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Measurements of Environmental Noise and Toxic Gas Emissions in Minna and Suleja, Niger State

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Abstract

Every year, tens of thousands of people worldwide lose their lives to ailments that can be traced to environmental pollution arising principally from the release of toxic effluents into the atmosphere and surrounding ecosystems. Also, it has now been recognized that noise pollution pose a serious threat to the quality of life enjoyed by the general populace. It is with these facts in mind that this project work was undertaken in order that a veritable document on environmental pollution indices of the major towns of Niger State would be produced. The core objective of this project work is the production of a reference document (a sort of "environmental atlas" or "environmental map") for the different precincts or wards of the different towns surveyed; this final document highlights the various environmental pollution indices for the areas surveyed. GPS-referenced dataset for noise levels and gas concentrations were collected from Minna and Suleja. This dataset was analysed and the results show that noise pollution is prevalent in the areas surveyed; the same can also be said for gaseous pollution.

INTRODUCTION

Every year, tens of thousands of people worldwide lose their lives to ailments that can be traced to environmental pollution arising principally from the release of toxic effluents into the atmosphere and surrounding ecosystems. Jonah *et al.* (2009) pointed out that noise pollution has now been recognised as a serious threat to the quality of life enjoyed by the larger population. It is with these facts in mind that this project work was undertaken in order that a veritable document on environmental pollution indices of the major towns of Niger State would be produced. Environmental pollution is the contamination of the earth's environment with materials that interfere with human health, the quality of life, or the natural functioning of the ecosystem (living organisms and their physical surroundings). Whilst some environmental pollution is a result of natural causes (such as volcanic eruptions), most are caused by human activities. Environmental pollution has been classified into different categories that include air pollution, water pollution, solid pollution, hazardous pollution, and noise pollution (Encarta, 2007). Pollution, is in its different forms, degrades the environment and affects the quality of life of the organisms that depend on this environment for survival; this especially holds true for the interaction of man and his environment. As humans become more skilful and adept at exploiting their environment, it becomes obvious that certain practices are quite detrimental to the "health" of the environment. Noise pollution or environmental noise is displeasing human or machine created sound that disrupts the activity or happiness of human life. Noise health effects are the health consequences of elevated sound levels. Elevated work place or other noise can cause hearing impairment, hypertension, ischemic heart disease, annoyance, sleep disturbance and decreased school performance. Changes in the immune system and birth defects have also been attributed to noise exposure (www.wikipedia.org/noise_health_effects). The most significant health problem caused by noise pollution is hearing loss (i.e. deafness). Any noise appreciable louder than talking can damage the delicate hear cells in the cochlea. Hearing loss is somewhat inevitable with age. However, it has been pointed out that due to loud music and a generally noisy environment, young people in the United States have a rate of impaired hearing 2.5 times greater than their parents and grandparents (Schmid, 2007). The mechanism of hearing loss arises from trauma to sterocilia of the cochlea, the principal fluid-filled structure of the inner ear. The pinna combined with the middle ear amplified sound pressure levels by a factor of twenty, so that extremely high sound pressure levels arrive in the cochlea, even from moderate atmospheric sound stimuli (Henderson et al., 2006). Noise has been associated with important cardiovascular health problems (Ising *et al.*, 1999). In 1999, the World Health Organization concluded that the available evidence suggested a weak association between long-term noise exposure above 67-70dB(A) and hypertension (Berglund *et al.*, 1999). More recent studies have suggested that noise levels of 50dbA at night may also increase the risk of myocardial infraction by chronically elevating cortical production (Maschke, 2003; Franssen *et al.*, 2004). The large minority of today's cars and heavy duty vehicles travel by using internal combustion engines that burn petrol or other fossil fuels. The process of burning petrol to power cars and heavy duty vehicles contributes to air pollution by releasing a variety of emissions into the atmosphere. Emissions that are released directly into the atmosphere from the exhaust pipes of cars and trucks are the primary sources of vehicular pollution. Motor vehicles also pollute the air during the process of manufacturing, refueling, and from the emissions associated with oil refining and distribution of the fuel they burn. Primary pollution from motor vehicles is pollution that is emitted directly into the atmosphere, whereas secondary pollution results from chemical reaction between pollutants after they have been released into the air.

Problem Statement

At present, not much is known about the overall environmental pollution patterns of Minna and Suleja. Without a doubt, it is now generally accepted that the menace of environmental pollution poses serious risks to the health of the general populace.

Aims of Study

The principal research objectives of this project work are as follows:

i. The research result would be tailored towards general enlightenment whence the government and the general populace would be made aware of the hazards of environmental pollution in the major towns of Niger State.
ii. At the end of this exercise, a reference document (a sort of "environmental atlas" or "environmental map") for the different precincts or wards of the different towns surveyed would be produced. The final document would highlight the various environmental pollution indices for the areas surveyed.

Scope and Limitation of Study

For this survey, Minna and Suleja were partitioned according to the available cadastral maps. The cadastral maps were procured in sheets, and on each of these sheets the settlements layouts are clearly shown; these sheets formed the basis of the survey guides for the research team members. From the outset it was clear to the research team members involved in this study that a significantly huge amount of resources would be expended in order to achieve a full-scale coverage of the designated study areas. However, such a detailed full-scale coverage was not possible for this project work owing to the inability of the research team members to secure funding for this planned objective. Nevertheless, sufficient dataset has been obtained by the students in order that the principal objectives could be met.

Literature Review

Jonah *et al.* (2009) pointed out that only a limited amount of research works has been carried out in Nigeria with respect to noise level measurements within Nigerian cities. The same argument can also be made for measurements regarding vehicular emission within Nigerian cities. On noise measurements, Abumere *et al.* (1999) carried out a study to investigate noise pollution within Port-Harcourt City. Their research concluded that noise exposure limits in Port-Harcourt City exceeds the value recommended by the International Environmental Protection Agency (IEPA), i.e. 70dB. They suggested some strategies for limiting noise levels in Port-Harcourt city. Menkiti (1976) highlighted the fact that the incidence of impaired hearing in Nigeria could be blamed on exposure to noise (Abumere *et al.*, 1999). Onuu and Menkiti (1993) have analyzed the spectra of road traffic noise for parts of southeastern Nigeria and they concluded that this type of noise dominates the low frequency range, 500-800Hz (Abumere *et al.*, 1999).

In his study of vehicular emission, environmental and health implications, Enemari (2001) pointed out that vehicular emissions in typical urban centres constitute over 60% of the total pollutant emission compared to what anyone will naturally hope, think or assumed. He recommended for proper servicing of vehicles for optimal performance and this should be encouraged. Also, he recommended that the refineries in the country should be fully evaluated with the aim of redesigning them to produce entirely unleaded petrol in the very near future. Furthermore, the use of catalytic converters in vehicles that uses unleaded petrol to control photochemical seeding was recommended.

Bishop and Stedman (1996) have pioneered and developed an instrument to remotely measure vehicle emissions. In several studies it has been found that about 10% of the fleet generates more than 50% of total emissions of carbon monoxide (CO). Most cars are clean but a small number of malfunctioning or tampered with vehicles produce a major amount of regulated and un-regulated emissions. Idle tests are generally known to be a poor indicator of true emissions. In Finland the periodic inspection intervals have increased and therefore several years can pass without emission testing.

The Microsoft Encarta (2008) stated that most hearing loss occurs in workplaces. Workers may be unable to avoid unhealthy noise, and where exposure may continue for years. Factory workers, construction workers, farmers, military personnel, police officers, firefighters, and musicians all have reason to be concerned about their occupational exposure to noise. Even at levels below those that cause hearing loss, noise pollution produces problems. Noise makes conversation difficult, interferes with some kinds of work, and disturbs sleep. As a source of stress, it can promote high blood pressure and other cardiovascular problems, as well as nervous disorders. Noise also puts stress on domestic animals and wildlife. In remote areas, helicopters and military aircraft often frighten animals. Aircraft noise in Alaska, for example, has been shown to reduce the survival rate of caribou calves. There is concern that increasing noise levels in the oceans may confuse the natural sonar that whales use to navigate, communicate, and locate food.

Ouise (2002) has addressed the negative effects resulting from the exposure to road traffic noise on people's well-being. Following observations, the writer said annoyance was one of the first and most direct reaction on environmental noise, and that the continuous exposure of people to road traffic noise lead to suffering from various kinds of discomfort; this he said reduced the number of their well-being elements. He also said his conclusion was still determined by non-acoustical factors like sensitivity, socio-economic situation and age. He reported that certain quantitative relationship between the objective quantities characterizing road traffic noise was established. Finally, he pointed out that the importance of these findings could be in more efficient ways of planning road traffic activity, in order to provide some succour.

Shih (1971) saw noise as sound with little or no periodicity, with its essential characteristic of undesirability. He then defined noise as any annoying or unwanted sound. Also pointed out that the rapid increase of noise level in the environment was a national public health hazard, and that noise affects man's state of mental, physical and social well-being, saying it was a type of air pollution. The author saw his work as an attempt to arrive at the understanding of the general situation on the problem of noise, being then, a rather new subject among other branches of science. His survey consisted of four major parts: the present status of noise pollution, its sources, its effects, and the control. Finally, he listed terminology and bibliography relating to noise pollution problems.

FIELD EQUIPMENT

Sound Level Meter

The standard Xtech A-weighted noise level meter was used to measure noise levels for the purpose of this research.

Gas Meters

Various gas meters specific to the measurements of gas types like sulphur dioxide (SO_2), carbon monoxide (CO), chlorine (Cl_2), hydrogen cyanide (HCN), nitrogen dioxide (NO_2), ammonia (NH_3), and hydrogen sulphide (H_2S) were used for this project work.

DESCRIPTION OF DATA COLLECTION SEQUENCES

At the commencement of work each member of the study group was guided by at least one cadastral map. The cadastral maps for each person were carefully studied and interpreted before the recording exercise which required the use of hand-held Global Positioning System (GPS) units, noise level meter, and the different gas samplers. During the exercise counseling was also given to householders, shop owners, etc., in order to ensure proper understanding of the research work and to inform them of the health hazards they are exposed to through noise pollution and particulates effluents. Though there were initial misconceptions owing to language barriers, however, these were subsequently conquered by the assistance of some educated citizens around the neighborhood and some of our research contemporaries. Each cadastral map was interpreted carefully and at least fifty (50) data points were collected for each cadastral map. All data were collected in the UTM reading after which they were converted to local co-ordinates reading and these were recorded in the data log sheet.

RESULTS AND DATA ANALYSIS

The abridged dataset showing the GPS values in the Universal Transverse Mercator (UTM) and local values as well as the conventional street addresses of the various stations of interest for Minna and Suleja are presented in the tables shown hence.

MINNA SHEETS

A1-M1: STATION IDENTIFICATION

	LOCAL CORDINATES	UTM	CONVENTIOAL LOCATION
1	N 09 39.269 E 06 31.741	X 228825 Y 1068095	Behind f.u.t café
2	N 09 39.219 E 06 31.742	X 228826 Y 1068003	Behind school clinic F.U.T. Minna
3	N 09 39.156 E 06 31.624	X 228609 Y 1007889	Boys hostel F.U.T. Minna
4	N 09 39.195 E 06 31.494	X 228372 Y 1067962	CRES F.U.T. Minna
5	N 09 39.245 E 06 31.554	X 228483 Y 1068054	Mathematic Department, F.U.T. Minna
6	N 09 39.130 E 06 31.595	X 228556 Y 1067841	Photocopy stand behind boys hostel F.U.T. Minna
7	N 09 39.140 E 06 31.580	X 228529 Y 1067866	School cafeteria cooking spot F.U.T. Minna
8	N 09 39.103 E 06 31.588.	X 228543 Y1067791	Photocopying stand behind F.U.T. Minna
9	N 09 39.099 E 06 31.572	X 228513 Y 1067784	Al-bir international barbing saloon behind f.u.t minna

10	N 09 39.096 E 06 31.578	X 228524 Y 106779	Mai suya joint behind f.u.t minna
11	N 09 39.089 E 06 31.564	X 228498 Y 1067766	Business center/ game center hanyan gwari
12	N 09 39.085 E 06 31.544	X 228486 Y 1067759	Mai shayi joint hanyan gwari
13	N 09 39.050 E 06 31.489	X 228361 Y 1067695	Four twin flat apartment hanyan gwari
14	N 09 39.030 E 06 31.491	X 228364 Y 1067658	Carten at hanyan gwari
15	N 09 39.941 E 06 31.474	X 228332 Y 1067494	Maisuya joint hanyan gwari
16	N 09 39.103 E 06 31.588.	X 228289 Y 1067421	Beauty palace okada road
17	N 09 38.861 E 06 31.465	X 228315 Y 1067347	Scopion house okada road
18	N 09 38.862 E 06 31.492	X 228242 Y 1007348	Chansawo computer center okada road
19	N 09 38.925 E 06 31.425	X 228242 Y 1007465	No. 46 okada road

20	N 09 38.938 E 06 31.310	X 228032 Y 1067491	Gidan matasa off okada road
21	N 09 38.972 E 06 31.305	X 228023 Y 1067554	Youth empowerment scheme café Gidann matasa off okada road
22	N 09 38.936 E 06 31.326	X 228061 Y 106 7487	Saleem/ Alnur café gidan matasa
23	N 09 38.905 E 06 31.300	X 228013 Y 1067430	Gidan matasa guest house off okada road
24	N 09 38.830 E 06 31.228	X 227880 Y 1067293	Aduplex opposite river basin gidan matasa
25	N 09 38.377 E 06 31.189	X 227808 Y 1067188	A flat opposite datma vetures house matasa area
26	N 09 38.778 E 06 31.160	X 227755 Y 1061198	Flat 1 datma venture house matasa area
27	N 09 38.785 E 06 31.150	X227737 Y 1067211	Flat 4 datma venture house matasa area
28	N 09 38.739 E 06 31.146	X 227729 Y 1067126	Coal spot matasa okada
29	N 09 38.721 E 06 31.143	X 227723 Y 106 7093	Mai shayi London street opp. SME plaza
30	N 09 38.692	X 227734	Former d.p.o house low cost London street

