	07/13/2011	18:14:47
Rainfall rate alarm	4130	Swiss Peaks	07/13/2011	18:06:24
Rainfall rate alarm	1570	Brighton ETO	07/13/2011	00:37:23

Rainfall rate alarm	1570	Brighton ETO	07/13/2011	00:08:55
Rainfall rate alarm	2330	Morrison	07/12/2011	23:43:55
Rainfall rate alarm	4290	Red Hill	07/12/2011	22:34:13
Rainfall rate alarm	4230	Golden Age	07/12/2011	22:13:18
Rainfall rate alarm	4230	Golden Age	07/12/2011	22:13:18
Rainfall rate alarm	4230	Golden Age	07/12/2011	22:13:18
Rainfall rate alarm	4200	Lazy Acres	07/12/2011	22:13:13
Rainfall rate alarm	4160	Sunshine	07/12/2011	22:11:57
Rainfall rate alarm	4150	Gold Hill	07/12/2011	22:11:25
Rainfall rate alarm	1570	Brighton ETO	07/12/2011	21:54:55
Rainfall rate alarm	1810	Sand Creek at m	07/12/2011	21:52:59
Rainfall rate alarm	1660	SPR at Henderso	07/12/2011	21:51:17
Rainfall rate alarm	1330	Roslyn	07/12/2011	21:50:57
Rainfall rate alarm	1340	Sanderson at Xa	07/12/2011	21:50:03
Rainfall rate alarm	400	Montview Park	07/12/2011	21:49:21
Rainfall rate alarm	1810	Sand Creek at m	07/12/2011	21:46:49
Rainfall rate alarm	1810	Sand Creek at m	07/12/2011	21:44:19
Rainfall rate alarm	1330	Roslyn	07/12/2011	21:40:58
Rainfall rate alarm	1460	Urban Farm	07/12/2011	21:40:34
Rainfall rate alarm	1810	Sand Creek at m	07/12/2011	21:39:49
Rainfall rate alarm	1460	Urban Farm	07/12/2011	21:38:22
Rainfall rate alarm	1720	Cherry Cr @ Ste	07/12/2011	21:37:09
Rainfall rate alarm	410	Kelly Dam	07/12/2011	21:36:34
Rainfall rate alarm	530	Fire Sta #19	07/12/2011	21:36:14
Rainfall rate alarm	400	Montview Park	07/12/2011	21:36:13
Rainfall rate alarm	610	Harvard @ Jacks	07/12/2011	21:33:25
Rainfall rate alarm	540	Parker/Mississi	07/12/2011	21:31:00
Rainfall rate alarm	530	Fire Sta #19	07/12/2011	21:30:44
Rainfall rate alarm	1720	Cherry Cr @ Ste	07/12/2011	21:30:25
Rainfall rate alarm	610	Harvard @ Jacks	07/12/2011	21:27:06
Rainfall rate alarm	1320	SPR at 3rd Ave	07/12/2011	21:25:54
Rainfall rate alarm	1700	Cherry Cr @ Cha	07/12/2011	21:24:24
Rainfall rate alarm	620	Quincy/Highline	07/12/2011	21:24:36
Rainfall rate alarm	1420	Diamond Hill	07/12/2011	21:24:23
Rainfall rate alarm	1340	Sanderson at Xa	07/12/2011	21:20:19
Rainfall rate alarm	1550	Lakewood CC	07/12/2011	21:20:13
Rainfall rate alarm	1340	Sanderson at Xa	07/12/2011	21:12:41
Rainfall rate alarm	1440	Elbert	07/12/2011	20:58:46
Rainfall rate alarm	830	Side Creek Park	07/12/2011	17:07:09
Rainfall rate alarm	4520	Eagle Ridge	07/11/2011	16:21:51
Rainfall rate alarm	4520	Eagle Ridge	07/11/2011	15:42:50
Rainfall rate alarm	2750	Castle Rock	07/11/2011	14:41:30
Rainfall rate alarm	4190	Slaughterhouse	07/10/2011	19:40:26
Rainfall rate alarm	4240	Sunset	07/10/2011	19:28:24
Rainfall rate alarm	4240	Sunset	07/10/2011	19:28:24
Rainfall rate alarm	4240	Sunset	07/10/2011	19:28:24
Rainfall rate alarm	4350	Conifer Hill	07/10/2011	19:24:53
Rainfall rate alarm	4170	Pine Brook	07/10/2011	18:29:58
Rainfall rate alarm	4750	Louisville Lake	07/09/2011	17:39:03
Rainfall rate alarm	1100	Louisville Rec	07/09/2011	17:33:38
Rainfall rate alarm	2240	Cold Sprg Glch	07/08/2011	20:04:16
Rainfall rate alarm	1330	Roslyn	07/08/2011	19:42:20
Rainfall rate alarm	2240	Cold Sprg Glch	07/08/2011	19:28:02
Rainfall rate alarm	1900	Niver Detention	07/08/2011	19:22:14
Rainfall rate alarm	1200	Broomfield 3207	07/08/2011	19:07:26
Rainfall rate alarm	1200	Broomfield 3207	07/08/2011	19:05:18

