

**Albuquerque Environmental Health Department (EHD)
Air Quality Programs (AQP)
Ambient Air Monitoring Section
2015 Annual Network Review for Ambient Air Monitoring**

Under 40 CFR, Part 58, Subpart B, The City of Albuquerque Air Quality Programs (AQP) is required to submit an annual monitoring network review to the Environmental Protection Agency (EPA) regional office in Dallas, Texas. Our objective, when preparing the report, is to optimally apply limited resources to best protect public health.

The network plan describes the framework of the local air quality surveillance system, presents monitoring results over the past three years, provides comparisons to National standards, and discusses future plans. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to formal submission to EPA. (Anticipated dates are May 29 – June 30, 2015.)

This document shows the current network configuration and proposed changes for 2015. It represents the commitment of the AQP to effectively protect the health of the citizens of Albuquerque-Bernalillo County¹ through ambient air monitoring, by using the best affordable technology, and by communicating the data collected as quickly and accurately as possible.

With EPA approval, several monitors were discontinued in 2015 resulting in the closing of site 2ZN (AIRS 35-001-0024) Southeast Heights. The discontinuance of ozone and PM 2.5 at the Southeast Heights site was effective May 1, 2015. Ozone was discontinued at the Westside site (AIRS 35-001-0032) effective April 30, 2015. The PM-10 FRM sampler, POC3, at the Jefferson (AIRS 35-001-0026) was discontinued effective May 1, 2015. With the termination of the monitors the City of Albuquerque will continue to meet our minimum requirements for each criteria pollutant.

Population Statistics

Albuquerque/Bernalillo County, including Rio Rancho and Los Lunas is the State's largest Metropolitan Statistical Area (MSA). The US Census Bureau estimates the 2014 population of the metropolitan statistical area (MSA) which includes portions of the adjacent counties of Sandoval, Valencia, and Torrance as approximately 904,587 (43.3% of the State). <http://quickfacts.census.gov/qfd/index.html#> As the regional center for employment, advanced education, retail commerce, and medical treatment, Albuquerque experiences non-local commuter traffic. The junction of major Interstate 25 (north/south) and Interstate 40 (east/west), adds significant heavy transport traffic between the port of Los Angeles and the East Coast, and between Denver, El Paso, and the US-Mexico Border. However, this traffic is less significant when compared major metropolitan areas.

¹ Excluding Native American and Pueblo Lands within the County.

The map in Figure 1 shows the physical location of all current monitoring sites currently operated by the Air Quality Programs. Two sites are within the city limits of Albuquerque (2ZM – Del Norte and 2ZS – Jefferson). Three other sites (2ZV - South Valley, 2ZW Westside, and 2ZF - Foothills) are in Bernalillo County.

