2006

A Study of environmental justice in relation to air pollution and income

Christian A. Malveaux
University of Nevada Las Vegas

CHRISTIAN A. MALVEAUX

A STUDY OF ENVIRONMETAL JUSTICE IN RELATION TO AIR POLLUTION AND INCOME

CONTENT ADVISOR:
David M. Hassenzahl, Assistant Professor, Department of Environmental Studies, University of Nevada, Las Vegas, david.hassenzahl@ccmail.nevada.edu

COURSE ADVISOR:
Helen R. Neill, Associate Professor, Department of Environmental Studies, University of Nevada, Las Vegas, neill@ccmail.nevada.edu

ABSTRACT: The purpose of this paper is come to a conclusion on whether or not air pollution and income levels are connected. There is an ongoing pollution problem in Las Vegas. The question that will be attempted to answer in this is paper is: Is there a difference in the amount of air pollution in affluent parts of the Las Vegas Valley and the less affluent parts of the valley? Information and data regarding air pollution is gathered from the Clark County website and other literature. Information on income levels is gathered from journals and literature pertinent to the subject and from the U.S. Census website. My hypothesis is that there will be a correlation between air pollution and income level. I think that the higher the income the less air pollutants there will be in the area.

INTRODUCTION:

Air pollution is a serious problem in the Las Vegas Valley. This has been proven. For a long time the Las Vegas valley has dealt with this issue. There are a few major air pollutants that this paper will examine. Those pollutants include particulate matter (PM 10 and PM 2.5), Carbon monoxide (CO), and Ozone (O3).

The Environmental Protection Agency (EPA) defines particulate matter as a mixture of solid particles and liquid droplets found in the air (www.epa.gov). There are two main types of particulate matter. The two types are PM 10 and PM 2.5. Some particles are large enough to be seen as dust or dirt (PM 10), while other, very fine particles are harder to see with the naked eye (PM 2.5). The numbers at the end of PM stand for size in micrometers in diameter. There for, PM 10 stands for, any airborne particle less than 10 micrometers in diameter and PM 2.5 would be any airborne particle less than 2.5 micrometer in diameter.

There are two totally different types of ozone, with two complete different effects on the environment. Ozone is a protective layer over the earth, which blocks ultraviolet rays. On the other hand, ground level ozone is the main source of smog in the United States (EPA Oct. 20, 2004). This ground level ozone forms in the air, usually during summer months. For the purpose of this paper, ground level ozone will be used and it will be referred to as simply ozone.

The final pollutant that will be examined in this paper is Carbon monoxide (CO). CO is a colorless and odorless gas. It forms when fuel is not completely burned. CO usually forms in places with heavy traffic congestion, like big or overpopulated cities,

such as Las Vegas. Although Las Vegas is a city that is under constant expansion, it is evident that the roadways are extremely overpopulated.

There is no real answer in sight to this problem. There are many cause and effects that this air pollution problem has the valley. Some of the effects are easy to see or pick out, while with other effects, it maybe necessary to look at things in deeper scope. The whole issue of air pollution and just bad environmental instances in general has brought many people in the environmental studies field to wonder about one effect in general. That effect is on a socioeconomic scale. This is where the subject of environmental justice comes into play.

It has never really been proven that there a problem with environmental justice. At the time being it is more of a theory than anything else. As defined by the EPA, environmental justice can is: "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." The EPA also goes on the state the following about environmental justice: "EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work." Now, the thought on environmental injustice can be describes as; a mind set in which certain minority populations are forced, through their lack of access to decision making and policy making process to live with a disproportionate share of environmental "bads", and suffer the related public health problems and quality of life burdens (Agyeman, Bullard, Evans, 2003). So, from the

definitions above, environmental justice is a guideline for how people should be treated. Environmental injustice comes about when those guidelines have been tampered with. This paper will in no way, shape, or form, try to prove this theory true or false. This paper will merely discuss evidence that has been found on the possible issue, examine data concerning Las Vegas and its air pollution in certain parts of the city, and then formulate some sort of conclusion as to what the problem may be. The main question in this thesis paper is: Is there a difference in the amount of air pollution in affluent parts of the Las Vegas Valley and less affluent parts of the valley?