Rainfall rate alarm	1200	Broomfield 3207	07/08/2011	19:03:25
Rainfall rate alarm	4190	Slaughterhouse	07/07/2011	19:09:56
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2011	19:03:41
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2011	19:03:41
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2011	19:03:41
Rainfall rate alarm	4200	Lazy Acres	07/07/2011	18:52:01
Rainfall rate alarm	4140	Logan Mill	07/07/2011	18:50:18
Rainfall rate alarm	4340	Riverside	07/07/2011	18:48:54
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:45:00
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:45:00
Rainfall rate alarm	4170	Pine Brook	07/07/2011	18:32:18
Rainfall rate alarm	4100	BC Filter Plant	07/07/2011	18:30:49
Rainfall rate alarm	4090	BC Magnolia	07/07/2011	18:30:23
Rainfall rate alarm	4200	Lazy Acres	07/07/2011	18:29:15
Rainfall rate alarm	4110	Betasso	07/07/2011	18:27:18
Rainfall rate alarm	4100	BC Filter Plant	07/07/2011	18:23:07
Rainfall rate alarm	4200	Lazy Acres	07/07/2011	18:23:05
Rainfall rate alarm	4090	BC Magnolia	07/07/2011	18:21:02
Rainfall rate alarm	4110	Betasso	07/07/2011	18:19:39
Rainfall rate alarm	4080	BC Twin Sisters	07/07/2011	18:14:12
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:12:45
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:12:45
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:12:45
Rainfall rate alarm	4090	BC Magnolia	07/07/2011	18:11:16
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:09:57
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:09:57
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:09:29
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:07:08
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:05:30
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:05:30
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:05:30
Rainfall rate alarm	4080	BC Twin Sisters	07/07/2011	18:05:27
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:04:14
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:04:14
Rainfall rate alarm	4730	Sugarloaf	07/07/2011	18:04:14
Rainfall rate alarm	4130	Swiss Peaks	07/07/2011	18:02:54
Rainfall rate alarm	4570	St. Antons	07/07/2011	17:59:11
Rainfall rate alarm	4080	BC Twin Sisters	07/07/2011	17:54:18
Rainfall rate alarm	4570	St. Antons	07/07/2011	17:54:16
Rainfall rate alarm	850	Flying J	07/07/2011	17:53:54
Rainfall rate alarm	860	Sand Cr at Colf	07/07/2011	17:50:20
Rainfall rate alarm	540	Parker/Mississi	07/07/2011	17:33:29
Rainfall rate alarm	710	Horseshoe Park	07/07/2011	17:33:14
Rainfall rate alarm	1460	Urban Farm	07/07/2011	17:33:09
Rainfall rate alarm	830	Side Creek Park	07/07/2011	17:31:58
Rainfall rate alarm	1720	Cherry Cr @ Ste	07/07/2011	17:31:07
Rainfall rate alarm	1800	Sand Creek Park	07/07/2011	17:30:06
Rainfall rate alarm	810	Granby Ditch @	07/07/2011	17:29:56
Rainfall rate alarm	800	Sable Ditch @ 1	07/07/2011	17:29:48
Rainfall rate alarm	920	Aurora Town Hal	07/07/2011	17:29:23

Rainfall rate alarm	1480	Third Creek at	07/07/2011	17:27:35
Rainfall rate alarm	800	Sable Ditch @ 1	07/07/2011	17:26:45
Rainfall rate alarm	520	Jewell Detentio	07/07/2011	17:26:30
Rainfall rate alarm	810	Granby Ditch @	07/07/2011	17:25:51
Rainfall rate alarm	1320	SPR at 3rd Ave	07/07/2011	17:25:06
Rainfall rate alarm	710	Horseshoe Park	07/07/2011	17:23:51
Rainfall rate alarm	810	Granby Ditch @	07/07/2011	17:22:23
Rainfall rate alarm	810	Granby Ditch @	07/07/2011	17:22:23
Rainfall rate alarm	820	ETG @ Buckley	07/07/2011	17:21:48
Rainfall rate alarm	440	Fire Station #7	07/07/2011	17:21:40
Rainfall rate alarm	920	Aurora Town Hal	07/07/2011	17:21:32
Rainfall rate alarm	700	Toll Gate @ 6th	07/07/2011	17:20:25
Rainfall rate alarm	430	Utah Park	07/07/2011	17:19:49
Rainfall rate alarm	820	ETG @ Buckley	07/07/2011	17:19:43
Rainfall rate alarm	1480	Third Creek at	07/07/2011	17:19:35
Rainfall rate alarm	530	Fire Sta #19	07/07/2011	17:18:53
Rainfall rate alarm	500	Havana Park	07/07/2011	17:18:37
Rainfall rate alarm	810	Granby Ditch @	07/07/2011	17:17:46
Rainfall rate alarm	500	Havana Park	07/07/2011	17:16:40
Rainfall rate alarm	1720	Cherry Cr @ Ste	07/07/2011	17:16:12
Rainfall rate alarm	430	Utah Park	07/07/2011	17:15:44
Rainfall rate alarm	520	Jewell Detentio	07/07/2011	17:15:37
Rainfall rate alarm	510	Virginia Court	07/07/2011	17:15:22
Rainfall rate alarm	1700	Cherry Cr @ Cha	07/07/2011	17:14:24
Rainfall rate alarm	530	Fire Sta #19	07/07/2011	17:13:30
Rainfall rate alarm	500	Havana Park	07/07/2011	17:12:36
Rainfall rate alarm	510	Virginia Court	07/07/2011	17:12:07
Rainfall rate alarm	700	Toll Gate @ 6th	07/07/2011	17:11:18
Rainfall rate alarm	420	Expo Park	07/07/2011	17:11:17
Rainfall rate alarm	530	Fire Sta #19	07/07/2011	17:11:11
Rainfall rate alarm	540	Parker/Mississi	07/07/2011	17:10:43
Rainfall rate alarm	1720	Cherry Cr @ Ste	07/07/2011	17:10:10
Rainfall rate alarm	420	Expo Park	07/07/2011	17:09:30
Rainfall rate alarm	700	Toll Gate @ 6th	07/07/2011	17:08:30
Rainfall rate alarm	1310	LDC at 64th	07/07/2011	17:03:57
Rainfall rate alarm	1360	Denver Zoo	07/07/2011	17:02:53
Rainfall rate alarm	1420	Diamond Hill	07/07/2011	17:02:33
Rainfall rate alarm	1320	SPR at 3rd Ave	07/07/2011	17:01:56
Rainfall rate alarm	1360	Denver Zoo	07/07/2011	17:00:07
Rainfall rate alarm	1460	Urban Farm	07/07/2011	16:59:24
Rainfall rate alarm	500	Havana Park	07/07/2011	16:59:22
Rainfall rate alarm	400	Montview Park	07/07/2011	16:59:00
Rainfall rate alarm	1360	Denver Zoo	07/07/2011	16:58:28
Rainfall rate alarm	1300	Hidden Lake	07/07/2011	16:57:59
Rainfall rate alarm	500	Havana Park	07/07/2011	16:57:23
Rainfall rate alarm	1310	LDC at 64th	07/07/2011	16:56:04
Rainfall rate alarm	1460	Urban Farm	07/07/2011	16:55:54
Rainfall rate alarm	400	Montview Park	07/07/2011	16:55:02
Rainfall rate alarm	1360	Denver Zoo	07/07/2011	16:52:51
Rainfall rate alarm	100	Carr Street	07/07/2011	16:52:31
Rainfall rate alarm	200	Leyden Reservoi	07/07/2011	16:51:44
Rainfall rate alarm	1360	Denver Zoo	07/07/2011	16:48:48
Rainfall rate alarm	320	Sports Complex	07/07/2011	16:48:17
Rainfall rate alarm	1330	Roslyn	07/07/2011	16:46:50
Rainfall rate alarm	1360	Denver Zoo	07/07/2011	16:46:36
Rainfall rate alarm	200	Leyden Reservoi	07/07/2011	16:46:22

