

Memo



Date: March 4, 2011
To: Kevin Stewart
From: Markus Ritsch
Subject: February 2011 ALERT Data Analysis

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 February 1 through February 28, 2011.

II. General System Analysis Summary

A total of 295,538 ALERT (legacy) data reports were analyzed. Meteorological sensors account for 77 percent, water level sensors 5 percent, and rain sensors 2 percent of the total monthly records.

The system-wide radio traffic loading was 10,555 reports per day with an average hourly loading of 440 reports. The peak hourly traffic loading was 683 reports, which occurred on February 20, between 1:00 AM and 2:00 AM. 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 unacceptable this month.

Table 1. Rain Sensors with Unacceptable Performance Characteristics

Rain ID	Description	Timer	Event	Comments
140	Wx-Blue Mountain	64%	100%	Poor timer performance
1350	Chatfield COE	36%	31%	Poor overall performance
1440	Wx-Elbert	59%	100%	Poor timer performance
1460	Wx-Urban Farm	55%	75%	Poor overall performance
1520	Wx-Marston Lake North	66%	93%	Poor timer performance
1570	Wx-Brighton Ditch	68%	100%	Poor timer performance
4470	Little Narrows	57%	79%	Poor overall performance
4490	Apple Valley	61%	85%	Poor timer performance
4710	Wx-Ward C-1	25%	100%	Poor timer performance

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										
1440	1440										
4470	4470										
1460	1460										
140	140										
1570	4490										

*- 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	7.45	Only the 1-mm rain sensors were included in the analysis
Median	4	Only the 1-mm rain sensors were included in the analysis
Standard deviation	7.07	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	28.67	Only the 1-mm rain sensors were included in the analysis
Minimum total count	1	Numerous stations
Maximum total count	28	ID 4850 (Porphory Mountain)

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											

*- 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
Chatfield COE	1350	A large jump occurred on February 14, 2011 (may be related to field maintenance)

D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 94.56 percent. A total of 487 incrementing reports were received and a total of 515 reports were expected. The total loss of incrementing reports for the month was approximately 5.44 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										
1460	950										
4470	1320										
4330	1330										
2710	840										
1640	1720										

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

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 500 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 500 reports was analyzed to quantify the number of missing rain reports for that hour.

Table 7. Heavy Radio Traffic Periods

Peak Traffic Periods	Reports/hour	Missing Rain Reports (% loss)	Hour Beginning
Peak Hourly Traffic	683	0 %	2/20/2011 1:00 AM
2nd Max	655	0 %	2/27/2011 1:00 AM
3rd Max	649	0 %	2/22/2011 10:00 PM
4th Max	631	0 %	2/17/2011 7:00 AM
5th Max	624	0 %	2/22/2011 9:00 PM

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)	360
Total reports from unknown IDs	2,165
Unknown IDs with only a single received report (potential noise)	212
Total reports from all IDs – RecData Log entire month	295,538
Unknown reports as a fraction of total reports	0.73%

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										

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%										

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 Number of Reports
1299	420
2323	419
2579	418
1470	29
1423	24
3172	20
1923	19
1934	19
1454	18
2811	17
1446	16
1926	16
1919	14
2748	14
2768	13
1929	12
2746	11
5005	11
1953	10
2775	10
1430	9
1631	9
1949	9
2239	9
1453	8
2745	8
2771	8
1433	7
1531	7
1970	7
1415	6
1419	6
1457	6
1486	6
1529	6
1581	6
1933	6
1951	6
1954	6
4766	6
153	5
154	5
1915	5
2714	5
206	4

208	4
1059	4
1451	4
1455	4
1487	4
1579	4
1653	4
1937	4
2215	4
2708	4
2784	4
4831	4

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	133	12:00-12:59	56
1:00-1:59	125	1:00-1:59	57
2:00-2:59	106	2:00-2:59	69
3:00-3:59	92	3:00-3:59	79
4:00-4:59	106	4:00-4:59	49
5:00-5:59	107	5:00-5:59	71
6:00-6:59	104	6:00-6:59	82
7:00-7:59	120	7:00-7:59	88
8:00-8:59	123	8:00-8:59	69
9:00-9:59	86	9:00-9:59	70
10:00-10:59	75	10:00-10:59	97
11:00-11:59	64	11:00-11:59	137