	E 06 31.149	Y 1067039	
31	N 09 38.665 E 06 31.189	X 227808 Y 1066989	White house low cost via London street
32	N 09 38.676 E 06 31.195	X 227817 Y 1067007	Mai shayi opposite the white house London street
33	N 09 38.649 E 06 31.221	X 227865 Y 1066959	Black smith spot London street
34	N 09 38.469 E 06 31.221	X 227865 Y 106 6959	LGJ/SAN/020 London street
35	N 09 38.078 E 06 31.485	X 228341 Y 1065903	LGJ/SAN/025 London street
36	N 09 38.066 E 06 31.466	X 228306 Y 1065881	LGJ/SAN/024 London street
37	N 09 38.039 E 06 31.468	X 228309 Y 1065831	LGJ/SAN/ 023 London street
38	N 09 38.785 E 06 31.150	X 228301 Y 1065794	LGJ/SAN/145 London street
39	N 09 38.019 E 06 31.444	X 228265 Y 1065794	LGJ/SAN/147 London street
40	N 09 37.965 E 06 31.403	X 22 8189 Y 1065695	LGJ/SAN /145london street

41	N 09 37.963 E 06 31.445	X 228265 Y 106655691	Mr. gbolahans house London street
42	N 09 37.945 E 06 31.430	X 228238 Y 106 6558	LGJ/SAN/131 London street
43	N 09 37.931 E 06 31.432	X 228242 Y 1065632	LGJ/SAN 129 London street
44	N 09 37.873 E 06 31.414	X 228208 Y 1065525	MTN mask London street
45	N 09 37.884 E 06 31.443	X 228261 Y 1065545	LGJ/SAN 049 London street
46	N 09 37.880 E 06 31.493	X 228353 Y 1065537	LGJ/SAN 009 London street
47	N 09 37.826 E 06 31.496	X 228357 Y 1065438	Mai masa London street
48	N 09 37.791 E 06 31.565	X 228483 Y 1065372	Vulcanizer /suya /cooking spot opp police head quarter
49	N 09 37.798 E 06 31.612	X 228569 Y 1065385	Pahama computer center opposite police head quarters
50	N 09 37.807 E 06 31.671	X 228677 Y 1065400	Chief of staff residence opposite police head quarters

A1-M2: STATION IDENTIFICATION

	GPS READINGS		LOCATION
	UTM VALUE	LOCAL CO-ORDINATE	
1	X=227764 Y=1065442	N=09˚ 37.826' E=006˚ 31.172'	Opposite Mawo Primary School, Western By-pass.
2	X=227755 Y=1065525	N=09˚ 37.871' E=006˚ 31.167'	Devine Blessing Bakery, Opposite Mawo Primary School, western by-pass.
3	X=227708 Y=1065331	N=09˚ 37.766' E=006˚ 31.142'	Dutsen Kuran-Gwari.
4	X=227879 Y=1065377	N=09˚ 37.791' E=006˚ 31.235'	G 3E/362, Dutsen Kuran-Gwari.
5	X=227998 Y=1065378	N=09˚ 37.792' E=006˚ 31.300'	Beside Mawo Primary School, western By-pass.
6	X=228082 Y=1065386	N=09˚ 37.797' E=006˚ 31.346'	22B/London Street.
7	X=228062 Y=1065338	N=09˚ 37.771' E=006˚ 31.335'	Dutsen Kuran-Gwari, along western By-pass.
8	X=228078 Y=1065268	N=09˚ 37.733' E=006˚ 31.345'	Western by-pass at Dutsen-Kura/Government House road junction.

9	X=228096 Y=1065250	N=09˚ 37.723' E=006˚ 31.354'	Western by-pass at Dutsen-Kura/Government House road junction.
10	X=228253 Y=1065173	N=09˚ 37.682' E=006˚ 31.440'	Plus 6 Ibrahim Aliyu Road. Dutsen-Kura Area.
11	X=228184 Y=1065242	N=09˚ 37.719' E=006˚ 31.402'	Government house/western by-pass junction.
12	X=228363 Y=1065213	N=09˚ 37.704' E=006˚ 31.500'	Old WAEC office, Dutsen-Kura Gwari.
13	X=228442 Y=1065203	N=09˚ 37.699' E=006˚ 31.543'	Ibrahim Aliyu road, after Forouk international Nursery and Primary School
14	X=228445 Y=1065334	N=09˚ 37.770' E=006˚ 31.544'	London Street. Government house road Junction.
15	X=228397 Y=1065397	N=09˚ 37.804' E=006˚ 31.518'	London Street. G3^{R}/7 (House 2)
16	X=228445 Y=1065371	N=09˚ 37.790' E=006˚ 31.544'	London Street/Government house road Junction.
17	X=228652 Y=1065364	N=09˚ 37.787' E=006˚ 31.657'	Dutsen-Kura Gwari, Opposite Police Headquarters, shop 1.
18	X=228787 Y=1065464	N=09˚ 37.842' E=006˚ 31.731'	Brigadier General Baba Mallam Avenue, Dutsen-Kura Gwari Hausa.

19	X=228836 Y=1065617	N=09˚ 37.925' E=006˚ 31.757'	Adamawa road, Plot 420.
20	X=228717 Y=1063995	N=09˚ 37.045' E=006˚ 31.698'	Opposite new modern market
21	X=228607 Y=1063994	N=09˚ 37.044' E=006˚ 31.638'	Opposite new modern market
22	X=228745 Y=1064135	N=09˚ 37.121' E=006˚ 31.713'	Daru Sallam Block industry western by-pass.
23	X=228764 Y=1063939	N=09˚ 37.015' E=006˚ 31.724'	Beside Daru Sallam block industry, western By-pass
24	X=228803 Y=1065313	N=09˚ 37.760' E=006˚ 31.740'	Time Block industry western by-pass.
25	X=228828 Y=1065267	N=09˚ 37.735' E=006˚ 31.754'	Beside Time Block industry, western By-pass.
26	X=228949 Y=1065260	N=09˚ 37.732' E=006˚ 31.820'	Western by-pass, opposite step-by-step Integrated services (Poultry)
27	X=228933 Y=1065044	N=09˚ 37.615' E=006˚ 31.812'	Opposite Haske block industry, western By-pass
28	X=228825 Y=1064999	N=09˚ 37.590' E=006˚ 31.753'	Haske Block industry, western by-pass
29	X=228912	N=09˚ 37.686'	Along western by-pass

	Y=1065176	E=006˚ 31.800'	
30	X=228902 Y=1064820	N=09˚ 37.493' E=006˚ 31.796'	F.S Block Industry, western by-pass.
31	X=228912 Y=1064639	N=09˚ 37.395' E=006˚ 31.802'	A.A Butu and sons Ltd. Western by-pass
32	X=228993 Y=1064528	N=09˚ 37.335' E=006˚ 31.847'	Josdin Block Industry
33	X=229117 Y=1062638	N=09˚ 36.311' E=006˚ 31.922'	Beside AP Filling Station.
34	X=229135 Y=1062618	N=09˚ 36.300' E=006˚ 31.932'	Opposite Niger State Judiciary Kpakungu.
35	X=229373 Y=1062598	N=09˚ 36.290' E=006˚ 32.062'	Opposite Nigerian prison service, zone D, Keteren Gwari road, Kpakungu.
36	X=229449 Y=1062579	N=09˚ 36.280' E=006˚ 32.104'	Niger State Shariah Commission Keteren Gwari
37	X=229596 Y=1062613	N=09˚ 36.299' E=006˚ 32.184'	Front of Board of internal Revenue Keteren Gwari
38	X=229616 Y=1062609	N=09˚ 36.297' E=006˚ 32.195'	Front of Board of internal Revenue Keteren Gwari
39	X=229683 Y=1062651	N=09˚ 36.320' E=006˚ 32.231'	Opposite board of internal Revenue, keteren Gwari road.
40	X=229710	N=09˚ 36.337'	Opposite board of internal Revenue, keteren

	Y=1062682	E=006˚ 32.246'	Gwari road
41	X=229751 Y=1062783	N=09˚ 36.392' E=006˚ 32.268'	Moh'd Muazu road Keteren Gwari
42	X=229753 Y=1062799	N=09˚ 36.401' E=006˚ 32.269'	Plot 1, Moh'd Muazu road Keteren Gwari
43	X=229763 Y=1062855	N=09˚ 36.431' E=006˚ 32.274'	Plot 1, Moh'd Muazu road Keteren Gwari
44	X=227948 Y=1063032	N=09˚ 36.520' E=006˚ 31.282'	Moh'd Muazu road Keteren Gwari
45	X=227949 Y=1063060	N=09˚ 36.535' E=006˚ 31.282'	Near Niger State Pilgrims Board, Moh'd Muazu road Keteren Gwari.
46	X=227919 Y=1063086	N=09˚ 36.549' E=006˚ 31.266'	Niger state scholarship Board
47	X=227952 Y=1063137	N=09˚ 36.577' E=006˚ 31.284'	Opposite Niger State Scholarship Board
48	X=227910 Y=1063047	N=09˚ 36.528' E=006˚ 31.261'	Scholarship Board gate.
49	X=227930 Y=1063240	N=09˚ 36.633' E=006˚ 31.271'	Opposite coppers training ground.
50	X=227921 Y=1063305	N=09˚ 36.668' E=006˚ 31.266'	Opposite coppers training ground.

A1-M3: STATION IDENTIFICATION

S/N	GPS READINGS		CONVENTIONAL LOCATION
	UTM	LOCAL CORDINATES	
1	X:227925 Y:1067729	9^0 39.067'N 6^0 31.251'E	Telecom mast, off Kutigi Road, Bosso Low-cost.
2	X:227896 Y:1067756	9^0 39.081'N 6^0 31.235'E	Two blocks to station (1).
3	X:227860 Y:1067766	9^0 39.087'N 6^0 31.215'E	Yellow house by mosque opposite station (1).
4	X: 227843 Y:1067806	9^0 39.108'N 6^0 31.206'E	Close to station (1).
5	X: 227753 Y:1068036	9^0 39.232'N 6^0 31.156'E	Bosso Secondary School junction.
6	X: 227698 Y:1067968	9^0 39.195'N 6^0 31.126'E	House 25. Bosso Low-cost
7	X: 227600 Y:1067870	9^0 39.142'N 6^0 31.073'E	Kutigi Road junction, Low-cost
8	X: 227407 Y:1067676	9^0 39.036'N 6^0 30.968'E	House no. 146. Low-cost.
9	X: 227294 Y:1067576	9^0 38.981'N 6^0 30.907'E	Bethel Hospital Junction, Bosso Estate.

10	X: 227275 Y:1067554	9^0 38.969'N 6^0 30.896'E	Classic Barbers, Bosso, Low-cost.
11	X: 227742 Y:1067718	9^0 39.060'N 6^0 31.151'E	No. 189, Kutigi Rd. Bosso Low-cost.
12	X: 227825 Y:1067613	9^0 39.003'N 6^0 31.197'E	Yellow house adjacent station (11).
13	X: 227764 Y:1067672	9^0 39.035'N 6^0 31.163'E	No. 94 kutigi Rd.
14	X: 227826 Y:1067544	9^0 38.966'N 6^0 31.197'E	White fence by ALIF refuse bin, off kutigi Rd.
15	X: 227790 Y:1067466	9^0 38.924'N 6^0 31.178'E	No. 140. Bosso Lw-cost.
16	X: 227751 Y:1067440	9^0 38.909'N 6^0 31.157'E	House no. 125, opposite a mosque.
17	X: 227689 Y:1067405	9^0 38.890'N 6^0 31.123'E	Brown gate next to station (16)
18	X: 227621 Y:1067457	9^0 38.918'N 6^0 31.086'E	White house behind station (17).
19	X: 227679 Y:1067516	9^0 38.950'N 6^0 31.117'E	Yellow painted house (Nokia Weaving Center).
20	X: 227753 Y:1067607	9^0 39.001'N 6^0 31.157'E	No 107, Kutigi Road.

21	X: 227632 Y:1067588	9^0 38.999'N 6^0 31.157'E	No. 85, Kutigi Road.
22	X: 227464 Y:1067457	9^0 38.917'N 6^0 31.000'E	No. 29, Senior Saff Qrts.
23	X: 227417 Y:1067475	9^0 38.927'N 6^0 30.974'E	Bethel Hospital, no. 3, Senior Staff quarters.
24	X: 227597 Y:1067351	9^0 38.860'N 6^0 31.073'E	No.168, Senior Saff Qrts.
25	X: 227306 Y:1067288	9^0 38.825'N 6^0 30.914'E	No. 22, Senior Staff Qrts
26	X: 227384 Y:1067239	9^0 38.799'N 6^0 30.957'E	No. 26, Senior " "
27	X: 227357 Y:1067218	9^0 38.787'N 6^0 30.942'E	Opposite Station (26)
28	X: 227414 Y:1067313	9^0 38.839'N 6^0 30.973'E	No. 19, Senior Staff "
29	X: 227392 Y:1067360	9^0 38.865'N 6^0 30.961'E	No. 8, Senior Staff "
30	X: 227353 Y:1067384	9^0 38.877'N 6^0 30.939'E	No. 16, Senior Staff "
31	X: 227329 Y:1067425	9^0 38.899'N 6^0 30.926'E	No. 11, Senior Staff "

32	X: 227295 Y:1067442	9^0 38.909'N 6^0 30.908'E	No. 13, Senior Staff "
33	X: 227285 Y:1067465	9^0 38.921'N 6^0 30.902'E	No. 34, Senior Staff "
34	X: 2277113 Y:1067064	9^0 38.693'N 6^0 30. 809'E	Blue Gate after station (10)
35	X: 227378 Y:1060134	9^0 34.946'N 6^0 30.982'E	Bazooka Block industry opposite police secondary school.
36	X: 227229 Y:1066217	9^0 38.244'N 6^0 30.876'E	Water Board Reservoir, opposite police secondary school.
37	X: 227063 Y:1066554	9^0 38.372'N 6^0 30.785'E	NDLEA, Western Bye-pass.
38	X: 227112 Y:1067062	9^0 38.702'N 6^0 30.809'E	Yellow painted house, with quos, sen. Staff qrts
39	X: 227072 Y:1067030	9^0 38.684'N 6^0 30.787'E	Yellow painted and blue gate house, by ostrich farm.
40	X: 226997 Y:1066991	9^0 38.63'N 6^0 30.747'E	House next to station 39, Bosso estate
41	X: 226996 Y:1067063	9^0 38.702'N 6^0 30.746'E	Green gate, behind ostrich farm, Bosso Estate.
42	X: 226945 Y:1067063	9^0 38.702'N 6^0 30.718'E	Opposite Abdulsalam Qrts,Bosso Estate

43	X: 226868 Y:1067238	9^0 38.796’N 6^0 30.675’E	Abdulsalam Qrts, Bosso Estate.
44	X: 226826 Y:1067133	9^0 38.739’N 6^0 30.653’E	Ash coloured gate, opposite Abdulsalam Estate..
45	X: 226834 Y:1067044	9^0 38.691’N 6^0 30.657’E	After station 44
46	X: 226524 Y:1067182	9^0 38.765’N 6^0 30.487’E	Poultry house, adjacent Abdulsalam.
47	X: 227135 Y:1067403	9^0 38.887’N 6^0 30.820’E	Telecom mast before Ostrich Farm.
48	X: 227204 Y:1067202	9^0 38.778’N 6^0 30.859’E	Green-roofed house, opp. house No. 22, sen. Staff.
49	X: 227269 Y:1067310	9^0 38.837’N 6^0 30.894’E	Black gate opposite no. 23, senior staff quarters.
50	X: 227335 Y:1067520	9^0 38.951’N 6^0 30.929’E	House no. 31, Senior Staff Qrts, Bosso Low-coast.
SHEET 26 OF MINNA MAP			
1	X:769571 Y:1063351	9^0 36.703’N 11^0 27.364’E	Maigari Bakery, ketaren gwarri Alagbado.
2	X:769571 Y:1063350	9^0 36.702’N 11^0 27.364’E	House J/S 12D, railway qrts.