LITERATURE REVIEW:

In the Las Vegas valley, there is a major issue with air pollution. Carbon monoxide and ozone are major air pollutants, but particulate matter seems to be the most abundant of these major air pollutants. It is my thought that particulate matter has become so abundant by wind blowing through the valley and picking up dust and other particles, especially at construction sites. Another source of particulate matter could be exhaust from vehicles and just vehicles driving around the valley on dusty roadways or dirt roads and kicking up dust. This issue causes Clark County to fail numerous air quality tests. This is an ever-growing problem, with no sufficient answer in sight. Beyond causing Clark County to fail air quality tests, this particulate matter also poses detrimental health problems to those who live in the county. Large particulate matter tends to sit in the respiratory tract, whereas smaller particulate matters have a tendency to invade much deeper into the lungs and is retained there for a longer period of time. But, for the purpose of this paper, health effects will not be an issue that is thoroughly covered.

As stated before, particulate matter vary widely in size. The particle mix in many US cities is dominated by fine particles, those being less than 2.5 micrometers in diameter. These are the particles that are usually carried far distances by wind and other types of weather. Coarse particles, measuring between 2.5 and 10 micrometers seem to cause the greatest health effects. Sometime this particulate matter will stay suspended in the air. These particles are called total suspended particulates (TSP). The larger particles or TSP's tend to accumulate wherever they first settle. The image below shows an example of the varied sizes. Each of the two most abundant sizes, PM 10 and PM 2.5 are very small. The figure shows that they both pale in comparison to a small strand of hair. Even when compared to the fine beach sand, it can be seen that both sizes of PM are extremely small.

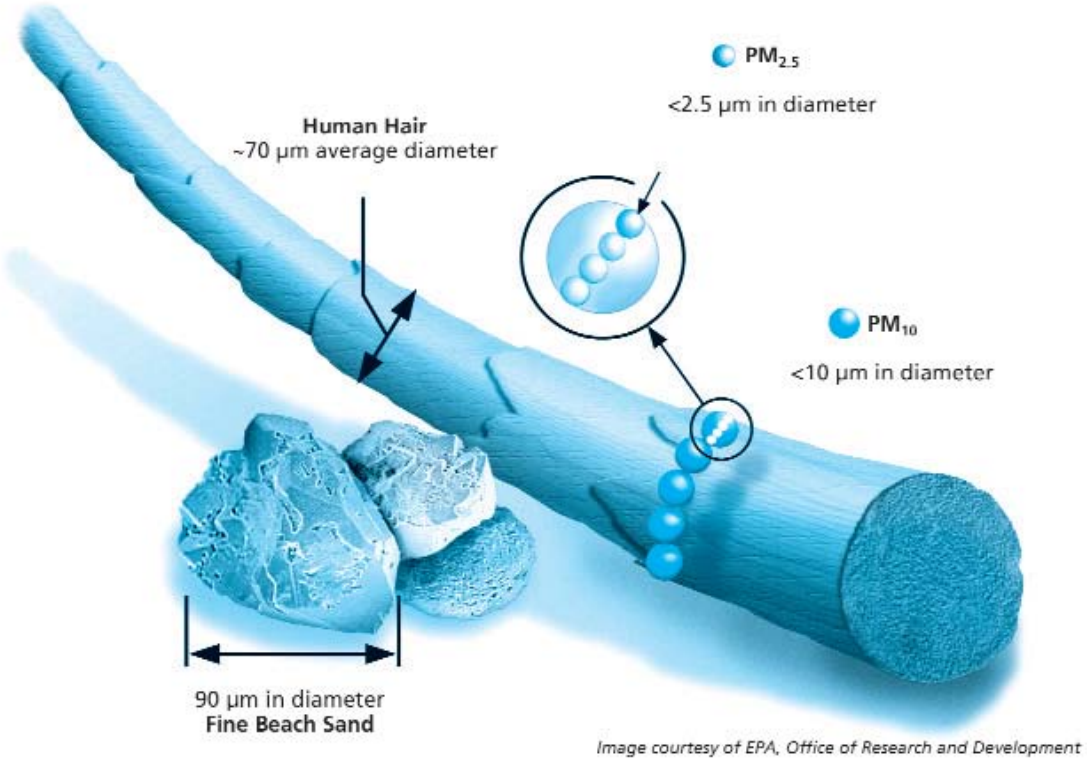

Image courtesy of EPA, Office of Research and Development

Beyond there being varied sizes of particulate matter, we know that there are also