Rainfall rate alarm	1360	Denver Zoo	07/07/2011 16:44:09
Rainfall rate alarm	1330	Roslyn	07/07/2011 16:43:18
Rainfall rate alarm	200	Leyden Reservoir	07/07/2011 16:35:53
Rainfall rate alarm	1360	Denver Zoo	07/07/2011 16:33:49
Rainfall rate alarm	2280	Kinney Peak	07/07/2011 16:26:34
Rainfall rate alarm	2930	Spring Valley R	07/07/2011 14:16:24
Rainfall rate alarm	5810	Stump Bump	07/06/2011 14:09:27

# General System Analysis

**Database Name**

P:\A207-UDFCD-Data-Analysis\2011\07-2011\Novastar\_extract\_2011Jul.mdb

**First Date in Database**

7/1/11 12:00 AM

**Total Days**

31.0

**Last Date in Database**

7/31/11 11:59 PM

**Total Hours**

744.0

**Total Records Analyzed**

420,735

**Records by Group**

Wind Gust	64,790	15%
Temperature	64,205	15%
Relative Humidity	62,613	15%
Water Level PT-HSE	51,063	12%
Barometric Pressure	30,564	7%
Precipitation	26,172	6%
Wind Direction	21,731	5%
Wind Speed Average	21,102	5%
Battery Voltage	19,571	5%
Wind Speed Average & Azimuth	17,174	4%
Solar Radiation	9,882	2%
Water Level Float	6,393	2%
Fuel Temperature	5,821	1%
Fuel Moisture	5,806	1%
Water Level PT	4,950	1%
Soil Moisture	2,910	1%
Repeater Status Report	2,365	1%
Wind ALERT	888	0%
Water Level	726	0%
Repeater Pass List	604	0%
12Hr Status Report	508	0%
Unknown IDs	489	0%
Hayman Battery	348	0%
Handar 585 ALARM Status	60	0%
<b>Total</b>	<b>420,735</b>	

**Records by Major Group**

Meteorologic Sensors	292,061	69%
Water Level Sensors	62,406	15%
Rain Sensors	26,172	6%
Soil and Fuel Sensors	14,537	3%
Sensor Status Transmissions	3,537	1%
<b>Total</b>	<b>398,713</b>	

**Traffic Loading Summary**

Alert Reports	420,735	
Average Daily Traffic	13,572	
Average Hourly Traffic	566	
Median Hourly Traffic	531	hour beginning
Peak Hourly Traffic	2,123	July-07 05:00 PM
2nd Max	1,763	July-12 09:00 PM
3rd Max	1,406	July-14 03:00 PM
4th Max	1,357	July-07 06:00 PM
5th Max	1,270	July-13 10:00 PM