3	X:769725 Y:1063167	9^0 36.602'N 11^0 27.447'E	House J/S 14C, " "
4	X:769633 Y:1063197	9^0 36.619'N 11^0 27.397'E	Across motoer bridge, Alagbado
5	X:769633 Y:1063259	9^0 36.652'N 11^0 27.398'E	Gringing maching, after station (4).
6	X:769602 Y:1063204	9^0 36.623'N 11^0 27.380'E	Gospel Faith Mission Intl. Church, Alagbado.
7	X:769696 Y:1063044	9^0 36.536'N 11^0 27.431'E	Alagbado bridge after Umar Farouk pri/Sch.
8	X:769849 Y:1062922	9^0 36.469'N 11^0 27.514'E	Green house by water-logged drainage, Alagbado.
9	X:769878 Y:1063199	9^0 36.619'N 11^0 27.531'E	First flat by Suki River bridge opposite Umar Farouk pri/Sch.
10	X:230074 Y:1063120	9^0 36.576'N 6^0 32.443'E	Hausa quosk across Suki river, after staton (9).
11	X:230047 Y:1063089	9^0 36.559'N 6^0 32.428'E	Next to station (10), close to an upstairs.
12	X:230295 Y:1063278	9^0 36.663'N 6^0 32.563'E	Opposite Willy Super Furniture, K/Gwari Rd.
13	X:230132 Y:1063150	9^0 36.593'N 6^0 32.475'E	Peace Invstment, K/Gwari Rd.

14	X:229953 Y:1063011	9^0 36.516'N 6^0 32.377'E	Opposite Zamex investment, K/Gwari Rd.
15	X:229802 Y:1062912	9^0 36. 462'N 6^0 32. 295'E	Gilead Medical Clinic, K/Gwari.
16	X:229751 Y:1062767	9^0 36.383'N 6^0 32.268'E	Mechanic area junction, before Old Secretariat junction.
17	X:229617 Y:1062779	9^0 36.389'N 6^0 32.195'E	Automobile workshop after old secretariat junction.
18	X:229964 Y:1063025	9^0 36.524'N 6^0 32.383'E	After Muslim Aid Community water tank, K/Gwari.
19	X:229993 Y:1062999	9^0 36.510'N 6^0 32.399'E	By Little Stars Nursery and Pri/Sch, K/Gwari.
20	X:229927 Y:1063068	9^0 36.547'N 6^0 32.343'E	Yellow painted house opposite upstairs.
21	X:229928 Y:1063108	9^0 36.568'N 6^0 32.363'E	First room at unpainted upstairs, K/Gwari.
22	X:229996 Y:1063137	9^0 36.585'N 6^0 32.400'E	Arewa Bread Bakery, K/Gwari.
23	X:229965 Y:1063204	9^0 36.621'N 6^0 32.383'E	House next to footpath bridge leading to 123 Qrts.
24	X:229882 Y:1063158	9^0 36.596'N 6^0 32.338'E	Opposite white and gray fenced house, after bridge.

25	X:229855 Y:1063142	9^0 36.587'N 6^0 32.323'E	White and gray fenced house, beside Trust Guest-Inn. 123 Qrts.
26	X:229778 Y:1063133	9^0 36.582'N 6^0 32.281'E	Trust Guest Inn 123 Qrts.
27	X:229682 Y:1063090	9^0 36.558'N 6^0 32.229'E	By bakery within Old Secretariat.
28	X:229611 Y:1063105	9^0 36.566'N 6^0 32.190'E	High Court, Minna.
29	X:229657 Y:1063112	9^0 36.570'N 6^0 32.215'E	Block Industry Opposite old Sec. gate.
30	X:229706 Y:1063049	9^0 36.536'N 6^0 32.242'E	Between Old secretariat gate and TRCCG Church.
31	X:229671 Y:1062806	9^0 36.404'N 6^0 32.224'E	Mobaz Ventures, Old Sec, Road junction.
32	X:229831 Y:1062677	9^0 36.335'N 6^0 32.312'E	Apo Minna Tyres service mechanic area, K/Gwari Rd.
33	X:229922 Y:1062795	9^0 36.399'N 6^0 32.361'E	Restaurant at Sikkens gate road-ending.
34	X:230777 Y:1063139	9^0 36.589'N 6^0 32.827'E	Police officers' mess, railway area.
35	X:230842 Y:1063026	9^0 36.528'N 6^0 32.863'E	House at Umar Erena Road junction, railway area, Minna.

36	X:230621 Y:1063054	9^0 36.542'N 6^0 32.742'E	First shop at "Nothing Pass God" restaurant, railway station.
37	X:230436 Y:1062750	9^0 36.378'N 6^0 32.642'E	Opposite Railway Clinic, railway area.
38	X:230495 Y:1062850	9^0 36.431'N 6^0 32.674'E	House opposite railway station.
39	X:230594 Y:1062794	9^0 36.401'N 6^0 32.728'E	Opposite house no. SS14, Tafawa Balewa Road, Railway area.
40	X:230948 Y:1062913	9^0 36.467'N 6^0 32.921'E	Zinc houses at police primary sch. Umaru Erena Rd.
41	X:231014 Y:1062717	9^0 36.361'N 6^0 32.958'E	Upstairs behind police prim. Sch.
42	X:231075 Y:1062526	9^0 36.258'N 6^0 32.992'E	House after station (41), police Qrts.
43	X:230954 Y:1062498	9^0 36.242'N 6^0 32.926'E	House no.PB 4/68, police Qrts.
44	X:230853 Y:1062172	9^0 36.065'N 6^0 32.872'E	Neighborhood Intercessory house, Nnamdi Azikiwe Rd.
45	X:230718 Y:1062299	9^0 36.133'N 6^0 32.798'E	House 293, Nnamdi Azikiwe Rd.
46	X:230638 Y:1062340	9^0 36.155'N 6^0 32.754'E	First house at Morris Fertilizer junction, Nnamdi Azikiwe Rd.

47	X:230190 Y:1063737	9^0 35.911'N 6^0 32.504'E	Green Gate house, affront Morris Fert. Gate.
48	X:230143 Y:1063822	9^0 35.957'N 6^0 32.478'E	Beside FIK barbing saloon after station (47).
49	X:230168 Y:1063883	9^0 35.990'N 6^0 32.491'E	Before FIK Barbing Saloon, Morris area,
50	X:230642 Y:1062611	9^0 36.302'N 6^0 32.755'E	White upstairs at sharp bend on Nnamdi Azikiwe Road.
51	X:229575 Y:1062984	9^0 36.500'N 6^0 32.171'E	Standard Hospital, after Old Secretariat, 123 Qrts.
52	X:229897 Y:1062989	9^0 36.504'N 6^0 32.347'E	Rice Milling machine, after station (18).

A1-M4: STATION IDENTIFICATION

	GPS VALUES		ADDRESS
	UTM VALUE	LOCAL COORDINATE	CONVENTIONAL LOCATION
1	E:0229436 N:1068119	LONG:6°32'4.48" LAT:9°39'17.05"	Mast compound behind Emir's palace, bosso
2	E:0229434 N:1068253	LONG:6°32'4.39" LAT:9°39'21.404"	Adjacent to the Emir's palace
3	E:0229407 N:1068253	LONG:6°32'3.478" LAT:9°39'24.39"	On the rocks behind the Emir's house
4	E:0229418 N:1068332	LONG:6°32'7.842" LAT:9°39'23.97"	A grey house with Arewa sign, a few blocks from the station
5	E:0229540 N:1068498	LONG:6°32'7.802" LAT:9°39'29.399"	A house on the rock behind station4
6	E:0229610 N:1068313	LONG;6°32'10.14" LAT:9°39'32.62"	Opposite a yellow mosque on the mountain
7	E:0229493 N:1068313	LONG:6°32'6.311" LAT:9°39'22.621"	Agwan masa
8	E:0229557 N:1068330	LONG:6°32'8.399" LAT:9°39'23.94"	Agwan masa
9	E:0029615	LONG:6°32'10.305"	3 blocks after station8

	N:1068310	LAT:9°39'23.301"	
10	E:0229664 N:1068276	LONG:6°32'11.92" LAT:9°39'22.206"	Near Ferma N/P school
11	E:0229644 N:1068157	LONG:6°32'11.92" LAT:9°39'18.33"	Ferma N/P school
12	E:0229714 N:1068156	LONG:6°32'13.587" LAT:9°39'18.314"	Adjacent Ferma N/p school
13	E:0229678 N:1068073	LONG:632'12.427" LAT:9°39'15.605"	Beginning of the street beside Ferma N/P school
14	E:0229606 N:1067859	LONG:6°32'10.117" LAT:9°39'8.626"	4blocks after station13
15	E:0229651 N:1067886	LONG:6°32'11.586" LAT:9°39'9.515"	Izala mosque after station14
16	E:0229789 N:10680098	LONG: 6°32'16.06" LAT:9°39'9.515"	Mal Unar shop after station 15
17	E:0229785 N:1068143	LONG:6°32'15.92" LAT:9°39'18.27"	Off Agwa Biri main road
18	E:0229850 N:1068143	LONG:6°32'18.05" LAT:9°39'17.923"	Agwa biri
19	E:0229895	LONG:6°32'19.52"	On a street off Agwa biri main road

	N;1068143	LAT:9°39'19.14"	
20	E:0229922 N:1068142	LONG:6°32'21.12" LAT9°39'19.14"	Prudent barbing salon
21	E:0229922 N:1068142	LONG:6°32'21.12" LAT:9°39'15.57"	Opposite station 20
22	E:0229949 N:1068041	LONG:6°32'21.32" LAT:9°39'14.63"	3 blocks after station
23	E:0229967 N:1068041	LONG:6°32'21.91" LAT:9°39'14.96"	Opposite station 22
24'	E:0229947 N:1068005	LONG:6°32'21.26" LAT:9°39'13.46"	Nassarawa c-ward, agwabiri
25	E:0229947 N:1067973	LONG:6°32'20.253" LAT:9°39'12.41"	Irene house, nassarawa c-ward
26	E:0229863 N:1067899	LONG:6°32'18.52" LAT:9°39'12.20"	5blocks after station25
27	E:0229883 N:1067899	LONG:6°32'19.19' LAT:9°39'9.387"	Beside tima lodge
28	E:0229938 N:1067899	LONG:6°32'20.996" LAT:9°39'9.387"	Gidan matsa agwabiri
29	E:0230005 N:1067827	LONG:6°32'23.205" LAT:9°39'7.68"	Sabon nassarawa
30	E:0230038	LONG:6°32'24.28"	Sabon nassarawa

	N:1067880	LAT:9°39'9.41"	
31	E;0229980 N:1067913	LONG:6°32'22.37" LAT:9°39'10.47"	Sabon nassarawa
32	E:0229980 N:1067944	LONG:6°32'21.93" LAT:9°39'11.48"	Sabon nassarawa
33	E:0230028 N:1067955	LONG:6°32'23.93" LAT:9°39'11.85"	Behind station32
34	E:0230074 N:1067927	LONG:6°32'25.44" LAT:9°39'1095"	3Blocks after station 33
35	E:0230097 N:1067893	LONG:6°32'26.21" LAT:9°39'9.85"	4Blocks after station 33
36	E:0230111 N:1067862	LONG:6°32'26.67" LAT:9°39'8.84"	After station 35
37	E:0230147 N:1067835	LONG:6°32'27.86" LAT:9°39'7.79"	Agwabiiri
38	E:0230172 N:1067722	LONG:6°32'28.704" LAT:9°39'4.301"	5Blocks after station 37
39	E:0230199 N:1067720	LONG:6°32'29.59" LAT:9°39'4.24"	Adjacent to station38

40	E:0230033 N:1067720	LONG:6°32'24.17" LAT:9°39'0.76"	On the road off agwabiri mainroad(before abbatoir)
41	E:0230059 N:1067516	LONG:6°32'25.05" LAT:9°38'57.57"	Behind station 35
42	E:0230118 N:1067724	LONG:6°32'26.93" LAT:9°39'4.35"	Mechanic workshop junction
43	E:0230516 N:1067306	LONG:6°32'40.08" LAT:9°38'50.85"	New abbatoir
44	E:0230559 N:1067146	LONG:6°32'41.53" LAT:9°38'45.65"	After station 43, tai village
45	E:0230568 N:1067134	LONG:6°32'41.83" LAT:9°38'43.08"	After station 44, tai village
46	E:0230565 N:1067067	LONG:6°32'41.74" LAT:9°38'43.08"	5blocks after station 45
47	E:0230795 N:067099	LONG:6°32'4928" LAT:9°38'44.17"	Tai village
48	E:0230852 N:1067159	LONG:6°32'51.13" LAT:9°38'46.14"	4blocks after station47 tai village
49	E:0230906 N:1067388	LONG:6°32'52.85" LAT:9°38'53.61"	Down the street after station48
50	E:0230874	LONG:6°32'51.82"	Before station 49