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	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011
140	Wx-Blue Mountain	3	5	4	2	
1420	Wx-Diamond Hill	2	0	3	2	
1440	Wx-Elbert	2	4	2	0	
1460	Wx-Urban Farm	2	2	1	1	
1520	Wx-Marston Lake North	0	0	0	3	
1530	Bear Creek at Lowell	0	0	0	5	
1920	Wx-Brighton	0	0	4	1	
2190	Wx-Squaw Mountain	2	1	1	1	
2750	Wx-Castle Rock	0	0	4	0	
4010	Crescent	13	6	0	0	
4030	Red Garden	4	6	0	0	
4060	Lakeshore	13	7	1	0	
4080	Twin Sisters	5	6	0	0	
4090	Magnolia	65	27	0	1	
4530	Winiger Ridge	3	2	0	0	
4570	St. Antons	3	1	0	0	
4730	Wx-Sugarloaf	7	0	0	0	
4770	Wx-Cal Wood Ranch	2	0	0	0	
4830	SBC-San Souci	7	4	1	0	
4840	SBC-S. Boulder Ditch	3	1	1	0	
4860	Fairview Peak	8	4	0	0	

General System Analysis

Database Name P:\A207-UDFCD-Data-Analysis\2011\02-2011\Novastar_extract_2011Feb.mdb

First Date in Database	2/1/11 12:00 AM	Total Days	28.0
Last Date in Database	2/28/11 11:59 PM	Total Hours	672.0

Total Records Analyzed 295538

Records by Group

Wind Gust	48986	17%
Temperature	45551	15%
Relative Humidity	44563	15%
Wind Speed Average & Azimuth	27331	9%
Barometric Pressure	20932	7%
ALERT/A2 Testing	17099	6%
Wind Direction	16017	5%
Wind Speed Average	15724	5%
Solar Radiation	7515	3%
Water Level PT-HSE	6422	2%
Precipitation	6249	2%
Battery Voltage HSE	5473	2%
Water Level PT	5111	2%
Fuel Temperature	4618	2%
Fuel Moisture	4617	2%
Battery Voltage Analog	3257	1%
Battery	3234	1%
Water Level Float	2952	1%
Battery Voltage Digital	2884	1%
Unknown	2165	1%
Repeater Status Report	2018	1%
Soil Moisture	1896	1%
Repeater Pass List	554	0%
12Hr Status Report	305	0%
Handar 585 ALARM Status	33	0%
Battery Voltage	19	0%
Solar Power	12	0%
Hayman Stage	1	0%
Total	295538	

Records by Major Group

Meteorologic Sensors	226619	77%
Sensor Status Transmissions	14536	5%
Water Level Sensors	14485	5%
Soil and Fuel Sensors	11131	4%
Rain Sensors	6249	2%
Total	273020	

Traffic Loading Summary

Alert Reports	295538	
Average Daily Traffic	10555	
Average Hourly Traffic	440	
Median Hourly Traffic	460	hour beginning
Peak Hourly Traffic	683	2/20/11 1:00 AM
2nd Max	655	2/27/11 1:00 AM
3rd Max	649	2/22/11 10:00 PM
4th Max	631	2/17/11 7:00 AM
5th Max	624	2/22/11 9:00 PM