# Rain Timer Performance

Analyze Rain Sensors

Rain ID	Description	Rcv	Timer	Exp	Performance
4300	Big Elk Park	19	23:55	62.00	31%
4330	Hansen Rain	28	18:31	62.00	45%
2750	Wx-Castle Rock	30	23:58	62.00	48%
2280	Kinney Peak	35	16:21	62.00	56%
870	Murphy Creek GC	36	14:34	62.00	58%
4270	Cannon Mountain	40	13:12	62.00	65%
540	Parker/Mississippi	42	15:39	62.00	68%
310	Guy Hill Ranch	44	13:33	62.00	71%
4510	Pinewood Springs	45	13:07	62.00	73%
3010	EPC at Hwy 105	46	13:50	62.00	74%
700	Toll Gate @ 6th	47	12:00	62.00	76%
4550	Boulder Jail	47	15:02	62.00	76%
4490	Apple Valley	48	13:30	62.00	77%
4750	Wx-Louisville Lake	48	12:56	62.00	77%
4790	Wx-Button Rock	48	13:37	62.00	77%
2270	Cub Cr below Blue	49	13:39	62.00	79%
2320	Choke Cherry Resvr	49	14:10	62.00	79%
4530	Winiger Ridge	49	12:55	62.00	79%
4770	Wx-Cal-Wood Ranch	49	12:19	62.00	79%
4310	Johnny Park	50	12:19	62.00	81%
1100	Louisville Rec Ctr	51	13:34	62.00	82%
2240	Cold Sprg Glch conf	51	14:01	62.00	82%
4080	Twin Sisters	51	12:33	62.00	82%
4810	Shanahan Ridge	51	12:34	62.00	82%
4820	Doudy Draw	51	14:13	62.00	82%
620	Quincy/Highline	52	13:00	62.00	84%
1200	Broomfield 3207	52	12:55	62.00	84%
2230	Bear Cr below Cub	52	12:40	62.00	84%
2980	Dakan Rd	52	12:59	62.00	84%
4470	Little Narrows	52	13:23	62.00	84%
640	Goldsmith @ Eastman	53	12:24	62.00	85%
1110	Gunbarrel	53	13:03	62.00	85%
2250	Rosedale	53	13:04	62.00	85%
2940	Willow Creek - DougCnty	53	12:18	62.00	85%
2950	DC Public Works	53	13:25	62.00	85%
4010	Crescent	53	12:18	62.00	85%
4020	Rio Grande	53	12:37	62.00	85%
4060	Lakeshore	53	12:16	62.00	85%
4150	Gold Hill	53	12:37	62.00	85%
4570	St. Antons	53	12:37	62.00	85%
1330	Roslyn	54	12:56	62.00	87%
1400	Upper Sloan Det.	54	12:16	62.00	87%
1600	Englewood Dam	54	12:15	62.00	87%
2860	CC at Stroh Rd	54	12:49	62.00	87%
3030	Bingham Lake Park	54	12:51	62.00	87%
4140	Logan Mill	54	13:02	62.00	87%
4180	Gold Lake	54	12:17	62.00	87%
1800	Sand Creek Park	55	12:32	62.00	89%
2370	Red Rocks Park	55	12:14	62.00	89%
4040	Martin Gulch	55	12:51	62.00	89%
4090	Magnolia	55	12:33	62.00	89%
4110	Betasso	55	12:47	62.00	89%
4170	Pine Brook	55	12:46	62.00	89%
4220	Fling's	55	13:35	62.00	89%

4350	Conifer Hill	55	12:15	62.00	89%
110	Ralston Reservoir	56	13:27	62.00	90%
200	Leyden Reservoir	56	12:33	62.00	90%
600	Harvard Gulch Park	56	12:49	62.00	90%
630	Temple Pond at DTC	56	11:56	62.00	90%
760	Mission Viejo Park	56	12:32	62.00	90%
1030	NREL/S. Table Mtn.	56	11:57	62.00	90%
1040	Lena @ U.S. Hwy 6	56	12:33	62.00	90%
1350	Chatfield COE	56	12:18	62.00	90%
1460	Wx-Urban Farm	56	12:55	62.00	90%
1500	Powers Park	56	12:50	62.00	90%
1530	Bear Creek @ Lowell	56	12:32	62.00	90%
2310	Genesee Village	56	11:57	62.00	90%
2330	Morrison	56	12:48	62.00	90%
2340	El Rancho	56	12:16	62.00	90%
2350	Idledale	56	11:57	62.00	90%
2710	Wx-Highlands Ranch WTP	56	12:00	62.00	90%
2840	Sulphur Gulch	56	12:33	62.00	90%
2910	East Cherry Cr-Douglas	56	11:54	62.00	90%
2960	Indian Creek	56	12:00	62.00	90%
2990	Wx-Tomah Rd-DougCnty	56	12:37	62.00	90%
3060	Fire Sta 47	56	12:16	62.00	90%
4070	Bear Peak	56	12:30	62.00	90%
4360	Justice Center	56	12:31	62.00	90%
4710	Wx-Ward C-1	56	12:35	62.00	90%
4830	SBC @ San Souci	56	12:14	62.00	90%
120	West Woods	57	12:14	62.00	92%
210	Leyden Confluence	57	12:14	62.00	92%
220	Upper Leyden	57	12:33	62.00	92%
400	Montview Park	57	12:46	62.00	92%
510	Virginia Court	57	11:57	62.00	92%
710	Horseshoe Park Drop	57	12:30	62.00	92%
900	Wx-Aurora Reservoir	57	12:50	62.00	92%
940	Sampson Gulch	57	12:46	62.00	92%
1050	Jeffco Fairgrounds	57	12:50	62.00	92%
1300	Hidden Lake	57	12:36	62.00	92%
1310	LDC at 64th	57	12:14	62.00	92%
1340	Sanderson at Xavier	57	12:53	62.00	92%
1360	Denver Zoo	57	12:54	62.00	92%
1420	Wx-Diamond Hill	57	12:17	62.00	92%
1520	Wx-Marston Lake North	57	12:52	62.00	92%
1620	Slaughterhouse Glch	57	12:36	62.00	92%
1660	SPR at Henderson	57	12:14	62.00	92%
2810	Pine Cliff Road	57	11:46	62.00	92%
2920	East Cherry Head-Douglas Ci	57	12:00	62.00	92%
3090	Highland Heritage Park	57	12:00	62.00	92%
4050	Walker Ranch	57	12:48	62.00	92%
4160	Sunshine	57	12:51	62.00	92%
4190	Slaughterhouse	57	11:58	62.00	92%
4260	Taylor Mountain	57	12:33	62.00	92%
4290	Red Hill	57	12:28	62.00	92%
150	Nott Creek	58	11:38	62.00	94%
330	Van Bibber @ Hwy 93	58	12:29	62.00	94%
520	Jewell Detention	58	11:57	62.00	94%
610	Harvard @ Jackson	58	11:57	62.00	94%
840	Fire Station 12	58	12:16	62.00	94%
860	Sand Cr at Colfax	58	12:16	62.00	94%
1000	Maple Grove Resv.	58	12:14	62.00	94%
1060	Heritage Square	58	11:57	62.00	94%



