

# Memo

**Date:** November 2, 2012  
**To:** Kevin Stewart  
**From:** Markus Ritsch  
**Subject:** October 2012 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 5.0 base station were analyzed for the period October 1 through October 31, 2012.

## II. General System Analysis Summary

A total of 369,686 legacy ALERT data reports were analyzed. Meteorological sensors account for 47 percent, water level sensors 5 percent, and rain sensors 4 percent of the total monthly records.

The system-wide radio traffic loading was 11,925 reports per day with an average hourly loading of 497 reports. The peak hour of radio traffic loading was 792 reports, which occurred on October 13<sup>th</sup>, between 1:00 PM and 2:00 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	Event	Comments
4310	Johnny Park	63%	100%	
4330	Hansen Rain	85%	76%	
4490	Apple Valley	76%	74%	
4550	Boulder Jail	69%	100%	Only 4 tips recorded for the entire month
4850	Porphory Mtn	58%	92%	
4870	SBC @ SB Road	79%	84%	
111, 112, 114, 116, 117, 118	Ralston Res (Site 110) is sending reports on undefined sensors IDs			
2734	Salisbury Park (site 2730) is sending data on undefined ID			

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

The ALERT and ALERT2 data feeds on the NS5 base station computer were in continuous operation 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*
2320	4550	4270	2890	1710	1660	1660	2270	1640	4850		
1460	1460	4870	1640	2230	2950	2790	2320	2900	4310		
1520	4470	4790	2270	4870	540	4330	3090	2270	4550		
1440	1520	4850	2970	1900	1710	2270	4330	2190	4490		
1000	1440	4570	4490	1660	4330	2320	870	2320	4870		
4520	140	4070	3010	4330	2320	4870	4270	1660	4290		

\*- 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). For the months of January, February, March, October, November and December only the stations that operate year-round are included in the rain event analysis. These stations include all weather stations and the stations in Boulder County.

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

Statistical Parameter	Value	Comments
Mean	22.32	Only the 1-mm rain sensors were included in the analysis
Median	23	Only the 1-mm rain sensors were included in the analysis
Standard deviation	7.32	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	44.29	Only the 1-mm rain sensors were included in the analysis
Minimum total count	4	Boulder Jail (ID 4550)
Maximum total count	37	Shanahan Ridge (ID 4810)

#### 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	18.25	37.67	25.73	10.41	13.59	32.03
2012	4.89	13.57	2.35	30.17	38.97	19.35	73.03	11.31	48.81	22.32			

\*- 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
Wx Cal-Wood Ranch	4770	Looks like maintenance induced jump in count
Hansen Rain	4330	Looks like maintenance induced jump in count
Betasso	4110	Looks like maintenance induced jump in count

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

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 95 percent. A total of 1,467 incrementing reports were received and a total of 1,540 reports were expected. The total loss of incrementing reports for the month was approximately 5 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*
1700	2980	2710	4490	2270	700	3070	3070	3070	4490		
1420	3030	4860	2980	4870	2970	4470	4790	110	4330		
4490	4240	2930	1660	4470	3070	4330	2860	2980	4290		
2980	1520	3030	3010	2980	400	2980	4490	310	4470		
1660	4490	2990	2320	310	2730	4870	2980	4490	4870		
4090	1420	4050	4470	2280	4330	2870	620	2790	4730		

\*-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 1,000 messages per hour are analyzed independently in an attempt to quantify data loss rates from rain sensors using their 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 1,000 reports was analyzed to quantify the number of missing rain reports for that hour.