two specific types of particulate matter (PM). The first type is primary PM. This type of matter is directly emitted into the air. It usually consists of carbon emitted from cars, heavy equipment, forest fires, or even burning waste. The second type is secondary PM. This type of PM usually forms in the air from gases. This type of PM consists of sulfates from sulfur dioxide (SO2) emissions and nitrates from nitrogen oxide (NO2) emissions from cars.

Particulate matter is a major source of haze, which reduces vision in many parts of the US. PM can also affect soil and vegetation by settling on soil and water, which upsets nutrients and other chemical balances.

Air pollution is major problem in many parts of the US and mainly in the major cities. But is there parts in certain cities that are worse off than other parts of the city in relation to air pollution or environmental health in general? If so, this would suggest that there could be an environmental justice issue. That is, there could be cases of environmental injustice.

There can be many categories in which to place environmental injustice, including race, age, sex, location, and economic status. This paper will focus on location and economic status. This theory of environmental injustice has not been in existence all that long. Only since the mid 1980's has there been recognition that minorities and people in "broken down" parts of town, face much greater environmental risk than those who live in "upscale" parts of town. Around this time, there were two major studies that took a deep and hard look at the relationship between the location of potential environment hazards-landfills, dumps, power plants, etc.-and the population characteristics of the surrounding area. Some of those characteristics included race, age, sex, and income

level. The first study, which was done in 1983 by the Government Accounting Office's study and the second study, done in 1987, the United Church of Christ's Commission for racial justice, both came to similar conclusions. They both found that those who are minorities and those who suffer from a low income are disproportionately affected by environmental hazards. In the coming years, there would be many more court case that would justify the arguments for environmental injustice. In 1997 a study conducted in Los Angles investigated the demographics of waste distribution and found that minorities are three times more likely than whites to live within half a mile of hazardous waste treatment or dumping centers. The study also found that low income residents in Southeast Los Angeles often live near industrial plants that recycle glass, metal, and concrete. Another study was conducted in Louisiana along a stretch of the Mississippi river dubbed "Cancer Alley". This place delivers more than a quarter of the nation's petrochemical product, but the state of Louisiana still remains one of the poorest in the nation. It is a stretch of seven oil refineries and hundreds of industrial power plants. 90% of the Mossville (Cancer Alley) residents are African American. This study showed that these residents that were tested had three times more dioxin in their blood than the average US citizen. Another incident that could be used as an example to argue that environmental injustice does occur, took place in Chester, PA. Chester is home to one of the largest collections of waste facilities in the country. In the west end neighborhood of Chester, lies a trash incinerator, a sewage treatment plant, and a medical waste plant. 95% of the residents who live closest to these facilities are African American.

To help people realize if they are being subjected to some form of environmental injustice, the Environmental Defense fund has created an "Environmental Scorecard".

The “scorecard” showed that at least 117 counties in the US were subjecting their residents to some form of environmental injustice. Cancer risk from hazardous air pollutants, release of toxic chemicals, superfund sites, and facilities emitting criteria air pollutants are all objects on the “scorecard”.

In 1994, former president Bill Clinton did sign Executive Order 12898, which requires federal agencies to address issue of environmental justice. This order has at least made the public aware of the fact that there could be a problem with environmental justice, which is most definitely a step in the right direction.