	N:1067286	LAT:9°38'50.28"	

A1-M5: STATION IDENTIFICATION

S/N	UTM VALUE	LOCAL COORDINATE	LOCATION AND ADDRESS
1	X=233139 Y=1064213	N=09˚37·18 E=006˚34·34	Gwandai village
2	X=233303 Y=1064644	N=09˚37·42 E=006˚34·20	Gwandai village
3	X=230470 Y=1065058	N=09˚37·64 E=006˚34·29	Gwandai village
4	X=233577 Y=1065443	N=09˚37·74 E=006˚34·35	Gwandai village
5	X=233500 Y=1065303	N=09˚37·68 E=006˚34·31	Gwandai village
6	X=233699 Y=10655165	N=09˚37·70 E=006˚34·41	Gwandai village
7	X=233616 Y1065321	N=09˚37·78 E=006˚34·37	Gwandai village
8	X=233648	N=09˚37·80	Gwandai village

	Y=10655347	E=006˚34·39	
9	X=233509 Y=1065308	N=09˚37·78 E=006˚34·31	Gwandai village
10	X=233484 Y=1065432	N=09˚37·84 E=006˚34·30	Gwandai village
11	X=233530 Y=1065435	N=09˚37·86 E=006˚34·32	Gwandai village
12	X=233583 Y=1065423	N=09˚37·84 E=006˚34·35	Gwandai village
13	X=233603 Y=1065424	N=09˚37·84 E=006˚34·36	Gwandai village
14	X=233597 Y=1065425	N=09˚37·85 E=006˚34·37	Gwandai village
15	X=233697 Y=1065462	N=09˚37·86 E=006˚34·41	Gwandai village
16	X=233758 Y=1065461	N=09˚37·86 E=006˚34·44	Gwandai village
17	X=233817 Y=1065435	N=09˚37·85 E=006˚34·48	Gwandai village
18	X=233826 Y=1065319	N=09˚37·78 E=006˚34·49	Gwandai village

19	X=233927 Y=1065259	N=09˚37·75 E=006˚34·54	Gwandai village
20	X=233404 Y=1065309	N=09˚37·78 E=006˚34·60	Gwandai village
21	X=234179 Y=1065291	N=09˚37·77 E=006˚34·69	Gwandai village
22	X=234207 Y=1065291	N=09˚37·76 E=006˚34·69	Gwandai village
23	X=233747 Y=1065365	N=09˚37·81 E=006˚34·44	Gwandai village
24	X=233411 Y=1065437	N=09˚37·85 E=006˚34·26	Gwandai village
25	X=233284 Y=1065415	N=09˚37·84 E=006˚34·19	Gwandai village
26	X=233209 Y=1065415	N=09˚37·83 E=006˚34·15	Mai tumbi junction
27	X=233202 Y=1065454	N=09˚37·85 E=006˚34·14	Mai tumbi junction
28	X=233178 Y=1065519	N=09˚37·89 E=006˚34·13	Mai tumbi junction
29	X=233213	N=09˚37·93	Mai tumbi

	Y=1065587	E=006˚34·15	
30	X=233275 Y=1065645	N=09˚37·95 E=006˚34·18	Mai tumbi road
31	X=233288 Y=1065586	N=09˚37·92 E=006˚34·19	Mai tumbi road
32	X=233452 Y=1065206	N=09˚37·72 E=006˚34·28	Gwandai village
33	X=233401 Y=1065175	N=09˚37·70 E=006˚34·25	Gwandai village
34	X=233332 Y=1065178	N=09˚37·71 E=006˚34·22	Gwandai village
35	X=23383 Y=1065180	N=09˚37·71 E=006˚34·24	Gwandai village
36	X=23308 Y=1065104	N=09˚37·67 E=006˚34·20	Gwandai village
37	X=233220 Y=1065080	N=09˚37·65 E=006˚34·16	Gwandai village
38	X=223177 Y=1065042	N=09˚37·63 E=006˚34·13	Beside hill top model school
39	X=233157 Y=1064936	N=09˚37·57 E=006˚34·12	Beside hill top model school

40	X=234113 Y=1065383	N=09˚37·82 E=006˚34·64	Anyuwan kadara mai tumbi
41	X=233609 Y=1065547	N=09˚37·90 E=006˚34·36	Anyuwan kadara mai tumbi
43	X=233602 y=1065626	N=09˚37·94 E=006˚34·36	Mai tumbi behind abudu barbing saloon
44	X=233131 Y=1064847	N=09˚37· E=006˚34·	Arewa blocking industry opp hill top model school
45	X=233109 Y=106419	N=09˚37·56 E=006˚34·10	beside arewa blocking industry opp hill top

46	X=232905 Y=1064935	N=09˚37·57 E=006˚33·98	Kuta road
47	X=233153 Y=1065508	N=09˚37·88 E=006˚34·12	flamingo estate
48	X=233116 Y=1065517	N=09˚37·89 E=006˚34·10	Opp flamingo estate kuta road
49	X=233047 Y=1065521	N=09˚37·89 E=006˚34·06	Along kuta road
50	X=232801 Y=1065486	N=09˚37·87 E=006˚33·92	Along kuta road

A1-M6: STATION IDENTIFICATION

	GPS VALUES		ADDRESS
	UTM VALUE	LOCAL CO-ORDINAT	CONVENTIONAL LOCATION
01	1064608.31 231202.13	09^0 37.335' 006^0 33.051'	Along Bako Kontagora Stadium
02	1064617.65 231185.73	09^0 37.340' 006^0 33.042'	Along Bako Kontagora Stadium
03	1064928.65 231283.13	09^0 37.509' 006^0 33.094'	Along Eid Prayer Ground

04	1065264.15 231307.49	09^{0} 37.691’ 006^{0} 33.106’	Along Eid Prayer Ground
05	1065213.31 231195.48	09^{0} 37.663’ 006^{0} 33.045’	Dr U.F Bahago Rd. U/Daji
06	1065177.33 231068.93	09^{0} 37.643’ 006^{0} 32.976’	Dr U.F Bahago Rd. U/Daji
07	1065269.99 231007.36	09^{0} 37.693’ 006^{0} 32.942’	Dr U.F Bahago Rd. U/Daji
08	1064621.05 230967.94	09^{0} 37.341’ 006^{0} 32.923’	P.O.W.A Complex. U/Daji
09	1064396.49 231678.34	09^{0} 37.222’ 006^{0} 33.312’	Kuta Rd, After the Junction.
10	1064454.33 231843.49	09^{0} 37.254’ 006^{0} 33.402’	Kuta Rd. Beside the Baptist Church
11	1064402.39 231885.21	09^{0} 37.226’ 006^{0} 33.425’	SE 132a Sabon Gari
12	1064500.34 232116.54	09^{0} 37.280’ 006^{0} 33.551’	Bridge across drainage, Sabon Gari.
13	1064593.11 232298.4	09^{0} 37.331’ 006^{0} 33.650’	SKG 226 Sabon Gari
14	1065043.33 232530.39	09^{0} 37.576’ 006^{0} 33.775’	Along Berger Drainage, Sabon Gari

15	1065003.18 232469.71	09^0 37.554’ 006^0 33.742’	Along Berger Drainage, Sabon Gari
16	1064979.34 232451.23	09^0 37.541’ 006^0 33.732’	Along Berger Drainage, Sabon Gari
17	1064476.67 231040.12	09^0 37.263’ 006^0 32.963’	Sarkin Bello Rd. Behind the Stadium
18	1064984.99 232434.8	09^0 37.544’ 006^0 33.723’	Along Berger Drainage, Sabon Gari
19	1064975.75 232436.57	09^0 37.539’ 006^0 33.724’	Along Berger Drainage, Sabon Gari
20	1065035.42 232345.48	09^0 37.571’ 006^0 33.674’	Along Kuta Rd
21	1065101.61 232375.23	09^0 37.607’ 006^0 33.690’	Along Kuta Rd
22	1065250.56 232436.69	09^0 37.688’ 006^0 33.723’	Along Kuta Rd
23*	1065283.06 232457.06	09^0 37.706’ 006^0 33.734’	Along Kuta Rd
24	1064872.18 232218.02	09^0 37.482’ 006^0 33.605’	Along Kuta Rd
25	1064839.17 232192.16	09^0 37.464’ 006^0 33.591’	Along Kuta Rd

26	1064701.69 232042.93	09^{0} 37.389' 006^{0} 33.510'	Along Kuta Rd
27	1064668.91 232013.41	09^{0} 37.371' 006^{0} 33.494'	Along Kuta Rd
28	1064617.68 231956.3	09^{0} 37.343' 006^{0} 33.463'	Along Kuta Rd
29	1064569.88 231934	09^{0} 37.317' 006^{0} 33.451'	Along Kuta Rd
30	1064588.25 231945.11	09^{0} 37.327' 006^{0} 33.457'	Along Kuta Rd
31	1064595.59 231950.65	09^{0} 37.331' 006^{0} 33.460'	Along Kuta Rd
32	1064557.07 231921.09	09^{0} 37.310' 006^{0} 33.444'	Along Kuta Rd
33	1064558.88 231924.77	09^{0} 37.311' 006^{0} 33.446'	Along Kuta Rd
34	1064622.03 231862.99	09^{0} 37.345' 006^{0} 33.412'	Along Kuta Rd
35	1064614.6 231870.25	09^{0} 37.341' 006^{0} 33.416'	Along Kuta Rd
36	1064631.33 231852.07	09^{0} 37.350' 006^{0} 33.406'	Along Kuta Rd

37	1064666.64 231815.72	09^0 37.369' 006^0 33.386'	Along Kuta Rd
38	1064666.99 231766.3	09^0 37.369' 006^0 33.359'	Along Kuta Rd
39	1064640.28 231632.49	09^0 37.354' 006^0 33.286'	SP7 Gwari Rd
40	1064637.19 231548.28	09^0 37.352' 006^0 33.240'	Behind Emir's Palace
41	1064646.52 231533.7	09^0 37.357' 006^0 33.232'	Behind Emir's Palace
42	1064652.51 231469.68	09^0 37.360' 006^0 33.197'	Behind Emir's Palace
43	1064836.75 231496.62	09^0 37.460' 006^0 33.211'	Off Gwari Rd
44	1065048.07 231606.12	09^0 37.575' 006^0 33.270'	Along Kuta Rd
45	1064964.54 231680.57	09^0 37.530' 006^0 33.311'	Along Kuta Rd
46	1064494.7 231873.06	09^0 37.276' 006^0 33.418'	Along Kuta Rd
47	1065016.67 232389.27	09^0 37.561' 006^0 33.698'	Along Berger Drainage, Sabon Gari

48	1064534.97 231915.44	09^0 37.298’ 006^0 33.441’	Along Kuta Rd. New Garage
49	1064512.58 231951.89	09^0 37.286’ 006^0 33.461’	Along Kuta Rd. New Garage
50	1064495.84 231971.91	09^0 37.277’ 006^0 33.472’	Along Kuta Rd. New Garage
	1064486.57 231979.16	09^0 37.272’ 006^0 33.476’	Along Kuta Rd. New Garage

A1-M7: STATION IDENTIFICATION

UTM CO ORDINATE		LOCAL CO ORDINATES		ADDRESS
X = 0230595 1066893	Y =	N = 09 38.624 32.713	E = 006	TAYI ROAD HOUSE NO: (BMR /SAN/48
X = 0230588 1066933	Y =	N = 09 38.646 32.709	E = 006	HOUSE BESIDE RIYADUE ISLAMIC SCI
X = 0230457 1067067	Y =	N = 09 38.718 32.709	E = 066	THIRD HOUSE ON THE RIGHT, TAYI RO
X = 0230365 1066981	Y =	N = 09 38.671 32.587	E = 006	HOUSE BEHIND BAHAGO SCHOOL
X = 0230400 1066820	Y =	N = 09 38.584 32.607	E = 006	BAHAGO SCHOOL STAFF QUARTERS.
X = 0230371 1066819	Y =	N = 09 38.583 32.591	E = 006	BAHAGO SCHOOL STAFF QUARTERS.
X = 0230211 1066766	Y =	N = 09 38.554 32.504	E = 006	BAHAGO SECONDARY SCHOOL INCIN
X = 0230231 1066632	Y =	N = 09 38.481 32.515	E = 006	TRCN ZONAL OFFICE MINNA.
X = 0230231 1066632	Y =	N = 09 28.481 32.515	E = 006	ZARUMAI JUNCTION
X = 0229872 1066666	Y =	N = 09 38.498 32.319	E = 006	BAMIYI BLOCK INDUSTRY
X = 0229804 1066642	Y =	N = 09 38.485 32.302	E = 006	MECHANIC SHED ALONG ZARUMAI RO

X = 0229841 1066635	Y =	N = 09 38.481 E = 006 32.302	WELDERING BESIDE MECHANIC SHED
X = 0229749 1066615	Y =	N = 09 38.470 E = 006 32.252	HOUSE BESIDE SOLID FOUNDATION S
X = 0229661 1066603	Y =	N = 09 38.463 E = 006 32.204	HOUSE NO: D3/9 ZARUMAI ROAD
X = 0229473 1066621	Y =	N = 09 38.478 E = 006 32.129	COMPOUND OPPOSITE THE GYM ON Z
X = 0229524 1066631	Y =	N = 09 38.472 E = 006 32.106	HOUSE BESIDE COMPOUND OPPOSITE
X = 0229438 1066617	Y =	N = 09 38.470 E = 006 32.082	WHITE HOUSE AT JARMA JUNCTION
X = 0229391 1066745	Y =	N = 09 38.539 E = 006 32.056	COMPOUND OPPOSITE ALBU TURAB I
X = 0229377 1066739	Y =	N = 09 38.536 E = 006 32.048	ABU TURAB ISLAMIC CENTER
X = 0229467 1066886	Y =	N = 09 38.616 E = 006 32.097	THE LAST HOUSE ON ZARUMAI ROAD
X = 0229461 1067012	Y =	N = 09 38.684 E = 006 32.093	HOUSE OFF ZARUMAI ROAD (WHITE A DESIGN)
X = 0229436 1067034	Y =	N = 09 38.696 E = 006 32.079	HOUSE NO: 139 OFF ZARUMAI ROAD
X = 0229489 1067118	Y =	N = 09 38.742 E = 006 32.108	LAST HOUSE ON ALI MOTORS ROAD
X = 0229513 1067139	Y =	N = 09 38.753 E = 006 32.121	MTN MAST ON ALI MOTORS ROAD