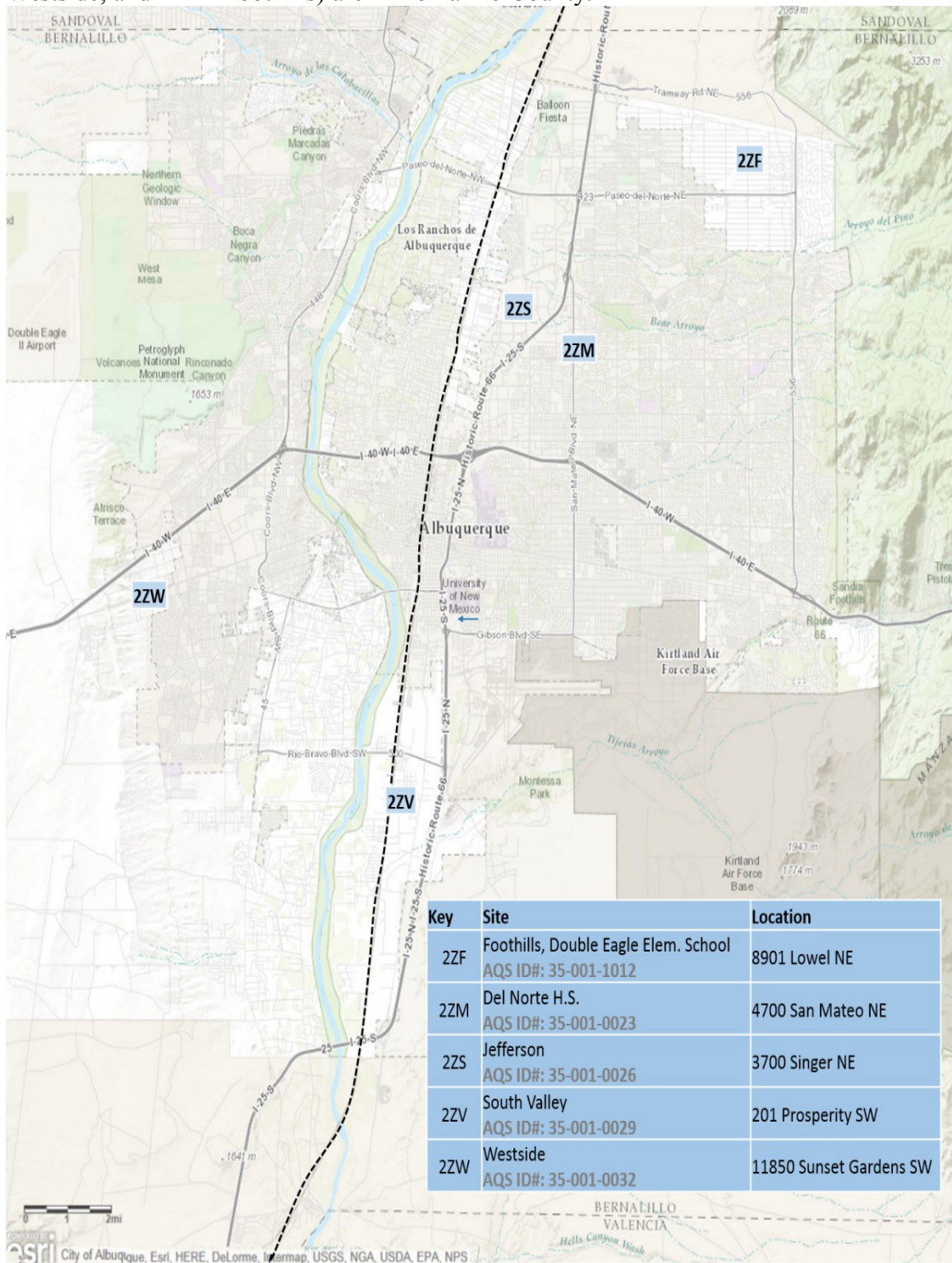


Figure 1: Albuquerque Ambient Air Quality Monitoring Network

Table 1 shows the current network configuration and lists the monitoring equipment operated at each site. Column 1 is the “AQS Site ID#,” a unique identification number assigned to each monitoring site in the network. The AQS (Air Quality System) is a national air monitoring database maintained by the EPA. Data collected from monitoring sites are input into the AQS database within 90 days following the end of each calendar quarter. <<http://www.epa.gov/ttn/airs/aqsdatamart/access.htm>>

Column 2 gives the local site designation, name, location, and “affiliation.” Site longitude and latitude are in columns 3 and 4. Columns 5 through 9 list the monitors at each site and their associated parameters. Site photographs accompany the hard-copy version of this report on CD. During the public review period monitoring site photographs can be downloaded from the City of Albuquerque – Air Quality Programs website <http://www.cabq.gov/airquality/>

Proposed changes to the network are discussed in the next section, by pollutant.