METHODS:

The Clark County website (Feb 15, 2005-Apr. 13, 2005) provides information on real time monitoring stations around the county. Also, the Census website (Mar. 20, 2005) provides pertinent information concerning income for different spots in the valley. There are 18 different spots in the county that monitor air pollution. I have chosen to use 16 of those stations for the purpose of this paper. The pollutants that are measured are carbon monoxide, particulate matter (PM 2.5 and PM 10), and ozone. Some stations do not measure all of the air pollutants that were previously named. What is measured from station to station varies. I examined AQI (Air Quality Index) summaries graphs to formulate figures. I also looked into hourly updated on air pollutant graphs, summary tables and charts, and temperature and wind speed to help me further formulate some of my figures.

To figure out how and if socioeconomic status had anything to do with the level of air pollution at a certain monitoring station, I looked at a few real estate websites that contained pertinent information regarding income and other socioeconomic subjects. My

main source of socioeconomic matter came from the U.S. Census website (http://factfinder.census.gov) website. To locate the necessary information regarding income, I looked up zip codes according to where each monitoring station was located. I then examined the amount of certain air pollutant levels and median family income for a particular zip code and compared that to other zip codes and their median family income level.

After I gathered income information and air pollution information, The two of them were put together to come to a conclusion on the primary research question; Is there a difference in the amount of air pollution in affluent parts of the Las Vegas Valley than there is in the less wealthy parts of the valley?

RESULTS:

City Center station measured a daily averagse of 23 ug/m3 for Pm 10, did not monitor PM 2.5, 1.37 ppm for CO, and 0.003 ppm for Ozone. The average household income for this area was $28,106. The Craig Road station measured daily averages of 31 ug/m3 for PM 10, 7 ug/m3 for PM 2.5, did not measure CO, and 0.011for Ozone. The average household income was $32,764. The East Sahara Station measured daily averages of 37 ug/m3 for PM 10, 6 ug/m3 for PM 2.5, 1.60 ppm for CO, and did not measure Ozone. The average household income for this area was $ 41,536. The Freedom Park station measured a daily average of 3.42 ppm for CO and did not measure PM 10, PM 2.5, or Ozone. The average household income for this area was $28,106. The Green Valley station measured daily averages of 75 ug/m3 for PM 10 and 7 ug/m3 for PM 2.5. Neither CO nor Ozone were monitored at this station. The average household income for this area was $62,385. The Henderson station measured daily

averages of 29 ug/m3 for PM 10 and 0.016 ppm for Ozone. This station did not monitor PM 2.5 and CO. The average household income for this area was $55,842. The J.D. Smith School station measured daily averages of 34 ug/m3 for PM 10, 5 ug/m3 for PM 2.5, 2.07 ppm for CO, and 0.002 ppm for Ozone. The average household income for this area was $32,894. The Joe Neal School station measure daily averages of 38 ug/m3 for PM 10 and 0.019 for Ozone. Neither PM 2.5 nor CO were monitored at this station. The average household income for this area was $63,175. The Lone Mountain station measured daily averages of 16 ug/m3 for PM 10 and 0.012 ppm for Ozone. PM 2.5 and CO were not monitored at this station. The average household income for this area was $68,602. The South Las Vegas Blvd station measured a daily average of 0.93 ppm for CO. PM 10, PM 2.5, and Ozone were not monitored at this station. The average household income for this area was $33,860. The Orr School station measured daily averages of 44 ug/m3 for PM 10 and 1.00 ppm for CO. Ozone and PM 2.5 were not monitored at this station. The average household income for this area was $36,193. The Paul Meyer Park station measured daily averages of 29 ug/m3 for PM 10 and 0.024 ppm for Ozone. CO and PM 2.5 were not monitored at this station. The average household income for this area was $60,301. The Palo Verde School station measured daily averages of 12 ug/m3 for PM 10 and 2.25 ppm for CO. Ozone and PM 2.5 were not monitored at this station. The average household income for this area was $76,058. The Sunrise Acres School station measured daily averages of 27 ug/m3 for PM 10 and 2.25 ppm for Co. PM 2.5 and Ozone were not monitored at this station. The average household income for this area was $28,106. The Walter Johnson School station measured daily averages of 26 ug/m3 for PM 10 and 0.023 ppm for Ozone. CO and PM

2.5 were not monitored at this station. The average household income for this area was $61,226. The Winterwood station measured daily average of 1.15 ppm for CO and 0.005 ppm for Ozone. PM 10 and PM 2.5 were not monitored at this station. The average household income for this area was $54,384.