1320	SPR at 3rd Ave	58	12:28	62.00	94%
1370	West Metro FS13	58	11:57	62.00	94%
1440	Wx-Elbert	58	12:17	62.00	94%
1550	Lakewood CC	58	11:57	62.00	94%
1810	Sand Creek at mouth	58	12:15	62.00	94%
1920	Wx-Brighton	58	12:00	62.00	94%
2730	Wx-Salisbury Park	58	12:32	62.00	94%
2870	Cottonwood (Apache)	58	12:13	62.00	94%
2930	'x-Spring Valley Rd-DougCrn	58	12:00	62.00	94%
3020	Wx-West Creek WX	58	12:37	62.00	94%
3080	Tallman Gulch	58	12:49	62.00	94%
4200	Lazy Acres	58	12:14	62.00	94%
4230	Golden Age	58	12:13	62.00	94%
4250	Geer Canyon	58	11:58	62.00	94%
4340	Riverside	58	12:14	62.00	94%
4730	Wx-Sugarloaf	58	12:49	62.00	94%
4840	SBC@S Boulder Ditch	58	12:26	62.00	94%
100	Carr Street	59	12:14	62.00	95%
140	Wx-Blue Mountain	59	12:28	62.00	95%
300	Van Bibber Park	59	11:57	62.00	95%
320	Sports Complex	59	11:57	62.00	95%
420	Expo Park	59	12:33	62.00	95%
440	Fire Station #7	59	11:57	62.00	95%
500	Havana Park	59	12:22	62.00	95%
730	No Name @ Quincy	59	12:12	62.00	95%
810	Granby Ditch @ 6th	59	12:28	62.00	95%
830	Side Creek Park	59	12:12	62.00	95%
950	Piney at Liverpool	59	12:13	62.00	95%
1570	Wx-Brighton Ditch	59	12:00	62.00	95%
1700	Cherry Cr @ Champa	59	12:16	62.00	95%
1710	Shop Creek	59	12:16	62.00	95%
2190	Wx-Squaw Mountain	59	12:20	62.00	95%
2850	Cherry Cr bl Bayou Glch	59	12:42	62.00	95%
3050	East/West Trailhead	59	12:00	62.00	95%
4030	Red Garden	59	12:29	62.00	95%
4100	Filter Plant	59	11:59	62.00	95%
4130	Swiss Peaks	59	12:13	62.00	95%
4240	Sunset	59	12:15	62.00	95%
410	Kelly Dam	60	11:58	62.00	97%
430	Utah Park	60	11:56	62.00	97%
530	Fire Station #19	60	11:57	62.00	97%
650	Iliff Pond	60	11:57	62.00	97%
750	Wx-Quincy Reservoir	60	12:11	62.00	97%
800	Sable Ditch @ 18th	60	12:12	62.00	97%
820	ETG @ Buckley	60	12:14	62.00	97%
850	Flying J	60	12:17	62.00	97%
920	Wx-Aurora Town Hall	60	11:59	62.00	97%
970	Pump Sta 3	60	12:16	62.00	97%
1010	Denver West	60	11:57	62.00	97%
1720	Cherry Cr @ Steele	60	11:57	62.00	97%
1900	Niver Detention	60	11:06	62.00	97%
2210	Wx-Hiwan G.C.	60	12:23	62.00	97%
2260	Brook Forest	60	11:36	62.00	97%
2360	Indian Hills	60	11:57	62.00	97%
720	Confluence Pond	61	12:12	62.00	98%
1640	SPR at Union Ave.	61	12:00	62.00	98%
4520	Eagle Ridge	61	12:00	62.00	98%
2900	Russelville Gulch-Douglas	62	12:00	62.00	100%
3070	Newlin Gulch	65	10:53	62.00	105%

2820	Haskins Gulch Conf	69	9:49	62.00	111%
1480	Third Creek at DIA	70	10:10	62.00	113%
2890	Spruce Mt - Douglas	98	6:47	62.00	158%
4850	Porphory Mtn	49	12:41	62.00	79%
4860	Fairview Peak	48	12:40	62.00	77%
5720	Four Mile Creek	21	20:34	62.00	34%
5730	West Creek	54	12:00	62.00	87%
5740	Trail Creek	59	12:15	62.00	95%
5810	Stump Bump	56	12:41	62.00	90%
5860	Cedar Mountain	55	12:56	62.00	89%
5880	Hackett Mountain	55	12:17	62.00	89%
5940	Log Jumper	12	14:00	62.00	19%