Table 1 Albuquerque 2015 Ambient Air Monitoring Network

AQS Site ID#	Address/ Location	Longitude	Latitude	Pollutants Measured	Monitor Type	Sampling Method	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA
35-001-0012	2ZF Foothills 8901 Lowell NE	-106.508	35.1852	O3	SLAMS	442-1-1 087	UV Photometric	Ultra Violet Absorbtion	continous	Highest Concentration	Neighborhood	Urban Scale	ABQ
				PM2.5	SLAMS	Not in AQS	Beta Absorbtion	Not In AQS	continous	General Background	Neighborhood	Not in AQS	ABQ
35-001-0023	2ZM Del Norte 4700A San Mateo NE Affiliation: Ncore	-106.586	35.13426	O3	SLAMS	44201-1 087	UV Photometric	Ultra Violet Absorbtion	continous	General Background	Population Exposure	Yes	ABQ
				HSCO	SLAMS	42101-1 593	Non Dispersive IR	Gas Filter Correlation Teledyne	continous	General Background	Unknown	Yes	ABQ
				NO2	SLAMS	42602-1 600	Chemiluminescence	Chemiluminescence	continous	General Background	Unknown	Yes	ABQ
				NOy	SLAMS	42600 599	Chemiluminescence	Chemiluminescence Teledyne API	continous	General Background	Neighborhood	NA	ABQ
				HSSO2	SLAMS	42406 600	UV fluorecence	UV Fluorescence T100U	continous	General Background	Population Exposure	Yes	ABQ
				Lead	SLAMS	14129-1 110	EQL-0710-192	Emission Spectra ICAP (ICP-OES)	Daily 1/6	General Background	Population Exposure	Yes	ABQ
				PM10	SLAMS	81102 122	Beta Absorbtion	Beta Attenuation	continous	General Background	Population Exposure	Yes	ABQ
				PM2.5	SLAMS	88101 170	Beta Absorbtion	Beta Attenuation	continous	General Background	Population Exposure	Yes	ABQ
				PM2.5 collocated	SLAMS	88101-2 118	Gravimetric	Gravimetric	Daily 1/3	General Background	Other	Yes	ABQ
				Speciation	Special Purpose	68103	Multiple	810-MetOne SASS 811MetOne	Daily 1/3	General Background	Mixture of Other, Population	NA	ABQ
				Carbon Speciation	Special Purpose	88320 88321	Multiple	826, 831, 839, 840, 841, 842 URG 300N	Daily 1/3	General Background	Mixture of Other, Population	NA	ABQ
PM10-PM2.5	SLAMS	86101-185	Beta Absorbtion	Beta Attenuation	continous	General Background	Population Exposure	Yes	ABQ				

Table 1 - Continued

35-001-0026	2ZS Jefferson 3700 Singer NE	-106.605	35.1443	PM10	SLAMS	88102-1 127	Gravimetric	Gravimetric	Daily 1/1	Significant Source	Middle	Yes	ABQ
				PM10	SLAMS	88102-2 176	TEOM	TEOM Gravimetric	continuous	Significant Source	Middle	Yes	ABQ
35-001-0029	2ZV South Valley 201 Prosperity SW	-106.657	35.01708	O3	SLAMS	44201-1 087	UV Photometric	Ultra Violet Absorption	continuous	General Background	Neighborhood	Yes	ABQ
				HSCO	SLAMS	42101-1 593	Non Dispersive IR	Gas Filter Correlation Teledyne	continuous	Highest Concentration	Neighborhood	Yes	ABQ
				PM10	SLAMS	81102-3 122	Beta Absorption	Beta Attenuation	continuous	General Background	Neighborhood	Yes	ABQ
				PM2.5	SLAMS	88101 170	Beta Absorption	Beta Attenuation	continuous	General Background	Neighborhood	Yes	ABQ
35-001-0032	2ZW Westside 11850 Sunset Gardens SW	-106.579	35.0631	PM10	Does not meet siting criteria	Not in AQS	TEOM	TEOM Gravimetric	continuous	General Background	Neighborhood	Not in AQS	ABQ

Summary of changes

Changes proposed for the upcoming year were developed in consultation with EPA Region VI, to better align the network with minimum network requirements.

Ground Level Ozone (O3)

Based on population, Table D-2 of Appendix D to Part 58, 40 CFR specifies a minimum of two (2) SLAMS (State and Local Air Monitoring Stations) ozone monitors.

Current – Currently the AQP exceeds the minimum requirements with three (3) ozone monitors, all categorized as SLAMS.