Rain Timer Performance

Boulder County and UDFCD Weather Stations

Analyze Rain Sensors

12:45

68%

Rain Sensors	Description	Rcv	Timer	Exp	Performance
4710	Wx-Ward C-1	14	12:00	56.00	25%
1460	Wx-Urban Farm	31	16:26	56.00	55%
4470	Little Narrows	32	15:39	56.00	57%
1440	Wx-Elbert	33	17:02	56.00	59%
4490	Apple Valley	34	17:33	56.00	61%
140	Wx-Blue Mountain	36	14:19	56.00	64%
1520	Wx-Marston Lake North	37	13:32	56.00	66%
1570	Wx-Brighton Ditch	38	16:20	56.00	68%
4730	Wx-Sugarloaf	44	14:20	56.00	79%
4510	Pinewood Springs	44	13:50	56.00	79%
4790	Wx-Button Rock	45	14:16	56.00	80%
4190	Slaughterhouse	46	13:54	56.00	82%
4060	Lakeshore	46	13:27	56.00	82%
4270	Cannon Mountain	47	14:00	56.00	84%
4240	Sunset	47	13:55	56.00	84%
4570	St. Antons	48	13:23	56.00	86%
4530	Winiger Ridge	48	13:38	56.00	86%
4330	Hansen Rain	48	13:06	56.00	86%
4310	Johnny Park	48	13:20	56.00	86%
4290	Red Hill	48	13:48	56.00	86%
4220	Fling's	48	13:06	56.00	86%
4200	Lazy Acres	48	13:11	56.00	86%
4080	Twin Sisters	48	13:35	56.00	86%
4860	Fairview Peak	49	13:01	56.00	88%
4140	Logan Mill	49	12:15	56.00	88%
4040	Martin Gulch	49	12:50	56.00	88%
4360	Justice Center	50	13:06	56.00	89%
4350	Conifer Hill	50	13:21	56.00	89%
4170	Pine Brook	50	12:33	56.00	89%
1420	Wx-Diamond Hill	51	12:50	56.00	91%
1920	Wx-Brighton	51	12:58	56.00	91%
920	Wx-Aurora Town Hall	51	12:58	56.00	91%
4850	Porphory Mtn	51	13:04	56.00	91%
4840	SBC@S Boulder Ditch	51	12:29	56.00	91%
4180	Gold Lake	51	12:59	56.00	91%
4070	Bear Peak	51	13:03	56.00	91%
2990	Wx-Tomah Rd-DougCnty	52	12:32	56.00	93%
2190	Wx-Squaw Mountain	52	12:43	56.00	93%
4830	SBC @ San Souci	52	12:30	56.00	93%
4520	Eagle Ridge	52	12:49	56.00	93%
4130	Swiss Peaks	52	12:45	56.00	93%
4090	Magnolia	52	12:29	56.00	93%
3020	Wx-West Creek WX	53	12:31	56.00	95%
2930	Wx-Spring Valley Rd-DougCnty	53	12:28	56.00	95%
2730	Wx-Salisbury Park	53	12:29	56.00	95%
900	Wx-Aurora Reservoir	53	12:14	56.00	95%
4820	Doudy Draw	53	12:13	56.00	95%
4550	Boulder Jail	53	12:13	56.00	95%
4300	Big Elk Park	53	12:13	56.00	95%
4250	Geer Canyon	53	12:30	56.00	95%
4230	Golden Age	53	12:26	56.00	95%
4160	Sunshine	53	12:41	56.00	95%
4150	Gold Hill	53	12:26	56.00	95%
4100	Filter Plant	53	12:28	56.00	95%
4030	Red Garden	53	12:16	56.00	95%
4010	Crescent	53	12:27	56.00	95%
750	Wx-Quincy Reservoir	54	12:12	56.00	96%
4750	Wx-Louisville Lake	54	12:14	56.00	96%
2210	Wx-Hiwan G.C.	54	12:14	56.00	96%
2710	Wx-Highlands Ranch WTP	54	12:00	56.00	96%
4770	Wx-Cal-Wood Ranch	54	12:15	56.00	96%
4810	Shanahan Ridge	54	12:12	56.00	96%
4340	Riverside	54	12:13	56.00	96%
4260	Taylor Mountain	54	12:13	56.00	96%
4050	Walker Ranch	54	12:11	56.00	96%
4020	Rio Grande	54	12:12	56.00	96%
2750	Wx-Castle Rock	55	12:00	56.00	98%
4110	Betasso	55	11:59	56.00	98%

Rain Event Performance				Analyze Rain Sensors										
		Reports Received	855											
	Systemwide Avg	Total Tips	916											
	93.34%	Data Loss	6.66%											
Rain ID	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	miss	hold	bucket	
1350	31%	3	2	0	0	0	0	1	5	16	11	0	0.0393701	
950	50%	1	0	1	0	0	0	0	2	4	2	0	0.0393701	
1320	50%	0	1	0	0	0	0	0	1	2	1	0	0.0393701	
1330	50%	3	0	0	0	1	0	0	4	8	4	0	0.0393701	
840	67%	1	1	0	0	0	0	0	2	3	1	1	0.0393701	
1720	67%	1	1	0	0	0	0	0	2	3	1	0	0.0393701	
1460	75%	2	1	0	0	0	0	0	3	4	1	0	0.0393701	
1660	75%	2	1	0	0	0	0	0	3	4	1	0	0.0393701	
4850	79%	17	4	1	0	0	0	0	22	28	6	0	0.01	
4470	79%	14	5	0	0	0	0	0	19	24	5	0	0.0393701	
4150	80%	3	1	0	0	0	0	0	4	5	1	0	0.0393701	
2330	81%	18	3	1	0	0	0	0	22	27	5	0	0.0393701	
4240	83%	4	1	0	0	0	0	0	5	6	1	0	0.0393701	
4490	85%	9	2	0	0	0	0	0	11	13	2	0	0.0393701	
4790	88%	13	2	0	0	0	0	0	15	17	2	0	0.0393701	
2710	89%	7	1	0	0	0	0	0	8	9	1	0	0.0393701	
4510	89%	22	1	1	0	0	0	0	24	27	3	0	0.0393701	
4030	90%	16	2	0	0	0	0	0	18	20	2	0	0.0393701	
1640	91%	9	1	0	0	0	0	0	10	11	1	0	0.0393701	
3020	91%	9	1	0	0	0	0	0	10	11	1	0	0.0393701	
4140	92%	10	1	0	0	0	0	0	11	12	1	0	0.0393701	
4530	92%	10	1	0	0	0	0	0	11	12	1	0	0.0393701	
4360	92%	11	1	0	0	0	0	0	12	13	1	0	0.0393701	
4520	92%	11	1	0	0	0	0	0	12	13	1	0	0.0393701	
1520	93%	13	1	0	0	0	0	0	14	15	1	0	0.0393701	
4840	93%	13	1	0	0	0	0	0	14	15	1	0	0.0393701	
4110	95%	19	1	0	0	0	0	0	20	21	1	0	0.0393701	
1000	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701	
4310	96%	24	1	0	0	0	0	0	25	26	1	0	0.0393701	
140	100%	7	0	0	0	0	0	0	7	7	0	0	0.0393701	
220	100%	4	0	0	0	0	0	0	4	4	0	2	0.0393701	
300	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
310	100%	2	0	0	0	0	0	0	2	2	0	1	0.0393701	
320	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
330	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701	
400	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
410	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
420	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
440	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
500	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
510	100%	4	0	0	0	0	0	0	4	4	0	1	0.0393701	
520	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
530	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
540	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
600	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
610	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
620	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
630	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
640	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
650	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
700	100%	9	0	0	0	0	0	0	9	9	0	0	0.0393701	
750	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701	
760	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
830	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
900	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393699	
920	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1010	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701	
1030	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1040	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1050	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701	
1060	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701	
1100	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1110	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1310	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1360	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1370	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701	
1400	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1420	100%	18	0	0	0	0	0	0	18	18	0	0	0.0393701	
1440	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1480	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1500	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1530	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1550	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1570	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701	
1600	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1620	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701	
1700	100%	11	0	0	0	0	0	0	11	11	0	0	0.0393701	