X = 0229552	Y = 1067140	N = 09 38.754	E = 006 32.142	HOUSE OF THE REGISTRAR FUT MINN ROAD
X = 0229585	Y = 1067149	N = 09 38.759	E = 006 32.160	HOUSE NEXT TO THE REGISTRAR HOU
X = 0229698	Y = 1067139	N = 09 38.754	E = 006 32.222	THE NEXT HOUSE
X = 0229705	Y = 1067128	N = 09 38.748	E = 006 32.226	THE HOUSE OPPOSITE
X = 0229709	Y = 1067109	N = 09 38.738	E = 006 32.228	THE HOUSE OPPOSITE ALI MOTORS RO
X = 0229725	Y = 1067078	N = 09 38.721	E = 006 32.237	SMALL UNPAINTED HOUSE OFF ALI M
X = 0229714	Y = 1067032	N = 09 38.696	E = 006 32.231	THE NEXT HOUSE
X = 0229766	Y = 1066987	N = 09 38.644	E = 006 32.260	SECOND TO THE LAST HOUSE OFF ALI
X = 0229775	Y = 1066936	N = 09 38.644	E = 006 32.265	THE LAST HOUSE OFF ALI MOTORS RO
X = 0229862	Y = 1066990	N = 09 38.674	E = 006 32.312	HOUSE DIRECTLY BEHIND PEUGOT OF
X = 0229812	Y = 1067024	N = 09 38.692	E = 006 32.285	FIRST STREET OFF ALI MOTORS
X = 0229796	Y = 1067057	N = 09 38.710	E = 006 32.276	SECOND HOUSE BEHIND PEUGOT OFF
X = 0229787	Y = 1065967	N = 09 38.119	E = 006 32.265	HOUSE OPPOSITE

X = 0229874 1067123	Y =	N = 09 38.746 E = 006 32.318	MARMUSA PETROL STATION BOSSO R
X = 0229921 1067095	Y =	N = 09 38.731 E = 006 32.344	PEUGOT OFFICE
X = 0229989 1067185	Y =	N = 09 38.780 E = 006 32.381	AMAJO BAKERY OPPOSITE PEUGOT
X = 0229911 1067250	Y =	N = 09 38.815 E = 006 32.338	BLOCK INDUSTRY OPPOSITE ALI MOT
X = 0229586 1067400	Y =	N = 09 38.895 E = 006 32.150	MECHANIC SHED BESIDE KONTOGOR
X = 0229577 1067372	Y =	N = 09 38.925 E = 006 32.155	COMPOUND BESIDE MECHANIC SHED
X = 0229618 1067455	Y =	N = 09 38.925 E = 006 32.155	WELDERING SHED BESIDE KONTAGO
X = 0229592 1067472	Y =	N = 09 38.934 E = 006 32.163	KONTAGORA PLAZA
X = 0229631 1067514	Y =	N = 09 38.957 E = 006 32.184	WELDERING OPPOSITE KONTAGORA
X = 0229498 1067590	Y =	N = 09 38.998 E = 006 32.111	VULCANIZER BEHIND THE VENTINAR
X = 0229472 1065813	Y =	N = 09 38.034 E = 006 32.104	WELDER BESIDE GIDAN RUWA
X = 0229304 1065856	Y =	N = 09 38.057 E = 006 32.012	WELDER BESIDE ANGWAN BIRI JUNC
X = 0229401 1065861	Y =	N = 09 38.060 E = 006 32.065	VULCANIZER IN FRONT OF BAMAS (JUNCTION)

A1-M8: STATION IDENTIFICATION

	GPS VALUES		**ADDRESS**
	UTM VALUE	LOCAL COORDINATE	CONVENTIONAL LOCATION
1	X:0228049 Y: 1065332	E:6^0.522132” N:9^0.6294577”	Dutsenkura gwari (small market along roadside)
2	X:0228051 Y: 1065324	E:6^0.5221507” N:9^0.6293855”	“
3	X:0228021 Y: 1065359	E:6^0.52218753” N:9^0.6296998”	“
4	X:0228003 Y: 1065384	E:6^0.52217097” N:9^0.6299246”	“
5	X:0227991 Y: 1065375	E:6^0.5221601” N:9^0.6298425”	“
6	X:0227964 Y: 1065390	E:6^0.52213542” N:9^0.6299762”	Mai angua area Dutsenkura gwari
7	X:0227943 Y: 1065392	E:6^0.5211629” N:9^0.6299929”	Inside the heart of dutsenkura gwari
8	X:0227937 Y: 1065386	E:6^0.5211086” N:9^0.6299383”	“
9	X:0227662 Y: 1065400	E:6^0.5186037” N:9^0.6300468”	“

10	X:0227726 Y: 1065487	E:6^0.5191807" N:9^0.6308373"	"
11	X:0227805 Y: 1065497	E:6^0.5198994" N:9^0.6309328"	"
12	X:0227843 Y: 1065486	E:6^0.52024461" N:9^0.6308359"	"
13	X:0227855 Y: 1065503	E:6^0.5203542" N:9^0.6309903"	**Opposite MAWO international school dutsenkura gwari minna**
14	X:0227947 Y: 1065437	E:6^0.5211963" N:9^0.6303999"	**Dutsenkura gwari minna**
15	X:0227999 Y: 1065437	E:6^0.5216698" N:9^0.6304033"	**Adjacent MAWO international school dutsenkura gwari minna**
16	X:0228045 Y: 1065387	E:6^0.522092" N:9^0.6299544"	**Dutsenkura gwari junction minna**
17	X:0228098 Y: 1065347	E:6^0.5225772" N:9^0.6295964"	**Opposite sawmill dutsenkura gwari junction minna**
18	X:0228097 Y: 1065399	E:6^0.5225647" N:9^0.6300663"	**Kaduna road junction, behind the sawmill dutsenkura gwari minna**
19	X:0228164 Y: 1065425	E:6^0.523173" N:9^0.6303056"	**Kaduna road dutsenkura gwari minna**
20	X:0228206 Y: 1065428	E:6^0.5235553" N:9^0.6303355"	"

21	X:0228283 Y: 1065333	E:6^{0}.5242626” N:9^{0}.629482”	**Former WAEC office dutsenkura gwari minna**
22	X:0228368 Y: 1065340	E:6^{0}.5250362” N:9^{0}.6295508”	**Opposite Former WAEC office dutsenkura gwari minna**
23	X:0228366 Y: 1065500	E:6^{0}.5250074” N:9^{0}.6309966”	**London street minna Niger state**
24	X:0228468 Y: 1065469	E:6^{0}.5259382” N:9^{0}.6307231”	**Directly opposite the Nigerian police force (NPF) Head Quarter minna Niger state**
25	X:0228549 Y: 1065544	E:6^{0}.5266709” N:9^{0}.6314062”	**Elizabeth Shabba street Dutsenkura minna**
26	X:0228575 Y: 1065478	E:6^{0}.5269119” N:9^{0}.6308114”	**Opposite the Nigerian police force (NPF) Head Quarter minna Niger state**
27	X:0228559 Y: 1065479	E:6^{0}.5267662” N:9^{0}.6308194”	**Kaduna road dutsenkura gwari minna**
28	X:0228520 Y: 1065439	E:6^{0}.5264137” N:9^{0}.6304554”	**Kaduna road dutsenkura gwari minna**
29	X:0228647 Y: 1065124	E:6^{0}.5275908” N:9^{0}.627617”	**State security service (SSS) officers’ Mess**
30	X:0228715 Y: 1065486	E:6^{0}.5281862” N:9^{0}.6308929”	**Adjacent the Nigerian police force (NPF) Head Quarter minna Niger state**
31	X:0228699	E:6^{0}.5280383”	**Brigadial general Baba mallam Tukura Avenue Dutsenkura minna**

	Y: 1065519	N:9^0.6311901”	
32	X:0228687 Y: 1065554	E:6^0.5279268” N:9^0.6315056”	“
33	X:0228711 Y: 1065592	E:6^0.5281428” N:9^0.6318506”	“
34	X:0228806 Y: 1065550	E:6^0.5290106” N:9^0.6314772”	**Adamawa road Dutsenkura minna**
35	X:0228752 Y: 1066025	E:6^0.5284877” N:9^0.6357663”	“
36	X:0228734 Y: 1066026	E:6^0.5283237” N:9^0.6357742”	“
37	X:0228740 Y: 1066062	E:6^0.528376” N:9^0.6360999”	**Dutsenkura Hausa minna Niger state**
38	X:0228755 Y: 1066140	E:6^0.5285074” N:9^0.6368058”	“
39	X:0228753 Y: 1066293	E:6^0.5284791” N:9^0.6381883”	“
40	X:0228777 Y: 1065389	E:6^0.5286914” N:9^0.6390574”	“
41	X:0228845 Y: 1066435	E:6^0.5293075” N:9^0.6394776”	“

42	X:0229037 Y: 1066387	E:6^{0}.531059” N:9^{0}.6390563”	**Godonasco road Zarumai minna Niger state**
43	X:0229137 Y: 1066448	E:6^{0}.5319656” N:9^{0}.6396141”	**Opposite progress curt Godonasco road Zarumai minna Niger state**
44	X:0229225 Y: 1066268	E:6^{0}.5327787” N:9^{0}.6379932”	**Celtel mast, Ilorin sreet Type-B quarters minna Niger state**
45	X:0229173 Y: 1066238	E:6^{0}.532372” N:9^{0}.6377187”	**Ilorin sreet Type-B quarters minna Niger state**
46	X:0229172 Y: 1066241	E:6^{0}.5322979” N:9^{0}.6377457”	“
47	X:0229107 Y: 1066197	E:6^{0}.5317089” N:9^{0}.6373438”	“
48	X:0229039 Y: 1066195	E:6^{0}.5310899” N:9^{0}.6373213”	“
49	X:0229040 Y: 1066196	E:6^{0}.5310989” N:9^{0}.6373304”	**Zaria road Type-B quarters minna Niger state**
50	X:0229042 Y: 1066198	E:6^{0}.531117” N:9^{0}.6373486”	“

A1-M9: STATION IDENTIFICATION

S/N	GPS VALUES		ADDRESS
	UTM VALUES	LOCAL COORDINATES	CONVENTIONAL LOCATION
1	E:0230186 N:1065510	LONG:6°32'29" LAT:9°37'29"	No;30 commissioner quarters road
2	E:0230031 N:1065488	LONG:6°32'24" LAT:9°37'52"	No; 23 commissioner quarters road
3	E:0229894 N:1065448	LONG:6°32'20" LAT:9°37'50"	No;39 commissioner quarters road
4	E:0229677 N:1065377	LONG:6°32'13" LAT:9°37'47"	No; 37 commissioner quarter road
5	E:0229578 N:1065397	LONG:6°32'9" LAT:9°37'48"	Along commissioners quarters road
6	E:0229586 N:1065292	LONG;6°32'10" LAT:9°37'47"	Along old sect. road
7	E:0229736 N:1064801	LONG:6°32'15" LAT:9°37'29"	Front of Niger state supply company
8	E:0229744 N:1064828	LONG:6°32'15" LAT:9°37'30"	Fast food joint before Niger state supply company
9	E:0230129 N:1064590	LONG:6°32'28" LAT:9°37'22"	No; 5A millioner street

10	E:0230362 N:1064701	LONG:6°32'35" LAT:9°37'26"	Bakery along millioner street
11	E:0230503 N:1064724	LONG:6°32'40" LAT:9°37'26"	Along millioner quarter A5
12	E:0230585 N:1064776	LONG:6°32'42" LAT:9°37'28"	Along millioner quarter
13	E:0230557 N:1064846	LONG:6^{0}32'40" LAT:9°37'30"	Amitech along Bosso road
14	E:0230578 N:1064929	LONG:6°32'42" LAT:9°37'33"	Beside St. Mecheal
15	E:0230615 N:1064857	LONG:6°32'43" LAT:9°37'31"	Zagbayi pharmacy along bosso road
16	E:0230625 N:1064821	LONG: 6°32'44" LAT:9°37'30"	Jonapal departmental stores
17	E:0230635 N:1064816	LONG:6°32'44" LAT:9°37'29"	Before drainage after jonapal along bosso road
18	E:0230624 N:1064756	LONG:6°32'44" LAT:9°37'27"	Before sky bank along bosso road
19	E:0230625 N;1064739	LONG:6°32'44" LAT:9°37'27"	Before sky bank along bosso road

20	E:0230601 N:1064702	LONG:6°32'43" LAT9°37'26"	Haier thermocool opposite sky bank
21	E:0230597 N:1064689	LONG:6°32'43" LAT:9°37'25"	Opposite sky bank
22	E:0230601 N:1064668	LONG:6°32'43" LAT:9°37'25"	Opposite sky bank
23	E:0230607 N:1064592	LONG:6°32'43" LAT:9°37'22"	Before Asmau pharmacy along bosso
24'	E:0230620 N:1064550	LONG:6°32'44" LAT:9°37'21"	After Asmau pharmacy along bosso
25	E:0230618 N:1064536	LONG:6°32'44" LAT:9°37'20"	Alh. Bawa sankira road
26	E:0230639 N:1064461	LONG:6°32'44" LAT:9°37'18"	Kastina junction
27	E:0230619 N:1064439	LONG:6°32'44’’ LAT:9°37'17"	No;100 bosso / kastina road
28	E:0230557 N:1064430	LONG:6°32'42" LAT:9°37'17"	Along kastina road
29	E:0230496 N:1064423	LONG:6°32'40" LAT:9°37'17"	Along kastina road
30	E:0230650 N:1064408	LONG:6°32'45" LAT:9°37'16"	Mustapha all stores