**Table 2: Ozone Design Value, part per million (ppm)
4th highest 8-hr**

Year	Avg.
2012	0.070
2013	0.070
2014	0.064
Design Value	0.068

The Ozone monitor at 2ZN SE Heights (AIRS 35-001-0024) was shut down on May 1, 2015 and at 2ZW Westside (AIRS 35-001-0032) was shut down effective on April 30, 2015. An end date in AQS for site 2ZN SE Heights (AIRS 35-001-0024) was May 1, 2015 and the AQS end date for 2ZW Westside (AIRS 35-001-0032) was April 30, 2015.

Future – No further changes are being considered at this time.

PM_{2.5}

According to Table D-5 of Appendix D to Part 58, 40 CFR two SLAMS PM_{2.5} sites (3 monitors) are required in Albuquerque.

Current – AQP operates four PM_{2.5} monitoring sites in Albuquerque-Bernalillo County with three (3) total monitors, all of which are identified as SLAMS.

The 2ZM site (35-001-0023) operates a continuous Met One BAM 1020 as the Primary sampler and a Partisol 2025 sequential sampler with 2.5 micron inlet cutoff to record 24-hour averages PM_{2.5} on a 1/3 schedule as a co-located sampler.

The 2ZN site (AIRS 35-001-0024) was misclassified by COA as an AQI site, but was actually a SLAMS site. This site has been discontinued as of April 30, 2015 per the 2014 ANR.

The 2ZV site (AIRS 35-001-0029) was originally classified as an AQI site prior to the September 17, 2012 installation of the Met One BAM 1020’s. With assistance with Region 6 the PM 2.5 was reclassified as a SLAMS site and is NAAQS comparable as of

12/07/12 using sampling method 88101. The PM 2.5 design value for the 2ZV is incomplete, and the 2012 data set does not meet the criteria completeness. The 2ZV PM 2.5 design value will be included in the 2016 ANR.

The site 2ZF (AIRS 35-001-1012) operates a Met One BAM 1020 and is classified for AQI purposes only.

Table 3: PM_{2.5} Design Value, microgram per cubic meter (ug/m3)

Site Name AQS #	Sampling Schedule	2012 Daily 98 th %	2013 Daily 98 th %	2014 Daily 98 th %	Design Value (% Daily NAAQS)	2012 Arithmetic Mean	2013 Arithmetic Mean	2014 Arithmetic Mean	Design Value (% Annual NAAQS)	Collocated with continuous PM2.5
Del Norte 0023	Continuous	16.3	14.1	16.7	44.9%	7.4	5.7	6.4	54.2%	Yes
SE Heights 0024	Continuous	20	14.5	13.5	45.7%	7.3	6.2	5.5	52.8%	No
South Valley 0029	Continuous	23.5*	18.5	20.1	36.8%	11.3*	8.7	11.3	55.6%	No

Annual values not meeting completeness criteria are marked with an asterisk (*)

Future – No further changes are being considered at this time.

PM₁₀

PM data is used by the AQI to accurately portray PM in neighborhoods, to enforce our local dust control regulation, and to issue high wind advisory and health alerts. High PM values are the most common cause of AQI warning days in Albuquerque.

Current – We currently operate at four sites with a total of 5 monitors. At this time, three of the sites and four monitors are NAAQS comparable.

The 2ZM NCore site (AQS 35-001-0023) operates a continuous FEM that produces data used for both PM₁₀ and PM_{10-2.5}.

The 2ZS Jefferson site (AQS 35-001-0026) has one PM₁₀ FRM (Primary) with a sampling frequency of 1/1, a TEOM continuous monitor at 2ZS (35-001-0029) (Co-located), all of which are NAAQS comparable. The POC 2 FRM located at 2ZS Jefferson site was shut down effective May 1, 2105.

The status of the PM₁₀ monitor at 2ZV (AQS 35-001-0029) was upgraded to SLAMS starting 1/1/2011 after site remediation and has 4-years of valid data.