**Table 7. Periods of Heavy Radio Traffic**

Day	Hour	Expected	Received	Total Load	Loss
13	13	87	87	792	0.00 %
24	18	121	120	787	0.83 %
24	19	69	69	776	0.00 %
16	23	3	3	743	0.00 %
24	20	1	1	728	0.00 %
13	14	30	30	720	0.00 %
5	9	37	37	695	0.00 %

## 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)	373
Total reports from unknown IDs	2,657
Unknown IDs with only a single received report (potential noise)	237
Total reports from all IDs – RecData Log entire month	369,686
Unknown reports as a fraction of total reports	0.72%

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	456	191	683	747	861
2012	692	750	1,575	977	5,469	11,016	453	683	774	2,657		

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%	0.12%	0.05%	0.12%	0.18%	0.22%	0.26%
2012	0.30%	0.25%	0.43%	0.26%	1.37%	2.74%	0.11%	0.18%	0.20%	0.72%		

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 ID	Reports
2734	1,407
2733	110
111	99
112	83
117	65
114	64
118	58
116	53
1470	19
1933	17
2768	10
1446	9
1449	9

## VII. Rain Sensors with Invalid Reports

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

Sensor	Description	Oct	Nov	Dec
1440	Wx-Elbert	3		
4240	Sunset	3		
4290	Red Hill	3		
4850	Porphory Mtn	3		

## VIII. Rainfall Alarms and Intensity Analysis

The following rainfall rate alarms from the Urban Drainage and Flood Control District NovaStar 5.0 Web Server were identified this month.

Urban Drainage and Flood Control District  
ALERT Web Server

===== RAINFALL RATE ALARMS =====

530	Fire Station #19 Precipitation-DN	Plains 10 minute rainfall	10/08/2012 11:37:32
4110	Betasso Precipitation-BO	FMC-BA 0.25" in 1 Hour Rainfall	10/18/2012 11:17:17
4240	Sunset Precipitation-BO	FMC-BA 0.25" in 1 Hour Rainfall	10/23/2012 08:43:54
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.25" in 1 Hour Rainfall	10/19/2012 14:48:14
4730	Sugarloaf Precipitation-BO	FMC-BA 0.25" in 1 Hour Rainfall	10/18/2012 12:30:14
4770	Cal-Wood Ranch Precipitation-BO	Boulder County 10 minute rainfall	10/19/2012 10:13:33

# General System Analysis

**Database Name**

P:\A207-UDFCD-Data-Analysis\2012\10-2012\Novastar\_extract\_2012Oct.mdb

**First Date in Database**

10/1/12 12:00 AM

**Total Days**

31.0

**Last Date in Database**

10/31/12 11:59 PM

**Total Hours**

744.0

**Total Records Analyzed**

369,686

## Records by Group

Wind Data	125,059	34%
Temperature	68,834	19%
Relative Humidity	59,654	16%
Barometric Pressure	33,597	9%
Water Level	18,730	5%
Battery Voltage	18,198	5%
Precipitation	13,182	4%
Solar Radiation	10,553	3%
Fuel Temperature	5,592	2%
Fuel Moisture	5,590	2%
Unknown IDs	2,657	1%
Soil Moisture	2,621	1%
Repeater Status Report	2,451	1%
Flasher Status	1,761	0%
Repeater Pass List	651	0%
12Hr Status Report	464	0%
Handar 585 ALARM Status	58	0%
Hayman Battery	20	0%
Solar Power	11	0%
ALERT/A2 Testing	1	0%
Dewpoint Temperature	1	0%
Evapotranspiration	1	0%
<b>Total</b>	<b>369,686</b>	

## Records by Major Group

Meteorologic Sensors	172,638	47%
Water Level Sensors	18,730	5%
Soil and Fuel Sensors	13,803	4%
Rain Sensors	13,182	4%
Sensor Status Transmissions	3,635	1%
<b>Total</b>	<b>221,988</b>	

## Traffic Loading Summary

Alert Reports	369,686	
Average Daily Traffic	11,925	
Average Hourly Traffic	497	
Median Hourly Traffic	498	hour beginning
Peak Hourly Traffic	792	Oct 13, 1:00 PM
2nd Max	787	Oct 24, 6:00 PM
3rd Max	776	Oct 24, 7:00 PM
4th Max	743	Oct 16, 11:00 PM
5th Max	728	Oct 24, 8:00 PM