31	E;0230650 N:1064423	LONG:6°32'45" LAT:9°37'16"	Opposite central mosque
32	E:0230658 N:1064373	LONG:6°32'45" LAT:9°37'15"	Opposite central mosque
33	E:0230654 N:1064330	LONG:6°32'45" LAT:9°37'14"	Opposite central mosque
34	E:0230654 N:1064330	LONG:6°32’45" LAT:9°37'14"	Opposite central mosque
35	E:0230679 N:1064453	LONG:6°32'46" LAT:9°37'18"	Abbas bello cresent junction
36	E:0230872 N:1064307	LONG:6°32'52" LAT:9°37'13"	Abbas bello cresent junction
37	E:0230876 N:1064270	LONG:6°32'52" LAT:9°37'12"	Ogbomosho road
38	E:0230883 N:1064195	LONG:6°32'52" LAT:9°37'9"	Ogbomosho road
39	E:0230843 N:1064106	LONG:6°32'51" LAT:9°37'6"	Ogbomosho road
40	E:0230647	LONG:6°32'45"	Stadium junction

	N:1064559	LAT:9°37'21"	
41	E:0230712 N:1064561	LONG:6°32'47" LAT:9°37'21"	Along gwari road
42	E:0230708 N:1064532	LONG:6°32'47" LAT:9°37'20"	Along gwari
43	E:0230819 N:1064581	LONG:6°32'50" LAT:9°37'22"	By police sign post along gwari road
44	E:0230842 N:1064582	LONG:6°32'51" LAT:9°37'22"	Front of police station along gwari road
45	E:0230906 N:1064598	LONG:6°32'53" LAT:9°37'22"	Dr umar faruk road
46	E:0230932 N:1064604	LONG:6°32'54" LAT:9°37'23"	Opposite celtel along gwari road
47	E:0230903 N:1064633	LONG:6°32'53" LAT:9°37'23"	Along Dr umar faruk road
48	E:0230880 N:1064650	LONG:6°32'52" LAT:9°37'24"	Along Dr umar faruk road
49	E:0230872 N:1064658	LONG:6°32'52" LAT:9°37'24"	Along Dr umar faruk road
50	E:0230889 N:1064762	LONG:6°32'52" LAT:9°37'28"	Along Dr umar faruk road

SULEJA SHEETS

A1-S1: STATION IDENTIFICATION

S/N	GPS VALUES		ADDRESS AND LOCATIONS
	UTM VALUES	LOCAL COORDINATES	
1	X= 030054 Y=1013888	N=09^0 10.108' E=007^0 11.100'	ALONG BWARI ROAD, GRA,BESIDE OLD NTA, SLEJA
2	X=0300496 Y=1013961	N=09^0 10.147' E=007^0 1.063'	ALONG BWARI ROAD, GRA, CLOSE TO OLD NTA, SULEJA
3	X=0300648 Y=1014084	N=09^0 10.214' E=007^0 11.146	ALONG BWARI ROAD,SULEJA
4	X=0300728 Y=1014111	N=09^0 10.229' E=007^0 11.189	ALONG BWARI ROAD,GRA,OPPOSITE FIELD BASE, FIRST GATE, SULEJA
5	X=0301007 Y=1016088	N=09^0 11.302' E=007^0 11.336'	INSIDE FIELD BASE, SULEJA
6	X=0300974 Y=1016091	N=09^0 11.304' E=007^0 11.318'	INSIDE FIELD BASE, SULEJA
7	X=0300752 Y=1016292	N=09^0 11412' E=007^0 11.196'	663 ALONG BWARI ROAD,SULEJA
8	X=0300663 Y=1016307	N=09^0 11.420' E=007^0 11.148'	67 LOWCOST ESTATE AREA,BWARI RAD,SULEJA

9	X=0300549 Y=1016223	N=09^0 11.374' E=007^0 11.086'	54 LOWCOST ESTATE AREA,BWARI ROAD,SULEJA
10	X=0300436 Y=1016142	N=09^0 11.330' E=007^0 1.024	AROUND LOWCOST ESTATE AREA,BWARI ROAD,SULEJA
11	X=0300436 Y=1016142	N=09^0 11. 330' E=007^0 1.024	AROUND LOWCOST ESTATE AREA,BWARI RAD,SULEJA
12	X=0300394 Y=1016172	N=09^0 11.346' E=007^0 11.001'	AROUND LOWCOST ESTATE AREA,BWARI ROAD,SULEJA
13	X=0302217 Y=1016164	N=09^0 11.347' E=007^0 11.996'	LOWCOST ESTATE AREA,BWARI ROAD,SULEJA
14	X=0302029 Y=1016175	N=09^0 11.351' E=007^0 11.894'	112 MOROCCO ROAD,SULEJA
15	X=0302028 Y=1016131	N=09^0 11.330' E=007^0 11.893'	OFF MOROCCO ROAD,SULEJA
16	X=0302003 Y=1016060	N=09^0 11.290' E=007^0 11.880'	OFF MOROCCO ROAD,SULEJA
17	X=0302003 Y=1016016	N=09^0 11.266' E=007^0 11.880'	OFF MOROCCO ROAD,SULEJA
18	X=0302023 Y=1015992	N=09^0 11.253' E=007^0 11.891'	OFF MOROCCO ROAD,SULEJA
19	X=0302003 Y=1015985	N=09^0 11.249' E=007^0 11.880'	OFF MOROCCO ROAD,SULEJA

20	X=0302003 Y=1015935	N=09^0 11.222' E=007^0 11.880'	OFF MOROCCO ROAD,SULEJA
21	X=0302023 Y=1015937	N=09^0 11.223' E=007^0 11.891'	OFF MOROCCO ROAD,SULEJA
22	X=0301913 Y=1015893	N=09^0 11.199' E=007^0 11.831'	OFF MOROCCO ROAD,SULEJA
23	X=0302014 Y=1015885	N=09^0 11.195' E=007^0 11.886'	OFF MOROCCO ROAD,SULEJA
24	X=0302021 Y=1015812	N=09^0 11.155' E=007^0 11.890'	OFF MOROCCO ROAD,SULEJA
25	X=0302020 Y=1015774	N=09^0 11.135' E=007^0 11.890'	OFF MOROCCO ROAD,SULEJA
26	X=0300740 Y=1016065	N=09^0 11.289' E=007^0 11.390'	ALONG BWARI ROAD, GRA, ARMY BARRACK, SULEJA
27	X=0301030 Y=1016183	N=09^0 11.354' E=007^0 11.348'	ALONG BWARI ROAD, GRA, ARMY BARRACK, SULEJA
28	X=0301007 Y=1016167	N=09^0 11.345' E=007^0 11.335'	ALONG BWARI ROAD, GRA, ARMY BARRACK, SULEJA
29	X=0300803 Y=1016283	N=09^0 11.407' E=007^0 11.224'	ALONG BWARI ROAD, GRA, ARMY BARRACK, SULEJA
30	X=0300776 Y=1016273	N=09^0 11.402' E=007^0 11.209'	THE BARRACK ALONG BWARI ROAD,SULEJA

31	X=0300745 Y=1016257	N=09^{0} 11.393’ E=007^{0} 11.192’	ALONG BWARI ROAD,INSIDE LOWCOST ESTATE,SULEJA
32	X=0300673 Y=1016311	N=09^{0} 11.422’ E=007^{0} 11.153’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
33	X=0300493 Y=1016246	N=09^{0} 11.387’ E=007^{0} 11.057’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
34	X=0300493 Y=1016246	N=09^{0} 11.387’ E=007^{0} 11.055’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
35	X=0300600 Y=1016164	N=09^{0} 11.342’ E=007^{0} 11.114’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
36	X=0300523 Y=1016090	N=09^{0} 11.302’ E=007^{0} 11.072’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
37	X=0300468 Y=1016070	N=09^{0} 11.291’ E=007^{0} 11.042’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
38	X=0300383 Y=1016099	N=09^{0} 11.306’ E=007^{0} 11.995’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
39	X=0300383 Y=1016099	N=09^{0} 11.306’ E=007^{0} 11.995’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
40	X=0300383 Y=1016099	N=09^{0} 11. 306’ E=007^{0} 11.995’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
41	X=0300344 Y=1016164	N= 09^{0} 11.342’ E= 007^{0} 11.974’	LOWCOST ESTATE AREA,BWARI RAD,SULEJA

42	X=0300344 Y=1016164	N=09^0 11.342' E= 007^0 11.974'	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
43	X=0300344 Y=1016164	N=09^0 11.342' E= 007^0 11.974'	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
44	X=0300336 Y=1016167	N=09^0 11.343' E= 007^0 11.969'	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
45	X=0300328 Y=1016172	N=09^0 11.346' E= 007^0 11.965'	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
46	X=0300320 Y=1016157	N=090 11.338' E= 007^0 11.961'	LOWCOST ESTATE AREA,BWARI RAD,SULEJA
47	X=0300310 Y=1016118	N=09^0 11.317' E= 007^0 11.955'	ALONG MOROCCO ROAD, SULEJA.
48	X=0300255 Y=1016208	N=09^0 11.365' E= 007^0 11.925'	ALONG MOROCCO ROAD, SULEJA.
49	X=0300231 Y=1016219	N=09^0 11.371' E= 007^0 11.912'	ALONG MOROCCO ROAD, SULEJA.
50	X=0300199 Y=1016238	N=09^0 11.381' E= 007^0 11.895'	ALONG MOROCCO ROAD, SULEJA.

A1-S2: STATION IDENTIFICATION

S/N	GPS READINGS		CONVENTIONAL LOCATION
	UTM	LOCAL COORDINATES	
1	X:302048 Y:1011605	09^0 08’ 52”N 07^0 11’ 55”E	Besides Ijeoma Super Store , along Keffi Rd. Suleja.
2	X:302018 Y:1011593	09^0 08’ 52”N 07^0 11’54”E	Beside Sybec Pharmacy and Stores, off Keffi Rd.
3	X:301987 Y:1011596	09^0 08’ 53”N 07^0 11’ 53”E	No. 2 Queen’s avenue, Rafin Sanyi, Suleja.
4	X:301957 Y:1011594	09^0 08’ 52”N 07^0 11’ 52”E	Skybiz Centre and Communication Centre, “ .
5	X:301987 Y:1011593	09^0 08’ 52”N 07^0 11’ 53”E	Beside station (4).
6	X:301957 Y:1011589	09^0 08’ 52”N 07^0 11’ 50”E	Opposite station (4)
7	X:301896 Y:1011655	09^0 08’ 54”N 07^0 11’ 50”E	Sarki Area.
8	X:301865 Y:1011655	09^0 08’ 54”N 07^0 11’ 49”E	“ “
9	X:301866 Y:1011717	09^0 08’ 56”N 07^0 11’ 50”E	“ “

10	X:301835 Y:1011625	09^0 08’ 53”N 07^0 11’ 48”E	Melina Market Area.
11	X:301804 Y:1011625	09^0 08’ 53”N 07^0 11’ 47”E	Melins Market, Suleja.
12	X:301804 Y:1011656	09^0 08’ 54”N 07^0 11’ 47”E	Mercy of God restaurant, Rafin Sanyi.
13	X:301743 Y:1011625	09^0 08’ 53”N 07^0 11’ 45”E	Behind station (11)
14	X:301804 Y:1011622	09^0 08’ 54”N 07^0 11’ 47”E	
15	X:301774 Y:1011687	09^0 08’ 55”N 07^0 11’ 46”E	Beside Deeper Life Bible Church, Fafin Sanyni
16	X:301682 Y:1011626	09^0 08’ 53”N 07^0 11’ 43”E	Opposite mount zion church.
17	X:301712 Y:1011595	09^0 08’ 52”N 07^0 11’ 44”E	Along station (16)
18	X:301621 Y:1011565	09^0 08’ 51”N 07^0 11’ 41”E	Same street as station (17)
19	X:301559 Y:1011534	09^0 08’ 50”N 07^0 11’39”E	Near Emarculate Heart School
20	X:301529 Y:1011504	09^0 08’ 49”N 07^0 11’ 38”E	Same street as above.

21	X:301315 Y:1011474	09^0 08’ 48”N 07^0 11’ 31”E	Rafin sanyi area.
22	X:301468 Y:1011473	09^0 08’ 47”N 07^0 11’ 36”E	“ “ “
23	X:301559 Y:1011442	09^0 08’ 46”N 07^0 11’ 39”E	
24	X:301589 Y:1011442	09^0 08’ 47”N 07^0 11’ 40”E	Rafin Sanyi.
25	X:301589 Y:1011380	09^0 08’ 45”N 07^0 11’ 40”E	Off All Christian Fellowship Church.
26	X:301711 Y:1011380	09^0 08’ 45”N 07^0 11’ 44”E	Same street as above
27	X:301712 Y:1011411	09^0 08’ 47”N 07^0 11’ 44”E	“ “ “ “
28	X:301742 Y:1011472	09^0 08’ 48”N 07^0 11’ 45”E	Victoria Looking Goog Saloon, Rafin Sanyi.
29	X:301773 Y:1011472	09^0 08’ 48”N 07^0 11’ 46”E	Ranfin Sanyi area.
30	X:301834 Y:1011502	09^0 08’ 49”N 07^0 11’ 48”E	Beside Vince-K, barbing Saloon, Rafin Sanyi.
31	X:301865 Y:1011533	09^0 08’ 50”N 07^0 11’ 49”E	Vince-K Barbing Saloon

32	X:301834 Y:1011533	09^0 08’ 49”N 07^0 11’ 48”E	Along station (30) street.
33	X:301895 Y:1011502	09^0 08’ 50”N 07^0 11’ 50”E	Bible Christian Centre, suleja.
34	X:301772 Y:1011379	09^0 08’ 45”N 07^0 11’ 46”E	Rafin Sanyi area.
35	X:301680 Y:1011257	09^0 08’ 41”N 07^0 11’ 43”E	Nothing pass God, Medicine store
36	X:301619 Y:1011196	09^0 08’ 39”N 07^0 11’ 41”E	Vision Block Industry, Polosa Road.
37	X:301588 Y:1011135	09^0 08’ 37”N 07^0 11’ 40”E	Same street as station (36)
38	X:301526 Y:1011043	09^0 08’ 34”N 07^0 11’ 38”E	“ “ “ “ “
39	X:301680 Y:1011257	09^0 08’ 41”N 07^0 11’ 43”E	Beside Nothing pass God medicine store
40	X:301741 Y:1011257	09^0 08’ 40”N 07^0 11’ 45”E	End-time Glory Ministry, Rafin Sanyi.
41	X:301772 Y:1011287	09^0 08’ 42”N 07^0 11’ 46”E	Redeem Christian Church, polosa Road, rafin Sanyi.
42	X:301833 Y:1011256	09^0 08’ 41”N 07^0 11’ 48”E	Off Paulosa Road.