The AQP operates a PM₁₀ a continuous monitor at 2ZW (AQS 35-001-0032) however, the PM siting criteria for site 2ZW are not met, and PM₁₀ data is not be compared to the

NAAQS. The continuous monitor is denoted “Special Purpose” and is used for AQI and to issue Health Advisories. As a result, data from that site does not appear in Table 5. Data from the special purpose monitor is also being archived to characterize the PM background prior to anticipated development.

Table 4 calculates the design values for each comparable PM10 site in the Albuquerque Network that has sufficient historical data. (Reference PM10 SIP Development Guideline, US EPA-450/2-86-001, June 1987). Using the highest single monitor design value, the Network Design value is 119.3ug/m3 which is 79.53% of the NAAQS. Based on population, 40CFR, Part 58, Table D-4 of Appendix D specifies two-to-four sites as the minimum requirement for low concentration MSA.

Table 4. PM₁₀ Design Values, ug/m³

				Maximum Values				
2ZM Del Norte		year	#of Observations	1st	2nd	3rd	4th	
	35-001-0023	1	2012	258	141	95	88	70
	35-001-0023	1	2013	356	104	92	88	85
	35-001-0023	1	2014	344	118	106	95	90
			Total	958	121.0	97.7	90.3	81.7
				3rd high				
				Maximum Values				
2ZS Singer		year	#of Observations	1st	2nd	3rd	4th	
	35-001-0026	1	2012	362	178	111	93	92
	35-001-0026	1	2013	353	114	98	94	93
	35-001-0026	1	2014	342	127	123	115	115
			Total	1057	139.7	110.7	100.7	100.0
				4th high				
				Maximum Values				
2ZV South Valley		year	#of Observations	1st	2nd	3rd	4th	
	35-001-0029	3	2012	316	205	145	120	115
	35-001-0029	3	2013	335	142	120	117	110
	35-001-0029	3	2014	360	147	131	121	106
			Total	1011	164.7	132.0	119.3	110.3
				3rd high				

Design Value	119.3	ug/m ³
PM-10 24hr STD	150	ug/m ³
% Annual NAAQS	79.53%	

Future

No changes are planned in the coming year.

Sulfur Dioxide (SO2)

Current – AQP operates an SO2 monitor at site 2ZM (AQS 35-001-0023), the NCore location. Table 6 shows that thus far the SO2 monitor is measuring only trace levels, less than 10% of the NAAQS.

Table 6: SO2 Design Value, part per billion (ppb)
99th

2ZM Del Norte	year	99th percentile
35-001-0023	2012	6
35-001-0023	2013	4
35-001-0023	2014	6
Design Value		5.0

Future –No changes are planned in the coming year.

Oxides of Nitrogen

Current – The AQP monitors NO, NO₂, NO_x, and NO_y² at 2ZM (AQS 35-001-0023), the NCore location. Table 7 shows that NO₂ levels are low. (Annual 98th percentile 1-hour values averaged over 3 years = 45.47 ppb compared to a standard of 100.)

Table 7: NO2 Design Value, ppb

2ZM Del Norte 35-001-0023

	2012	2013	2014	3 year Design Value
98th Percentile				
1-Hr Concentration (PPB)	49	45.4	42	45.47

Associated with the new NO₂ NAAQS is a requirement to monitor NO₂ Roadway emissions. A new site will have to be located and built-up since none of the current sites are within 50-meters of the nearest traffic lane. The AQP identified several potential sites and participated in a national pilot program with passive sampling. The worst-case data from that study showed Albuquerque well within NAAQS annual limits and with a high statistically probability of staying below the 1-hour standard. As a result, Albuquerque is on the “build and hold” list with an anticipated start date of 1/1/2017.

Future –No changes are planned for Oxides of Nitrogen in the coming year.

²

Carbon Monoxide (CO)

Current –Albuquerque/Bernalillo County remains in maintenance status for CO until 2016. The AQP currently operates two (2) CO monitors. One for NCore and the other is for CO Maintenance. Both run year around.