For a further analysis of the results one may look at charts 1-4. Each individual charts shows a line graph for a specific air pollutant in relation to income levels. Represented on the y-axis is the income level and represented on the x-axis are the measurements for certain air pollutants.

DISCUSSION:

My hypothesis was that there is a direct correlation between air pollution and income levels or socioeconomics status. I figured that the more wealthy areas of town would have a low level of air pollution and the poorer areas of town would have high levels of air pollution. I thought this because the wealthier areas of town may have the means to fight, mitigate, or at least get a hold on the air pollution problem more so than the poorer parts of town. I also figured that the wealthier parts of town would be the newer and developing parts of town, like the Summerlin or Green Valley areas. And those involved with trying to mitigate the problem may see that it makes more sense to put tax dollars into these parts of town instead of areas that are a little more rundown like Old Downtown and some parts of North Las Vegas. So, by examining my hypothesis one may think that I was trying to imply that environmental injustice does exist. Well, that is one way to look at. Or you could look at it from the perspective of common sense, in which I was thinking that money would be put into places that have a strong future. Either way you look at it, my hypothesis was neither wrong nor right, but inconclusive.

There are times that as I went through my research, I would tell myself that my hypothesis was on point and than at other times it just seemed way off. And for the most part, it really varied from pollutant to pollutant. Particulate Matter, PM 10 to be exact will be the first air pollutant to be discussed in this results section. As far as particulate matter measurements go, the standard units are ug/m3 (micrograms per cubic meter), where the higher the number, the worse the air pollution. 13 of the stations 16 stations monitored particulate matter. For PM 10 the highest average was 75 ug/m3. This average came from the Green Valley station, one of the wealthier areas of town, with an average household income of $62,385. The City Center station, which along with the Sunrise Acre station had the lowest average household income at $28,106, and measured a daily average of 23 ug/m3 which happens to be the third lowest measurement for PM 10. Before any research had been performed I thought that Green Valley area would have a low amount of PM 10 because I know the area to be nice and houses in the area are somewhat expensive, which led me to believe that average income would be high in the area. I was correct about the average income part, but I was incorrect on the air pollution correlated to income issue.

When I looked at the Palo Verde School station and the Lone Mountain station I realized that in these two cases my hypothesis was correct. The Palo Verde School station came in as the wealthiest area with an average household income of $76,058. The Lone Mountain area was the second wealthiest area with a household income of $68,602. These two areas also had the lowest measurements of PM 10 with the Palo Verde area measuring at 12 ug/m3 and the Lone Mountain area measuring at 16 ug/m3. So, it's fitting that the most affluent part of town had the lowest measurement for PM 10.

There were a couple other instances in which my hypothesis could be correct. The Henderson and Walter Johnson School station, two of the wealthier areas had household income levels of $55,842 and $61,226 respectively and both measured below the 32 ug/m3 averages for the county. The Henderson area measured 29 ug/m3 and the Walter Johnson School area measured 26 ug/m3.

The range for PM 10 measurements was from 12ug/m3 to 75 ug/m3 and other than the two that were pointed out in the paragraph before last, there was really no correlation between PM 10 measurements and average income level. For example, The Joe Neal School station measured PM 10's daily average at 38 ug/m3 and the Craig Road station and the PM 10 average at 31 ug/m3. The average household income for the Joe Neal School area is $30,411 more then the average income for the Craig Road area. The rest of the income figures and air pollution figures are basically in the middle of the pack. All the figures can be examined in greater detail in chart 1 which can be found in the appendix.

Only 5 of the 16 station measured PM 2.5. The average measurement for PM 2.5 was about 6 and the range was from 5 ug/m3 to 7 ug/m3. This is another instance in which my hypothesis was inconclusive. The wealthiest area, which was stated above is the Palo Verde area. This area had an average of 7 ug/m3 which was the highest measurement of PM 2.5. The Green Valley area with an average household income of $62,385 ($2^{nd}$ wealthiest) and the Craig Road area with an average household income of $32,764 both measured an average of 7 ug/m3 as well.