# Rain Timer Performance

Analyze Rain Sensors

Rain Sensors	Description	Rcv	Timer	Exp	Performance
4850	Porphory Mtn	36	12:24	62	58%
4310	Johnny Park	39	12:19	62	63%
4550	Boulder Jail	43	11:44	62	69%
4490	Apple Valley	47	15:06	62	76%
4870	SBC @ SB Road	49	13:48	62	79%
4290	Red Hill	50	13:21	62	81%
4790	Wx-Button Rock	52	12:16	62	84%
4470	Little Narrows	52	13:40	62	84%
4270	Cannon Mountain	52	13:01	62	84%
4330	Hansen Rain	53	12:44	62	85%
4860	Fairview Peak	57	12:14	62	92%
4570	St. Antons	57	12:28	62	92%
4510	Pinewood Springs	57	12:14	62	92%
4220	Fling's	57	12:58	62	92%
4100	Filter Plant	57	12:42	62	92%
4030	Red Garden	57	12:29	62	92%
4110	Betasso	58	11:59	62	94%
4020	Rio Grande	58	12:27	62	94%
1920	Wx-Brighton	59	12:27	62	95%
4530	Winiger Ridge	59	12:12	62	95%
4260	Taylor Mountain	59	12:12	62	95%
4250	Geer Canyon	59	11:58	62	95%
4230	Golden Age	59	12:11	62	95%
4180	Gold Lake	59	12:25	62	95%
4130	Swiss Peaks	59	12:13	62	95%
4070	Bear Peak	59	12:27	62	95%
4060	Lakeshore	59	12:12	62	95%
4050	Walker Ranch	59	12:12	62	95%
2730	Wx-Salisbury Park	60	12:13	62	97%
750	Wx-Quincy Reservoir	60	11:57	62	97%
1440	Wx-Elbert	60	12:13	62	97%
140	Wx-Blue Mountain	60	12:13	62	97%
4880	Whispering Pines	60	12:12	62	97%
4840	SBC@S Boulder Ditch	60	11:57	62	97%
4820	Doudy Draw	60	11:57	62	97%
4810	Shanahan Ridge	60	11:57	62	97%
4360	Justice Center	60	12:00	62	97%
4340	Riverside	60	11:57	62	97%
4320	Lee Hill Rain 2012	60	12:11	62	97%
4300	Big Elk Park	60	12:27	62	97%
4170	Pine Brook	60	12:13	62	97%
4040	Martin Gulch	60	12:12	62	97%
4010	Cresent	60	11:58	62	97%
2210	Wx-Hiwan G.C.	61	12:00	62	98%
1420	Wx-Diamond Hill	61	12:00	62	98%
4770	Wx-Cal-Wood Ranch	61	12:00	62	98%
1570	Wx-Brighton Ditch	61	12:12	62	98%
3030	WX-Bingham Lake Park	61	12:10	62	98%
4830	SBC @ San Souci	61	12:01	62	98%
4520	Eagle Ridge	61	11:58	62	98%
4190	Slaughterhouse	61	11:57	62	98%
4160	Sunshine	61	11:57	62	98%
4150	Gold Hill	61	11:57	62	98%
4140	Logan Mill	61	11:58	62	98%

4090	Magnolia	61	11:57	62	98%
4080	Twin Sisters	61	11:57	62	98%
1460	Wx-Urban Farm	62	12:04	62	100%
2990	Wx-Tomah Rd-DougCnty	62	11:58	62	100%
2930	Wx-Spring Valley Rd-DougCnty	62	11:57	62	100%
1520	Wx-Marston Lake North	62	12:00	62	100%
4750	Wx-Louisville Lake	62	11:58	62	100%
2710	Wx-Highlands Ranch WTP	62	12:07	62	100%
2750	Wx-Castle Rock	62	11:49	62	100%
4350	Conifer Hill	62	11:57	62	100%
4200	Lazy Acres	62	11:59	62	100%
3020	Wx-West Creek WX	63	11:43	62	102%
4710	Wx-Ward C-1	63	11:47	62	102%
4240	Sunset	63	11:30	62	102%
4730	Wx-Sugarloaf	64	11:46	62	103%
920	Wx-Aurora Town Hall	67	11:00	62	108%
900	Wx-Aurora Reservoir	78	9:24	62	126%