Rain Event Performance				Analyze Rain Sensors									
		Reports Received	13,772										
	Systemwide Avg	Total Tips	15,811										
	87.10%	Data Loss	12.90%										
Rain ID	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket
870	43%	28	3	1	0	1	0	1	33	77	44	0	0.0393701
4300	47%	29	15	2	1	1	0	3	48	102	54	0	0.0393701
4330	55%	18	7	1	1	2	1	0	30	55	25	0	0.0393701
2980	58%	27	21	8	0	1	0	0	57	98	41	0	0.0393701
4490	60%	22	7	1	0	2	1	0	33	55	22	0	0.0393701
4790	69%	30	2	3	3	0	0	0	38	55	17	0	0.0393701
2270	71%	9	2	0	1	0	0	0	12	17	5	0	0.0393701
4470	72%	28	7	2	0	1	0	0	38	53	15	0	0.0393701
4520	72%	32	8	3	1	0	0	0	44	61	17	1	0.0393701
1480	72%	75	18	4	3	1	0	0	101	140	39	0	0.0393701
4530	72%	40	17	3	0	0	0	0	60	83	23	0	0.0393701
2280	73%	67	13	6	1	1	0	0	88	120	32	0	0.0393701
4290	73%	30	3	1	1	0	1	0	36	49	13	0	0.0393701
4570	75%	68	13	5	2	0	0	0	88	117	29	0	0.0393701
4730	76%	56	21	2	0	0	0	0	79	104	25	0	0.0393701
1350	76%	33	5	0	0	0	0	1	38	50	12	0	0.0393701
4360	76%	41	11	3	0	0	0	0	55	72	17	0	0.0393701
4510	77%	33	4	4	0	0	0	0	41	53	12	0	0.0393701
1700	78%	66	6	3	1	0	0	1	76	98	22	0	0.0393701
4140	78%	40	9	3	0	0	0	0	52	67	15	0	0.0393701
4270	78%	36	7	3	0	0	0	0	46	59	13	0	0.0393701
4130	78%	62	17	3	0	0	0	0	82	105	23	0	0.0393701
4550	79%	41	5	0	1	0	1	0	48	61	13	0	0.0393701
4190	79%	51	11	3	0	0	0	0	65	82	17	0	0.0393701
4810	80%	59	13	1	0	1	0	0	74	93	19	0	0.0393701
2920	80%	81	6	1	0	0	0	1	88	110	22	0	0.0393701
4080	81%	65	16	0	1	0	0	0	82	101	19	0	0.0393701
2850	82%	36	8	1	0	0	0	0	45	55	10	0	0.0393701
4710	82%	62	8	4	0	0	0	0	74	90	16	0	0.0393701
2230	82%	79	10	2	2	0	0	0	93	113	20	0	0.0393701
310	83%	81	8	6	0	0	0	0	95	115	20	1	0.0393701
1330	83%	99	18	2	1	0	0	0	120	145	25	2	0.0393701
1360	83%	107	13	3	1	1	0	0	125	151	26	0	0.0393701
700	83%	87	17	1	1	0	0	0	106	128	22	0	0.0393701
610	83%	98	14	3	1	0	0	0	116	139	23	0	0.0393701
4060	84%	52	6	3	0	0	0	0	61	73	12	0	0.0393701
1720	84%	96	12	3	0	1	0	0	112	134	22	0	0.0393701
4250	84%	31	4	0	1	0	0	0	36	43	7	0	0.0393701
4090	84%	55	4	2	0	1	0	0	62	74	12	0	0.0393701
1200	85%	76	9	2	1	0	0	0	88	104	16	0	0.0393701
4180	85%	37	6	1	0	0	0	0	44	52	8	0	0.0393701
510	85%	89	13	3	0	0	0	0	105	124	19	1	0.0393701
2840	85%	85	13	1	1	0	0	0	100	118	18	0	0.0393701
400	85%	124	16	5	0	0	0	0	145	171	26	1	0.0393701
2320	85%	91	11	4	0	0	0	0	106	125	19	0	0.0393701
2950	85%	49	5	1	1	0	0	0	56	66	10	0	0.0393701
4310	85%	38	6	1	0	0	0	0	45	53	8	0	0.0393701
1550	85%	95	7	4	0	1	0	0	107	126	19	0	0.0393701
1640	85%	36	2	1	1	0	0	0	40	47	7	0	0.0393701
2960	85%	73	13	1	0	0	0	0	87	102	15	0	0.0393701
4340	85%	48	10	0	0	0	0	0	58	68	10	0	0.0393701
1660	85%	69	12	1	0	0	0	0	82	96	14	0	0.0393701
1320	85%	77	8	2	1	0	0	0	88	103	15	0	0.0393701
4770	85%	39	8	0	0	0	0	0	47	55	8	0	0.0393701
110	86%	50	8	1	0	0	0	0	59	69	10	0	0.0393701
4150	86%	50	8	1	0	0	0	0	59	69	10	0	0.0393701
4220	86%	51	6	2	0	0	0	0	59	69	10	0	0.0393701
1100	86%	54	11	0	0	0	0	0	65	76	11	0	0.0393701
4240	86%	41	6	1	0	0	0	0	48	56	8	0	0.0393701
3090	86%	84	12	0	0	1	0	0	97	113	16	0	0.0393701
4820	86%	61	12	0	0	0	0	0	73	85	12	0	0.0393701
620	86%	74	10	2	0	0	0	0	86	100	14	0	0.0393701
1400	86%	83	11	2	0	0	0	0	96	111	15	0	0.0393701
4020	87%	81	7	2	1	0	0	0	91	105	14	0	0.0393701
2350	87%	77	4	3	1	0	0	0	85	98	13	1	0.0393701
4010	87%	69	8	2	0	0	0	0	79	91	12	0	0.0393701