Table 8: CO Design Value, ppm

2ZM Del Norte 35-001-0023			2ZV South Valley 35-001-0029		
1 Hour			1 Hour		
Year	1st Max	2nd Max	Year	1st Max	2nd Max
2013	1.5	1.4	2013	2.7	2.4
2014	1.5	1.5	2014	3.2	2.8

2ZM Del Norte 35-001-0023			2ZV South Valley 35-001-0029		
8 Hour			8 Hour		
Year	1st Max	2nd Max	Year	1st Max	2nd Max
2013	0.9	0.9	2013	1.1	1.1
2014	1.3	1.2	2014	1.3	1.2

The hourly high value over the past 2 years is 3.2 ppm (2ZV, 2014) which is 9.1% of the hourly NAAQS (35 ppm). The 8-hour high average is 1.3 ppm (2ZV and 2ZM, 2014) which is 14.4% of the 8-hour NAAQS (9 ppm). Because of the low CO concentrations, both monitors are now ‘high sensitivity.’

Future –No changes are planned for CO in the coming year. CO monitors will continue to operate year around at the CO Maintenance site (AQS 35-001-0029), and at the designated NCore site (AQS 35-001-0023).

Lead (Pb)

Current – A TSP (Total Suspended Particulate) monitor was installed and operational by December 18, 2011 at the Del Norte site (AIRS 35-001-0023). Sufficient Lead data has been obtained since the inception of the sampler. With the design value of 4.4% attainment issues are not anticipated.

Table 9: Lead Design Values

2ZM Del Norte 35-001-0023	
Year	ug/m ³
2012	0.01
2013	0.01
2014	0.00
Design Value	4.4%

Future –No changes are planned for Lead in the coming year.

PM_{2.5} Chemical Speciation

Current – CFR Part 58 regulations require the operation of a speciation sampler at approved NCore sites. The Del Norte (AQS 35-001-0023) site in Albuquerque operates a MetOne Super SASS and a URG sampler for EC/OC (Elemental and Organic Carbon). Speciation filters are sent to RTI, the EPA national analysis contractor in North Carolina, and data is reported by the contractor to the AQS. The AQP also uses this data in local studies to correlate with data from other samplers.

Both samplers now operate on the full 1/3 schedule.

Visibility

Current – Albuquerque-Bernalillo County does not have any Class I areas³. It exhibits good visibility much of the year but does experience a brown cloud in winter months, particularly during temperature inversions. For that reason, the AQP currently operates a Nephelometer and an Aethelometer at one site, (AQS 35-001-0023).

Community Scale Monitoring (CSM)

Current – The AQP has participated previously in CSM studies, but there were none in the past year.

National Core Monitoring Network (NCore)

The NCore site has been fully operational and compliant since the 2010 start-up date. Individual NCore instruments have been addressed in the appropriate sections above. The 2ZM site also has NCore compliant meteorology.

³ AQCR 152 includes the Albuquerque MSA and has two Class 1 areas that may be impacted by the Albuquerque airshed, just as we were impacted by the fires in 2011 - 2013.

Albuquerque – Bernalillo County Network

Table 10 shows the 2015 network before the changes proposed in this review.

Table 10: Albuquerque-Bernalillo Co 2015 Air Monitoring Network

Station Description	Gases					TSP	PM10		PM2.5			Other	
Station Name (Site Code), AIRs #	Ozone	CO	H S - N O 2	HS- NOy	HS- SO2	Lead	Sequential	Contin uous	Contin uous	Sequenti al	Speciati on	Neph a- lomet er	Aethe- lomet er
Foothills (2ZF), 35-001-1012	API T400								BAM 1020				
Del Norte HS (2ZM), 35-001-0023	API T400	API T300U	A P I T 2 0 0	API T200 U	API T100 U	TE- 5170		BAM 1020	BAM 1020	Thermo 2025 Col 1/3	MetOne Super SASS & URG Carbon 1/3	Optec NGN- 2	McGe e AE21
Jefferson (2ZS), 35-001-0026							Thermo 2025i 1/1	R & P 1400					
South Valley (2ZV), 35-001-0029	API 400E	API T300U						BAM 1020	BAM 1020				
Westside (2ZW), 35-001-0032								R & P 1400					
	SLAMS/NCORE			SLAMS		Special Purpose							