Rain Event Performance			Reports Received	Analyze Rain Sensors											
		Systemwide Avg	Total Tips	1,540											
		0.95	Data Loss	4.74%											
Description	Sensor	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket	
Apple Valley	4490	74%	10	3	1	0	0	0	0	14	19	5	0	0.0393701	
Hansen Rain	4330	76%	10	2	1	0	0	0	1	13	17	4	0	0.0393701	
Red Hill	4290	81%	22	2	0	0	1	0	0	25	31	6	0	0.0393701	
Little Narrows	4470	82%	18	5	0	0	0	0	0	23	28	5	0	0.0393701	
SBC @ SB Road	4870	84%	21	5	0	0	0	0	0	26	31	5	0	0.0393701	
Wx-Sugarloaf	4730	85%	21	1	0	1	0	0	0	23	27	4	0	0.0393701	
Red Garden	4030	86%	28	1	0	0	1	0	0	30	35	5	0	0.0393701	
Cannon Mountain	4270	89%	15	0	1	0	0	0	0	16	18	2	0	0.0393701	
Martin Gulch	4040	90%	25	3	0	0	0	0	0	28	31	3	0	0.0393701	
Pinewood Springs	4510	91%	27	1	1	0	0	0	0	29	32	3	0	0.0393701	
Wx-Brighton Ditch	1570	91%	19	2	0	0	0	0	0	21	23	2	0	0.0393701	
Wx-Ward C-1	4710	92%	10	1	0	0	0	0	0	11	12	1	0	0.0393701	
Wx-Spring Valley Rd-DougCnty	2930	92%	10	1	0	0	0	0	0	11	12	1	0	0.0393701	
Wx-Button Rock	4790	92%	21	2	0	0	0	0	0	23	25	2	0	0.0393701	
Conifer Hill	4350	92%	22	0	1	0	0	0	0	23	25	2	1	0.0393701	
Crescent	4010	92%	22	2	0	0	0	0	0	24	26	2	0	0.0393701	
Lazy Acres	4200	93%	23	2	0	0	0	0	0	25	27	2	0	0.0393701	
Justice Center	4360	93%	24	2	0	0	0	0	0	26	28	2	0	0.0393701	
Doudy Draw	4820	94%	29	2	0	0	0	0	0	31	33	2	1	0.0393701	
Wx-Aurora Town Hall	920	94%	15	1	0	0	0	0	0	16	17	1	0	0.0393701	
Swiss Peaks	4130	94%	16	1	0	0	0	0	0	17	18	1	0	0.0393701	
Walker Ranch	4050	94%	16	1	0	0	0	0	0	17	18	1	0	0.0393701	
Shanahan Ridge	4810	95%	33	2	0	0	0	0	0	35	37	2	0	0.0393701	
Lee Hill Rain 2012	4320	95%	34	0	1	0	0	0	0	35	37	2	0	0.0393701	
Big Elk Park	4300	95%	17	1	0	0	0	0	0	18	19	1	0	0.0393701	
WX-Bingham Lake Park	3030	95%	18	1	0	0	0	0	0	19	20	1	0	0.0393701	
Gold Lake	4180	95%	19	1	0	0	0	0	0	20	21	1	1	0.0393701	
St. Antons	4570	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701	
Winiger Ridge	4530	96%	23	1	0	0	0	0	0	24	25	1	0	0.0393701	
Whispering Pines	4880	96%	24	1	0	0	0	0	0	25	26	1	0	0.0393701	
Slaughterhouse	4190	96%	24	1	0	0	0	0	0	25	26	1	0	0.0393701	
SBC @ San Souci	4830	97%	33	1	0	0	0	0	0	34	35	1	0	0.0393701	
Wx-West Creek WX	3020	100%	14	0	0	0	0	0	0	14	14	0	0	0.0393701	
Wx-Urban Farm	1460	100%	21	0	0	0	0	0	0	21	21	0	1	0.0393701	