1810	87%	85	13	1	0	0	0	0	99	114	15	0	0.0393701
4070	87%	58	8	1	0	0	0	0	67	77	10	0	0.0393701
530	87%	105	14	2	0	0	0	0	121	139	18	0	0.0393701
330	88%	67	9	1	0	0	0	0	77	88	11	0	0.0393701
1010	88%	87	9	1	1	0	0	0	98	112	14	0	0.0393701
1110	88%	24	4	0	0	0	0	0	28	32	4	0	0.0393701
2940	88%	50	4	2	0	0	0	0	56	64	8	0	0.0393701
4830	88%	55	7	1	0	0	0	0	63	72	9	0	0.0393701
800	88%	80	11	1	0	0	0	0	92	105	13	0	0.0393701
2370	88%	79	13	0	0	0	0	0	92	105	13	0	0.0393701
1340	88%	80	13	0	0	0	0	0	93	106	13	0	0.0393701
1420	88%	81	11	1	0	0	0	0	93	106	13	0	0.0393701
2890	88%	39	3	0	1	0	0	0	43	49	6	1	0.0393701
1300	88%	92	8	3	0	0	0	0	103	117	14	0	0.0393701
850	88%	75	3	2	1	0	0	1	81	92	11	1	0.0393701
4750	88%	64	10	0	0	0	0	0	74	84	10	0	0.0393701
810	88%	79	8	2	0	0	0	0	89	101	12	0	0.0393701
1060	88%	79	8	2	0	0	0	0	89	101	12	0	0.0393701
4260	88%	73	8	0	1	0	0	0	82	93	11	0	0.0393701
650	88%	84	13	0	0	0	0	0	97	110	13	0	0.0393701
1920	88%	68	7	0	1	0	0	0	76	86	10	0	0.0393701
1310	88%	108	12	2	0	0	0	0	122	138	16	0	0.0393701
540	89%	95	12	1	0	0	0	0	108	122	14	0	0.0393701
1460	89%	131	13	3	0	0	0	0	147	166	19	0	0.0393701
3050	89%	95	14	0	0	0	0	0	109	123	14	0	0.0393701
4200	89%	78	6	1	1	0	0	0	86	97	11	0	0.0393701
420	89%	111	14	1	0	0	0	0	126	142	16	0	0.0393701
1050	89%	79	8	0	1	0	0	0	88	99	11	0	0.0393701
3080	89%	73	6	2	0	0	0	0	81	91	10	0	0.0393701
2710	89%	80	2	0	0	0	0	1	82	92	10	0	0.0393701
3060	89%	67	9	0	0	0	0	0	76	85	9	0	0.0393701
3070	90%	85	7	2	0	0	0	0	94	105	11	0	0.0393701
2340	90%	86	9	1	0	0	0	0	96	107	11	0	0.0393701
2240	90%	95	8	2	0	0	0	0	105	117	12	1	0.0393701
4350	90%	49	6	0	0	0	0	0	55	61	6	0	0.0393701
920	90%	126	10	1	1	0	0	0	138	153	15	0	0.0393701
200	90%	76	5	2	0	0	0	0	83	92	9	0	0.0393701
2860	90%	76	5	2	0	0	0	0	83	92	9	0	0.0393701
500	90%	143	13	2	0	0	0	0	158	175	17	0	0.0393701
1570	90%	127	11	2	0	0	0	0	140	155	15	0	0.0393701
2930	90%	76	7	1	0	0	0	0	84	93	9	0	0.0393701
1000	90%	94	7	2	0	0	0	0	103	114	11	0	0.0393701
1030	90%	78	5	2	0	0	0	0	85	94	9	0	0.0393701
4840	90%	17	2	0	0	0	0	0	19	21	2	0	0.0393701
2330	91%	96	11	0	0	0	0	0	107	118	11	0	0.0393701
4040	91%	71	6	1	0	0	0	0	78	86	8	0	0.0393701
1500	91%	114	13	0	0	0	0	0	127	140	13	0	0.0393701
720	91%	63	7	0	0	0	0	0	70	77	7	0	0.0393701
4230	91%	46	3	1	0	0	0	0	50	55	5	0	0.0393701
860	91%	84	5	2	0	0	0	0	91	100	9	0	0.0393701
140	91%	103	7	2	0	0	0	0	112	123	11	1	0.0393701
2990	91%	47	3	1	0	0	0	0	51	56	5	0	0.0393701
4100	91%	37	4	0	0	0	0	0	41	45	4	0	0.0393701
1520	91%	66	5	1	0	0	0	0	72	79	7	1	0.0393701
4030	91%	76	8	0	0	0	0	0	84	92	8	0	0.0393701
2310	91%	106	9	1	0	0	0	0	116	127	11	0	0.0393701
600	91%	77	8	0	0	0	0	0	85	93	8	0	0.0393701
640	91%	77	8	0	0	0	0	0	85	93	8	0	0.0393701
950	91%	59	4	1	0	0	0	0	64	70	6	0	0.0393701
970	92%	59	6	0	0	0	0	0	65	71	6	0	0.0393701
520	92%	81	6	1	0	0	0	0	88	96	8	0	0.0393701
1800	92%	81	6	1	0	0	0	0	88	96	8	0	0.0393701
2810	92%	51	3	1	0	0	0	0	55	60	5	0	0.0393701
300	92%	73	7	0	0	0	0	0	80	87	7	0	0.0393701
210	92%	68	3	0	1	0	0	0	72	78	6	0	0.0393701
430	92%	99	9	0	0	0	0	0	108	117	9	0	0.0393701
2730	92%	66	6	0	0	0	0	0	72	78	6	0	0.0393701
4160	92%	90	4	2	0	0	0	0	96	104	8	0	0.0393701
830	93%	70	4	1	0	0	0	0	75	81	6	0	0.0393701
220	93%	58	5	0	0	0	0	0	63	68	5	1	0.0393701
3030	93%	59	5	0	0	0	0	0	64	69	5	0	0.0393701