1710	100%	4	0	0	0	0	0	0	4	4	0	2	0.0393701
1810	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
1900	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701
1920	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701
2190	100%	1	0	0	0	0	0	0	1	1	0	0	0.0393701
2210	100%	7	0	0	0	0	0	0	7	7	0	0	0.0393701
2320	100%	11	0	0	0	0	0	0	11	11	0	0	0.0393701
2730	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701
2750	100%	6	0	0	0	0	0	0	6	6	0	0	0.0393701
2930	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701
2990	100%	22	0	0	0	0	0	0	22	22	0	0	0.0393701
4010	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701
4020	100%	6	0	0	0	0	0	0	6	6	0	0	0.0393701
4040	100%	20	0	0	0	0	0	0	20	20	0	0	0.0393701
4050	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701
4060	100%	9	0	0	0	0	0	0	9	9	0	0	0.0393701
4070	100%	9	0	0	0	0	0	0	9	9	0	0	0.0393701
4080	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701
4090	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
4100	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701
4130	100%	7	0	0	0	0	0	0	7	7	0	0	0.0393701
4160	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701
4170	100%	9	0	0	0	0	0	0	9	9	0	0	0.0393701
4180	100%	5	0	0	0	0	0	0	5	5	0	0	0.0393701
4190	100%	16	0	0	0	0	0	0	16	16	0	0	0.0393701
4200	100%	13	0	0	0	0	0	0	13	13	0	0	0.0393701
4220	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
4230	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701
4250	100%	26	0	0	0	0	0	0	26	26	0	0	0.0393701
4260	100%	10	0	0	0	0	0	0	10	10	0	0	0.0393701
4270	100%	6	0	0	0	0	0	0	6	6	0	0	0.0393701
4290	100%	26	0	0	0	0	0	0	26	26	0	0	0.0393701
4300	100%	5	0	0	0	0	0	0	5	5	0	0	0.0393701
4330	100%	12	0	0	0	0	0	0	12	12	0	0	0.0393701
4340	100%	17	0	0	0	0	0	0	17	17	0	0	0.0393701
4350	100%	14	0	0	0	0	0	0	14	14	0	0	0.0393701
4550	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
4570	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
4710	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701
4730	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701
4750	100%	7	0	0	0	0	0	0	7	7	0	0	0.0393701
4770	100%	11	0	0	0	0	0	0	11	11	0	0	0.0393701
4810	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
4820	100%	6	0	0	0	0	0	0	6	6	0	0	0.0393701
4830	100%	16	0	0	0	0	0	0	16	16	0	0	0.0393701
4860	100%	2	0	0	0	0	0	0	2	2	0	0	0.01
	Total Tips	810	40	4	0	1	0	1	855	916	61	7	

2011 Monthly ALERT Radio Traffic Summary