The East Sahara station which has an average household income of $41,536 measured in at 6 ug/m3. And the J.D. Smith School station, which has an average household income of $32,894 had an average of PM 2.5 level of 5 ug/m3.

From these numbers, there is really no conclusion that can be made as far as environmental justice goes. The most affluent area of the five had the highest level of PM 2.5, but so did one of the lesser affluent areas. And nothing can really be deduced from the other three.

The next air pollutant examined was Carbon Monoxide (CO), which is measured in parts per million (ppm). 8 of the 16 stations measured CO. For the most part, my hypothesis was proven correct in this area. The highest average level of CO was 3.42 ppm. This level was recorded at the Freedom Park station, which has an average household income of $28,106. That happened to be the lowest average household income. Then next highest CO level was recorded at Sunrise Acres School, which had the same average household income level as the Freedom Park area. The CO level was 2.25 ppm. And then the next highest level could be found at the J.D. Smith School station which measured at 2.07 ppm and had an average household income level of $32,894.

But the two lowest average measurements were found at the South Las Vegas Blvd. station, 0.93 ppm and at the Orr School station, 1.00 ppm. The South Las Vegas Blvd areas had an average household income of $33,860 and the Orr school area had an average household income level of $36,193. When I first looked at the South L.V. Blvd area the income did not make sense to me. The location of that monitoring station is South Las Vegas Blvd and Tropicana Ave. That is right on The Strip, which is by far the

wealthier parts of town. But one thing that was not taken into consideration was that only household incomes would be measure. So none of the business that happens on that part of The Strip was really taken into consideration. This is a very busy part of town, which is why I was surprised to see the CO level so low. There is so much stop and go traffic and so much exhaust being let out in that area, which is why the low CO level shocked me.

The final pollutant that was examined is Ozone (O3). For the third time the most affluent area has the highest average level of an air pollutant. The Palo Verde station measured an average of 0.043 ppm of O3. The next two highest measurements came from the next two wealthiest areas that were taken into consideration for this project. The Paul Meyer Park station measured an average O3 level of 0.024 ppm and, where the average household income is $60,301. And the Walter Johnson School station measuread an average O3 level of 0.023 ppm, where the average household income level is $61,226. The lowest average level for O3 was found at the City Center station. The measurement was 0.003 ppm. The average household income for this area is $28,106. These three examples would prove my hypothesis wrong all together. But then next lowest average O3 level was found at Winterwood station, where the average household income was $54,348.

An exact location of all of these stations can be found in table 1 of the appendix.

CONCLUSION:

At the beginning of this paper I stated that I thought there would be a direct correlation between air pollution and income level. I thought that the more prosperous an

area was the less air pollution there would be and vice versa. But my results turned out to be inconclusive. Many areas that I figured would have low air pollution because of the income level turned to be some the highest of all the stations. I would attribute this to the constant development of those areas. There is constantly some kind of construction going on to develop the area. Construction seems to be one the main causes of air pollution. Also with these areas being as new as they are, there tends to be constant traffic, which is also another major source of air pollution. So the more these areas are building up, it could possibly mean more pollution

Also, as I stated in the beginning of this paper, I was not trying to prove that environmental injustice exists, but just to further the on going study on this subject matter. There is so much that can be looked into in relation to this subject. This paper only focused on income level. There are subjects such race, age, and sex that could also be added into the mix the further examine the possible issue of environmental injustice.

As for now, the issue stands as it is. There are strong arguments for both sides. No one has proven that the problem does in fact exist, there are only theories, but then again, no one has proven that it does not exist. So for now we will let the issue stand at what it is.