43	X:301986 Y:1011409	09^0 08’ 46’N 07^0 11’ 53”E	Along Paulosa Road.
44	X:301985 Y:1011133	09^0 08’ 37”N 07^0 11’ 53”E	Off Paulosa Road.
45	X:301956 Y:1011440	09^0 08’ 47”N 07^0 11’ 53”E	“ “ “
46	X:302017 Y:1011409	09^0 08’ 46”N 07^0 11’ 54”E	Along Paulosa Road.
47	X:302017 Y:1011439	09^0 08’ 47”N 07^0 11’ 54”E	“ “ “
48	X:301987 Y:1011501	09^0 08’ 49”N 07^0 11’ 53”E	“ “ “
49	X:302078 Y:1011439	09^0 08’ 47”N 07^0 11’ 56”E	“ “ “
50	X:302107 Y:1011470	09^0 08’ 47”N 07^0 11’ 57”E	“ “ “
51	X:302170 Y:1011470	09^0 08’ 48”N 07^0 11’ 59”E	“ “ “
52	X:302109 Y:1011439	09^0 08’ 48”N 07^0 11’ 57”E	“ “ “

A1-S3: STATION IDENTIFICATION

S/N	LOCAL CORDINATES	UTM	LOCATOIN OF STREETS
1	N 09 11.202 E 07 11.216	X 5206129.93 Y 794417. 8	Kaduna road field base
2	N 09 11.212 E 07 11.219	X 520631.33 Y 794423.52	Opposite field base
3	N 09 11.213 E 07 11.228	X 520633.16 Y 794440.1	Opposite field base
4	N 09 11.222 E 07 11.24	X 520649.71 Y794462.22	Opposite field base
5	N 09 11.229 E 07 11.23	X 520662.6 Y 794443.8	Opposite field base
6	N 09 11.246 E 07 11.233	X 520693.88 Y 794493.34	Celebration chapel international
7	N 09 11.226 E 07 11.257	X 520657.06 Y 794493.54	A long kaduna road
8	N 09 11.229 E 07 11.257	X 520602.58 Y 794493.91	A long kaduna road
9	N 09 11.231 E 07 11.261	X 520666.28 Y 794500.91	Royal furniture besid NBC suleja coca-cola depot

10	N 09 11.233 E 07 11.261	X 520669.94 Y 794500.92	Mohammed quality furniture opposite coca-cola depot
11	N 09 11.248 E 07 11.302	X 520697.51 Y 794576.47	Along kaduna road
12	N 09 11.301 E 07 11.269	X 520795.06 Y 794515.71	Opposite trust and obey the lord chapel along field base
13	N 09 11.309 E 07 11.262	X 520809.78 Y 794502.82	Trust and obey church opposite field base
14	N 09 11.34 E 07 11.254	X 520866.83 Y 794488.1	Behind trust and obey church
15	N 09 11.35 E 07 11.217	X 520885.26 Y 79441974	Field base
16	N 09 11.354 E 07 11.201	X 520892.64 Y 794390.46	Field base
17	N 09 11.321 E 07 11.209	X 520831.91 Y 794405.17	Field base
18	N 09 11.319 E 07 11.228	X 520828.21 Y 794440.18	Suleiman barau road
19	N 09 11.341 E 07 11.209	X 520868.71 Y 794405.19	Suleiman barau road
20	N 09 11.327	X 520842.97	Suleiman barau road

	E 07 11.182	Y 794355.43	
21	N 09 11.343 E 07 11.156	X 520872.42 Y 794307.54	Suleiman barau road
22	N 09 11.346 E 07 11.159	X 520877.95 Y 794313.09	Suleiman barau road
23	N 09 11.392 E 07 11.13	X 520962.62 Y 794259.67	G.R.A
24	N 09 11.408 E 07 11.266	X 520991.95 Y 794510.26	G.R.A
25	N 09 11.40E 07 11. 142	X 520979.17 Y 794218.79	G.R.A
26	N 09 11.418 E 07 11.142	X 5201010.45 Y 794218.79	G.R.A
27	N 09 11.419 E 07 11.093	X 5201012.33 Y 794191.52	Behind oyus
28	N 09 11.435 E 07 11.131	X 520041.74 Y 794261.8	Behind oyus
29	N 09 11.429 E 07 11.129	X 520030.7 Y 794257.86	Behind oyus
30	N 09 11.428 E 07 11.12	X 520028.87 Y 794241.28	Behind oyus

31	N 09 11.417 E 07 11.068	X 520008.67 Y 794145.46	Along Suleiman barau road
32	N 09 11.412 E 07 11.59	X 520999.07 Y 795107.22	Along Suleiman barau road
33	N 09 11.395 E 07 11.61	X 520967.77 Y 795144.06	Along Suleiman barau road
34	N 09 11.396 E 07 11.40	X 520969.77 Y 794757.14	Along Suleiman barau road
35	N 09 11.415 E 07 11.28	X 521004.82 Y 794536.06	Along Suleiman barau road
36	N 09 11.427 E 07 11.3O	X 521026.89 Y 794572.92	Along paragon
37	N 09 11.426 E 07 11.29	X 521025.06 Y 794554.49	Along paragon
38	N 09 11.436 E 07 11.25	X 521043.49 Y 794480.8	Along paragon
39	N 09 11.439 E 07 11.30	X 521048.97 Y 794572.93	Along paragon
40	N 09 11.437 E 07 11.02	X 521045.5 Y 794057.04	Opp Suleiman barau road old paragon hotel

41	N 09 11.464 E 07 11.02	X 521069.43 Y 794057.05	Opp Suleiman barau road old paragon hotel.
42	N 09 11.450 E 0711.02	X 521095.19 Y 794057.06	Suleiman barau road
43	N 09 11.476 E 07 10.595	X 521117.6 Y 793274.02	Along old paragon hotel
44	N 09 11.480 E 07 10.587	X 521124.96 Y 793259.28	Along old paragon hotel
45	N 09 11.500 E 07 10.560	X 521161.79 Y 793209.55	Mama do good beside ministry of justice
46	N 09 11.520 E 07 10.573	X 521198.58 Y 793233.52	Mama do good beside ministry of justice
47	N 09 11.473 E 07 10.562	X 521112.1 Y 793213.21	Near high court
48	N 09 11.457 E 07 11.567	X 521082.66 Y 793222.41	Near high court
49	N 09 11.450 E 07 10.568	X 521069.77 Y 793224.25	Near high court
50	N 09 11.441 E 07 10.571	X 521053.21 Y 793229.77	Near high court

A1-S4: STATION IDENTIFICATION

S/N	**GPS READINGS**	**VALUES**	**ADDRESS**
	UTM VALUES	LOCAL COORDINATES	
1.	X = 300 15 2.7 Y = 1014748.67	N = 09^0 10’ 52.4” E = 007^0 10’ 34.4”	Hassan Dallatu Road.
2.	X = 300091.64 Y = 1014748.98	N = 09^0 10’ 50.4” E = 007^0 10’ 34.4”	Hassan Dallatu Road.
3.	X = 300082.53 Y = 1014758.25	N = 09^0 10’ 50.1” E = 007^0 10’ 34.7”	Hassan Dallatu Road.
4.	X = 300045.89 Y = 1014758.43	N = 09^0 10’ 48.9” E = 007^0 10’ 34.7”	Hassan Dallatu Road.
5.	X = 299997 Y = 1014752.53	N = 09^0 10’ 47.3” E = 007^0 10’ 35.5”	Hassan Dallatu Road.
6.	X = 299868.91 Y = 1014780.84	N = 09^0 10’ 43.1” E = 007^0 10’ 35.4”	Anguwar Iya, Suleja
7.	X = 299992.81 Y = 1014827.31	N = 09^0 10’ 40.6” E = 007^0 10’ 36.9”	Anguwar Iya, Suleja
8.	X = 299780.62 Y = 1014830.44	N = 09^0 10’ 40.2” E = 007^0 10’ 37.0”	Anguwar Iya, Suleja
9.	X = 299756.25 Y = 1014842.85	N = 09^0 10’ 39.4” E = 007^0 10’ 37.4”	Anguwar Iya, Suleja
10.	X = 299744.2	N = 09^0 10’ 39.0”	Anguwar Iya, Suleja

	Y = 1014873.64	E = 007^0 10’ 38.3”	
11.	X = 299704.49 Y = 1014870.77	N = 09^0 10’ 37.7” E = 007^0 10’ 38.3”	Anguwar Iya, Suleja
12	X = 299695.47 Y = 1014898.47	N = 09^0 10’ 37.4” E = 007^0 10’ 39.2”	Anguwar Iya, Suleja
13.	X = 299683.63 Y = 1014972.26	N = 09^0 10’ 37.0” E = 007^0 10’ 41.6”	Anguwar Dallatu
14.	X = 299664.95 Y = 1014901.69	N = 09^0 10’ 36.4” E = 007^0 10’ 39.3”	Hassan Dallatu Road, Suleja
15.	X = 299661.56 Y = 1014834.12	N = 09^0 10’ 36.3” E = 007^0 10’ 37.1”	Anguwar Gayan
16.	X = 299627.85 Y = 1014816.2	N = 09^0 10’ 35.2” E = 007^0 10’ 36.3”	Anguwar Gayan
17.	X = 299560.71 Y = 1014816.2	N = 09^0 10’ 33.0” E = 007^0 10’ 46.5”	Anguwar Gayan Suleja
18.	X = 299585.68 Y = 1014923.6	N = 09^0 10’ 33.8” E = 007^0 10’ 40.0”	Hassan Dallatu Road
19.	X = 299558.33 Y = 1014948.32	N = 09^0 10’ 32.9” E = 007^0 10’ 40.8”	Hassan Dallatu Road
20.	X = 299585.99 Y = 1014985.05	N = 09^0 10’ 28.3” E = 007^0 10’ 43.0”	Salanke, Suleja
21.	X = 299418.18	N = 09^0 10’ 28.3”	Anguwar Danzaria

	Y = 1015007.41	E = 007^0 10’ 42.7”	
22.	X = 299409.06 Y = 1015016.67	N = 09^0 10’ 28.0” E = 007^0 10’ 43.0”	Anguwar Danzaria
23.	X = 299375.52 Y = 1015026.06	N = 09^0 10’ 26.9” E = 007^0 10’ 43.3”	Anguwar Danzaria
24.	X = 2993881.85 Y = 1015069.04	N = 09^0 10’ 27.1” E = 007^0 10’ 44.7”	Anguwar Danzaria
25.	X = 299318.26 Y = 10115173.82	N = 09^0 10’ 25.0” E = 007^0 10’ 48.1”	Gindi Rimi
26.	X = 2993030.01 Y = 1015173.82	N = 09^0 10’ 24.5” E = 007^0 10’ 48.9”	Gindi Rimi
27.	X = 299260.38 Y = 1015198.7	N = 09^0 10’ 23.1” E = 007^0 10’ 48.9”	Gindi Rimi
28.	X = 299226.86 Y = 1015211.16	N = 09^0 10’ 22.0” E = 007^0 10’ 49.3”	Gindi Rimi, Suleja
29.	X = 299217.65 Y = 1015201.99	N = 09^0 10’ 21.7” E = 007^0 10’ 49.7”	Gindi Rimi, Suleja
30	X = 299147.38 Y = 1015193.13	N = 09^0 10’ 19.4” E = 007^0 10’ 48.7”	Anguwar – Juma
31.	X = 299086.03 Y = 1015138.14	N = 09^0 10’ 17.4” E = 007^0 10’ 46.9”	Anguwar – Juma
32.	X = 299033.05	N = 09^0 10’ 14.7”	Anguwar – Juma

	Y = 1015031.03	E = 007^0 10’ 43.4”	
33.	X = 298990.74 Y = 1015012.65	N = 09^0 10’ 14.3” E = 007^0 10’ 42.8”	Anguwar – Juma
34.	X = 299247.06 Y = 1014980.63	N = 09^0 10’ 22.7” E = 007^0 10’ 41.8”	Anguwar – Pawa
35.	X = 299201.34 Y = 1014996.22	N = 09^0 10’ 21.2” E = 007^0 10’ 42.3”	Anguwar – Pawa
36.	X = 299201.15 Y = 1014959.35	N = 09^0 10’ 21.2” E = 007^0 10’ 41.1”	Anguwar – Pawa
37.	X = 299213.2 Y = 1014928.57	N = 09^0 10’ 21.6” E = 007^0 10’ 40.2”	Anguwar – Pawa
38.	X = 299262.18 Y = 1014952.9	N = 09^0 10’ 23.2” E = 007^0 10’ 40.9”	Anguwar – Pawa
39.	X = 299289.68 Y = 1014955.83	N = 09^0 10’ 24.1” E = 007^0 10’ 41.0”	Anguwar – Pawa
40.	X = 299292.59 Y = 1014928.16	N = 09^0 10’ 24.2” E = 007^0 10’ 40.1”	Anguwar - Galadima
41.	X = 299344.62 Y = 101495.48	N = 09^0 10’ 25.9” E = 007^0 10’ 40.9”	Anguwar – Galadima
42.	X = 299350.71 Y = 1014949.37	N = 09^0 10’ 26.1” E = 007^0 10’ 40.8”	Anguwar - Galadima
43.	X = 299421.37	N = 09^0 10’ 28.4”	Anguwar – Danzaria