Wx-Tomah Rd-DougCnty	2990	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Wx-Salisbury Park	2730	100%	12	0	0	0	0	0	0	12	12	0	0	0.0393701	
Wx-Quincy Reservoir	750	100%	17	0	0	0	0	0	0	17	17	0	0	0.0393701	
Wx-Marston Lake North	1520	100%	18	0	0	0	0	0	0	18	18	0	0	0.0393701	
Wx-Louisville Lake	4750	100%	22	0	0	0	0	0	0	22	22	0	0	0.0393701	
Wx-Hiwan G.C.	2210	100%	21	0	0	0	0	0	0	21	21	0	0	0.0393701	
Wx-Highlands Ranch WTP	2710	100%	19	0	0	0	0	0	0	19	19	0	0	0.0393701	
Wx-Elbert	1440	100%	6	0	0	0	0	0	0	6	6	0	1	0.0393701	
Wx-Diamond Hill	1420	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Wx-Castle Rock	2750	100%	9	0	0	0	0	0	0	9	9	0	0	0.0393701	
Wx-Cal-Wood Ranch	4770	100%	19	0	0	0	0	0	1	19	19	0	0	0.0393701	
Wx-Brighton	1920	100%	29	0	0	0	0	0	0	29	29	0	0	0.0393701	
Wx-Blue Mountain	140	100%	18	0	0	0	0	0	0	18	18	0	0	0.0393701	
Wx-Aurora Reservoir	900	100%	15	0	0	0	0	0	0	15	15	0	0	0.0393699	
SBC@S Boulder Ditch	4840	100%	36	0	0	0	0	0	0	36	36	0	0	0.0393701	
Boulder Jail	4550	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701	
Eagle Ridge	4520	100%	19	0	0	0	0	0	0	19	19	0	0	0.0393701	
Riverside	4340	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Johnny Park	4310	100%	11	0	0	0	0	0	0	11	11	0	0	0.0393701	
Taylor Mountain	4260	100%	25	0	0	0	0	0	0	25	25	0	0	0.0393701	
Geer Canyon	4250	100%	33	0	0	0	0	0	0	33	33	0	0	0.0393701	
Sunset	4240	100%	18	0	0	0	0	0	0	18	18	0	0	0.0393701	
Golden Age	4230	100%	9	0	0	0	0	0	0	9	9	0	0	0.0393701	
Fling's	4220	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701	
Pine Brook	4170	100%	22	0	0	0	0	0	0	22	22	0	1	0.0393701	
Sunshine	4160	100%	27	0	0	0	0	0	0	27	27	0	0	0.0393701	
Gold Hill	4150	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Logan Mill	4140	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Betasso	4110	100%	28	0	0	0	0	0	1	28	28	0	0	0.0393701	
Filter Plant	4100	100%	16	0	0	0	0	0	0	16	16	0	0	0.0393701	
Magnolia	4090	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701	
Twin Sisters	4080	100%	17	0	0	0	0	0	0	17	17	0	0	0.0393701	
Bear Peak	4070	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Lakeshore	4060	100%	24	0	0	0	0	0	0	24	24	0	0	0.0393701	
Rio Grande	4020	100%	20	0	0	0	0	0	0	20	20	0	0	0.0393701	
TOTAL			1408	50	6	1	2	0	3	1467	1540	73	6		

## 2012 Monthly ALERT Radio Traffic Summary