APPENDIX

Table 1

Station Name	Station ID	Income Level	PM 10	PM 2.5	CO	OZONE
City Center	CC	$28,106	23 ug/m3	n/a	1.37 ppm	0.003 ppm
Craig Road	CR	$32,764	31 ug/m3	7 ug/m3	n/a	0.011 ppm
E. Sahara	ES	$41,536	37 ug/m3	6 ug/m3	1.60 ppm	n/a
Freedom Park	FP	$28,106	n/a	n/a	3.42 ppm	n/a
Green Valley	GC	$62,385	75 ug/m3	7 ug/m3	n/a	n/a
Henderson	HN	$55,842	29 ug/m3	n/a	n/a	0.016 ppm
J.D. Smith School	JD	$32,894	34ug/m3	5 ug/m3	2.07 ppm	0.002 ppm
Joe Neal School	JO	$63,175	38 ug/m3	n/a	n/a	0.019 ppm
Lone Mountain	LO	$68,602	16 ug/m3	n/a	n/a	0.012 ppm
S. Las Vegas Blvd.	MG	$33,860	n/a	n/a	0.93 ppm	n/a
Orr School	OR	$36,193	44 ug/m3	n/a	1.00 ppm	n/a
Paul Meyer Park	PM	$60,301	29 ug/m3	n/a	n/a	0.024 ppm
Palo Verde School	PV	$76,058	12 ug/m3	7 ug/m3	n/a	0.043 ppm
Sunrise Acres School	SA	$28,106	27 ug/m3	n/a	2.25 ppm	n/a
Walter Johnson School	WJ	$61,226	26 ug/m3	n/a	n/a	0.023 ppm
Winterwood	WW	$54,384	n/a	n/a	1.15 ppm	0.005 ppm

APPENDIX CONT.

Table 2

	Station I.D.	Station Name	Station Address	Station Vicinity
1	AP	Apex	12101 US. Highway 93	I-15 and US93 Great Basin Hwy
2	BC	Boulder City	1005 Industrial Rd.	Industrial & US93 Nevada Hwy
3	CC	City Center	559 North 7th St.	Bonanza Rd. & 7th St.
4	CR	Craig Rd.	4701 Mitchell St.	Craig Rd. & I-15
5	EC	E. Charleston	2801 E. Charleston Blvd.	E. Charleston Blvd. & 28th St.
6	ES	E. Sahara	4001 E. Sahara Ave.	E. Sahara Ave. & Lamb Blvd.
7	FP	Freedom Park	650 N. Mojave Rd	N. Mojave Rd. & E. Bonanza Rd
8	GV	Green Valley	248 Arroyo Grande Blvd.	Arroyo Grande Blvd. & Santiago Dr.
9	HN	Henderson	545 W. Lake Mead Dr.	W. Lake Mead Dr. & Van Wagenen St.
10	JD	J. D. Smith School	1301B E. Tonopah Ave.	Bruce St. & Tonopah Ave.
11	JN	Jean	1965 State Hwy 161	Jean, NV
12	JO	Joe Neal School	6651 W. Azure Ave.	Tropical Pkwy. & Rebecca Rd.
13	LO	Lone Mountain	3525 N. Valadez St.	W. Gowan Rd. & Buffalo Dr.
14	MG	S. Las Vegas Blvd.	3799 S. Las Vegas Blvd.	S. Las Vegas Blvd. & Tropicana Ave.
15	MQ	Mesquite	465 E. Old Mill Rd.	Old Mill Rd. / Mimosa Way
16	OR	Orr School	1562 E. Katie Ave.	Maryland Pkwy. & E. Flamingo Rd.
17	PM	Paul Meyer Park	4525 New Forest Dr.	W. Flamingo Rd. & Tenaya Way
18	PV	Palo Verde School	333 Pavillion Center Dr.	W. Alta Dr. & Pavillion Center Dr.

19	SA	Sunrise Acres School	2501 S. Sunrise Ave.	N. Eastern Ave. & Sunrise Ave.
20	ST	Searchlight	103 Highway 95 Rd.	Searchlight, NV
21	WJ	Walter Johnson School	7701 Ducharme Ave.	W. Alta Dr. & Buffalo Dr.
22	WW	Winterwood	5483 Club House Dr.	E. Sahara Ave. & Winterwood Blvd.