2900	93%	63	2	0	1	0	0	0	66	71	5	0	0.0393701
1440	93%	74	6	0	0	0	0	0	80	86	6	1	0.0393701
100	93%	99	8	0	0	0	0	0	107	115	8	0	0.0393701
940	93%	62	5	0	0	0	0	0	67	72	5	0	0.0393699
4050	93%	51	4	0	0	0	0	0	55	59	4	0	0.0393701
1900	93%	103	8	0	0	0	0	0	111	119	8	0	0.0393701
320	93%	92	5	1	0	0	0	0	98	105	7	2	0.0393701
760	93%	66	5	0	0	0	0	0	71	76	5	0	0.0393701
150	93%	121	7	1	0	0	0	0	129	138	9	0	0.0393701
410	94%	70	3	1	0	0	0	0	74	79	5	0	0.0393701
2190	94%	88	6	0	0	0	0	0	94	100	6	2	0.0393701
1040	94%	90	4	1	0	0	0	0	95	101	6	0	0.0393701
900	94%	60	4	0	0	0	0	0	64	68	4	0	0.0393699
4110	94%	46	3	0	0	0	0	0	49	52	3	0	0.0393701
120	94%	77	5	0	0	0	0	0	82	87	5	0	0.0393701
2820	94%	48	3	0	0	0	0	0	51	54	3	0	0.0393701
840	95%	34	0	1	0	0	0	0	35	37	2	1	0.0393701
820	95%	101	6	0	0	0	0	0	107	113	6	1	0.0393701
3020	95%	102	4	1	0	0	0	0	107	113	6	0	0.0393701
630	95%	124	5	1	0	0	0	0	130	137	7	0	0.0393701
1620	95%	54	1	1	0	0	0	0	56	59	3	1	0.0393701
710	95%	99	5	0	0	0	0	0	104	109	5	0	0.0393701
2250	95%	121	6	0	0	0	0	0	127	133	6	3	0.0393701
2750	96%	64	3	0	0	0	0	0	67	70	3	0	0.0393701
1530	96%	65	3	0	0	0	0	0	68	71	3	0	0.0393701
750	96%	44	2	0	0	0	0	0	46	48	2	0	0.0393701
2870	96%	73	3	0	0	0	0	0	76	79	3	0	0.0393701
2360	96%	98	4	0	0	0	0	0	102	106	4	0	0.0393701
440	96%	74	3	0	0	0	0	0	77	80	3	0	0.0393701
2260	96%	105	4	0	0	0	0	0	109	113	4	0	0.0393701
1370	97%	61	2	0	0	0	0	0	63	65	2	0	0.0393701
4170	97%	31	1	0	0	0	0	0	32	33	1	0	0.0393701
1710	98%	80	2	0	0	0	0	0	82	84	2	0	0.0393701
730	98%	42	1	0	0	0	0	0	43	44	1	0	0.0393701
2910	98%	84	2	0	0	0	0	0	86	88	2	0	0.0393701
2210	98%	98	2	0	0	0	0	0	100	102	2	0	0.0393701
1600	100%	50	0	0	0	0	0	0	50	50	0	0	0.0393701
	<b>Total Tips</b>	<b>12,191</b>	<b>1,308</b>	<b>212</b>	<b>41</b>	<b>16</b>	<b>4</b>	<b>9</b>	<b>13,772</b>	<b>15,811</b>	<b>2,039</b>	<b>24</b>	
3010	68%	151	37	13	6	3	1	2	211	309	98	0	0.01
4850	71%	119	45	9	2	1	0	0	176	249	73	37	0.01
4860	72%	163	58	8	6	0	0	0	235	327	92	51	0.01
5720	60%	18	7	2	0	2	0	3	29	48	19	0	0.0393701
5730	95%	73	4	0	0	0	0	0	77	81	4	0	0.0393701
5740	90%	56	7	0	0	0	0	0	63	70	7	0	0.0393701
5810	95%	89	5	0	0	0	0	0	94	99	5	0	0.0393701
5860	93%	48	2	1	0	0	0	0	51	55	4	0	0.0393701
5880	92%	44	2	1	0	0	0	0	47	51	4	0	0.0393701
5940	67%	37	14	2	3	0	0	1	56	83	27	0	0.0393701

# 2011 Monthly ALERT Radio Traffic Summary