	Y = 1015035.04	E = 007^0 10’ 43.6”	
44.	X = 299400.78 Y = 1015188.76	N = 09^0 10’ 27.7” E = 007^0 10’ 42.6”	Emirs Palace Round-about
45.	X = 299477.28 Y = 1015222.17	N = 09^0 10’ 30.2” E = 007^0 10’ 49.7”	Opposite Emirs Palace round–about Suleja
46.	X = 299486.55 Y = 1015243.63	N = 09^0 10’ 30.5” E = 007^0 10’ 50.4”	Opposite Emirs Palace Suleja
47.	X = 299495.79 Y = 1015258.95	N = 09^0 10’ 30.8” E = 007^0 10’ 50.9”	Opposite Emirs Palace Suleja
48.	X = 299527.42 Y = 1015311.07	N = 09^0 10’ 31.5” E = 007^0 10’ 52.6”	Emirs round about Suleja
49.	X = 299477.79 Y = 1015323.56	N = 09^0 10’ 30.2” E = 007^0 10’ 53.0”	Along Emirs Palace Suleja
50.	X = 299544.78 Y = 1015286.35	N = 09^0 10’ 32.4” E = 007^0 10’ 51.8”	Emirs Round-about Suleja

A1-S5: STATION IDENTIFICATION

	LOCAL CORDINATES	UTM	LOCATOIN OF STREETS
1	N 09 06 38.6	X 292912	Along keffi road
	E 07 12 54.6	Y 1018602	
2	N 09 06 38.8	X 292934	Off keffi road
	E 07 12 54.6	Y 101860	
3	N 09 06 38.5	X 292970	Off keffi road
	E 07 12 5.9	Y 101605	
4	N 09 06 38.5	X 292982	Oga musa avenue
	E 07 12 56.9	Y 1018599	Street
5	N 09 06 38.6	X 292985	Oga musa avenue
	E 07 12 57.4	Y 1018602	Street
6	N 09 06 37.3	X 292988	Oga musa avenue
	E 07 12 57.1	Y 1018562	Street
7	N 09 06 36.9	X 292997	Oga musa avenue
	E 07 12 57.4	Y 1018549	Street
8	N 09 06 36.4	X 293000	Barikin
	E 07 12 57.5	Y 1018534	Gwamps
9	N 09 06 36.1	X 292997	Barikin
	E 07 12 57.4	Y 1018525	Gwamps

10	N 09 06 36.1	X 292988	Barinkin
	E 07 12 57.1	Y 1018525	Gwamps
11	N 09 06 30.0	X 292975	Barinkin
	E 07 12 56.7	Y 1018338	Gwamps
12	N 09 06 31.5	X 292884	Along keffi road
	E 07 12 53.7	Y 1018384	
13	N 09 06 27.9	X 292953	Beside police station
	E 07 12 56.0	Y 1018273	Madalla
14	N 09 06 27.8	X 292947	Beside police station
	E 07 12 55.8	Y 1018270	Madalla
15	N 09 06 26.5	X 292935	Beside police station
	E 07 12 55.4	Y 1018230	Madalla
16	N 09 06 26.5	X 292935	Madalla junction
	E 07 12 55.4	Y 1018215	
17	N 09 06 26.4	X 292913	Madalla junction
	E 07 12 54.7	Y 1018227	
18	N 09 06 26.1	X 292907	Along madalla junction
	E 07 12 54.5	Y 1018218	
19	N 09 06 25.2	X 292898	Along madalla junction
	E 07 12 54.2	Y 1018160	
20	N 09 06 24.8	X 292898	Madalla junction
	E 07 12 54.2	Y 1018160	

21	N 09 06 27.4	X 292926	Off madalla junction
	E 07 12 55.1	Y 1018255	
22	N 09 06 20.6	X 292946	Shadow CD record studio
	E 07 12 55.8	Y 1018049	
23	N 09 06 19.0	X 292958	Off madalla junction
	E 07 12 56.2	Y 101799	
24	N 09 06 17.9	X 292958	1 Hussein madaki
	E 07 12 56.2	Y 1017999	Street
25	N 09 06 17.4	X 292955	Tailoring shop off Hussein street
	E 07 12 56.0	Y 1017950	
26	N 09 06 16.5	X 292951	Off hushing street
	E 07 12 56.0	Y 1017907	
27	N 09 06 16.3	X 292957	Around nitel pole
	E 07 12 56.2	Y 1017917	
28	N 09 06 15.9	X 292966	Around nitel pole
	E 07 12 56.5	Y 1017895	
29	N 09 06 14.0	X 292977	Around nitel pole
	E 07 12 56.7	Y 1017846	
30	N 09 06 14.3	X 292960	Around nitel pole
	E 07 12 55.6	Y 1017855	
31	N 09 06 44.9	X 292914	Around nitel pole
	E 07 12 54.8	Y 1017874	

32	N 09 06 15.7	X 292890	Around nitel pole
	E 07 12 54.0	Y 1017899	
33	N 09 06 15.9	X 292966	Opposite madalla health centre
	E 07 12 56.5	Y 1017895	
34	N 09 06 14.0	X 292977	Nitel base road
	E 07 12 56.7	Y 1017846	
35	N 09 06 14.3	X 292990	Nitel base road
	E 07 12 55.6	Y 1017899	
36	N 09 06 22.2	X 292708	Nitel base road
	E 07 12 48.6	Y 1018099	
37	N 09 06 22.6	X 292690	Nitel base road
	E 07 12 47.4	Y 10178112	
38	N 09 06 23.8	X 292736	Along emir palace madalla
	E 07 12 48.9	Y 1018148	
39	N 09 06 14.0	X 292977	Along emir palace madalla
	E 07 12 56.7	Y 1017846	
40	N 09 06 22.6	X 292799	Along emir palace madalla
	E 07 12 51.7	Y 1018111	
41	N 09 06 21.7	X 292854	Sarki area
	E 07 12 52.3	Y 1018083	
42	N 09 06 22.2	X 292764	Sarki area
	E 07 12 53.1	Y 1018098	

43	N 09 06 28.1	X 292883	Sarki area
	E 07 12 53.7	Y 1018280	
44	N 09 06 28.6	X 292879	Sarki area
	E 07 12 53.6	Y 1018295	
45	N 09 06 28.8	X 292883	Sarki area
	E 07 12 53.7	Y 1018307	
46	N 09 06 29.3	X 292862	Off madalla junction
	E 07 12 53.6	Y 1018317	
47	N 09 06 29.4	X 292880	Jonavitphor mercy way, madalla junction
	E 07 12 53.6	Y 1018338	
48	N 09 06 28.6	X 292879	Along madalla junction
	E 07 12 53.6	Y 1018295	
49	N 09 06 29.1	X 292877	Along madalla junction
	E 07 12 53.5	Y 1018310	
50	N 09 06 29.3	X 292862	Along madalla junction
	E 07 12 53.6	Y 1018317	

A1-S6: STATION IDENTIFICATION

	LOCAL CORDINATES	UTM	LOCATOIN OF STREETS
1	N=09 11.452 E=07 10.715	X=299870.62 Y=1016320.08	Opposite general hospital. Suleiman Barau road
2	N=09 11.452 E=07 10.715	X=299870.62 Y=1016320.08	Suleiman barau Rd. sleja
3	N=09 11.486 E=07 10.721	X=299882.18 Y=1016432.47	Opposite Nitel office, Suleiman Barau Rd.
4	N=09 11.514 E=007 10.746	X=299928.24 Y=1016483.85	Opposite Nitel office, Suleiman Barau Rd
5	N=09 11.583 E=007 10.762	X=299958.19 Y=1016610.89	Behind intercontinental bank, Suleiman barau Rd.
6	N=09 11.657 E=007 10.845	X=300110.93 Y=1016746.53	In front of Dadama guest house Suleiman Barau Rd.
7	N=09 11.709 E=007 10.938	X=300281.77 Y=1016841.52	Suleiman Barau Rd. Behind formal Nepa.
8	N=09 11.638 E=007 10.931	X=300268.29 Y=1016710.71	After mosque,Opp Nepa. Suleiman barau Rd.
9	N=09 11.676 E=007 10.966	X=300332.75 Y=1016780.43	73, Suleiman Barau Rd.

10	N=09 11.662 E=007 10.987	X=300371.09 Y=1016754.43	74, Suleiman Barau Rd
11	N=09 11.642 E=007 11.026	X=300442.35 Y=1016717.62	Gra,, Off Suleiman Barau Rd.
12	N=09 11.642 E=007 11.037	X=300462.5 Y=1016717.1	Gra,, Off Suleiman Barau Rd.
13	N=09 11.675 E=007 11.057	X=300499.44 Y=1016777.74	Opp, Abuja capital polythenic office, Suleiman barau Rd
14	N=09 11.723 E=007 11.008	X=300410.13 Y=1016866.68	GRA, off Suleiman Barau Rd.
15	N=09 11.746 E=007 11.966	X=302165.22 Y=1016900.22	GRA ABK/S/0/025, Suleiman barau Rd.
16	N=09 11.624 E=007 11.042	X=300471.49 Y=1016683.55	106, Suleiman Barau Rd
17	N=09 11.624 E=007 11.076	X=300533.77 Y=1016683.55	Plot 80 Suleiman Barau Rd.
18	N=09 11.624 E=007 11.076	X=300533.77 Y=1016683.55	Plot 80 Suleiman Barau Rd
19	N=09 11.539 E=007 11.126	X=300624.57 Y=1016526.4	Plot 59, Suleiman Barau Rd
20	N=09 11.490	X=300508.71	Plot 92, Suleiman Barau Rd

	E=007 11.063	Y=1016436.66	
21	N=09 11.445 E=007 11.986	X=302166.1 Y=1016345.35	Plot ABK/S/L/0117. Suleiman Barau Rd.
22	N=09 11.571 E=007 11.027	X=300443.52 Y=1016586.31	Front of Saida Guest inn. Suleiman Barau Rd.
23	N=09 11.571 E=007 11.027	X=300443.52 Y=1016586.31	Suleiman Barau Rd.
24	N=09 11.466 E=007 11.158	X=300682.51 Y=1016391.54	Opp. Sarafina Guest inn, Suleiman Barau Rd.
25	N=09 11.466 E=007 11.158	X=300682.51 Y=1016391.54	Opp. Sarafina Guest inn, Suleiman Barau Rd
26	N=09 11.450 E=007 11.180	X=300724.62 Y=1016387.64	Suit 2, Sarafina Guest inn, Suleiman Barau Rd
27	N=09 11.450 E=007 11.180	X=300734.82 Y=1016361.81	After Sarafina Guest inn, Suleiman Barau Rd
28	N=09.1958153 Y=007.1806883	X=0300105 Y=1016916	Suleiman Barau Rd.
29	N=9.1958153 E=7.1806883	X=0300201 Y=1016951	Suleiman Barau Rd.
30	N=9.1966426 E=7.1815939	X=0300205 Y=1017007	Along catering road, GRA

31	N=9.1981522 E=7.1815316	X=0300199 Y=1017174	GRA
32	N=9.1981987 E=7.1817861	X=0300227 Y=1017197	Catering road, GRA
33	N=9.1981987 E=7.1817861	X=0300227 Y=1017197	GRA
34	N=9.1989759 E=7.1817093	X=0300219 Y=1017265	GRA
35	N=9.1989695 E=7.182228	X=0300276 Y=1017264	Catering road, GRA
36	N=9.1964781 E=7.1848338	X=0300561 Y=1017027	Along catering road Rd. GRA
37	N=9.1968413 E=7.1851413	X=0300595 Y=1017027	Along catering Rd. GRA
38	N=9.1972237 E=7.185667	X=0300653 Y=1017069	GRA
39	N=9.1939257 E=7.1860842	X=0300697 Y=1016704	GRA
40	N=9.193015 E=7.1865892	X=0300752 Y=1016603	Catering rd. GRA
41	N=9.1929251 E=7.1866897	X=0300763 Y=1016593	GRA

42	N=9.192492 E=7.1868739	X=0300783 Y=1016545	GRA
43	N=9.1914371 E=7.1874525	X=0300846 Y=1016428	GRA
44	N=9.18996794 E=7.1885259	X=0300963 Y=1016233	Catering Road, GRA.
45	N=9.1893969 E=7.1880815	X=0300914 Y=1016233	GRA
46	N=9.1890694 E=7.1876829	X=0300870 Y=1016166	Suleiman Barau Rd
47	N=9.1889059 E=7.1873476	X=0300854 Y=1016148	Suleiman Barau Rd.
48	N=9.1887965 E=7.1873476	X=0300823 Y=1016136	Suleiman Barau Rd
49	N=9.1899081 E=7.187251	X=0300823 Y=1016259	Suleiman Barau Rd
50	N=9.1899081 E=7.187251	X=0300823 Y=1016259	Suleiman Barau Rd

The abridged dataset for Minna and Suleja are presented in the tables shown hence.

MINNA SHEETS

A2-M1: STATIONS' DATASET

NOISE LEVEL DATA LOG

	DESCRIPTION OF SOURCE OF NOISE				GPS VALUES		NOISE LEVEL VA dBA)		
	SOURCES OF NOISE	MODEL / SERIAL NO.	RATING	AGE (yrs)	UTM VALUE	LOCAL CORDINATE	1st reading	2nd reading	3rd Re g
1.	A diesel operated grinding engine	D175		1	X:0228051 Y: 1065324	E:6^0.5221507” N:9^0.6293855”	93.8	92.6	93
2.	Vulcanizing machine			2	X:0228003 Y: 1065834	E:6^0.52217097” N:9^0.6299246”	93.2	92.4	91
3.	Tiger generator (medium size)	TG2700	2.0KW	1	X:0227991 Y: 1065375	E:6^0.5221601” N:9^0.6298425”	88.3	86.7	85
4.	Grinding & milling machine		10HP & 15HP	10	X:0227964 Y: 1065390	E:6^0.52213542” N:9^0.6299762”	93.7	95.6	91

5.	Grinding & milling machine		10HP & 15HP	5	X:0227943 Y: 1065392	E:6^{0}.5211629” N:9^{0}.6299929”	93.7	95.6	91
6.	Tiger generator (small size)			2	X:0227726 Y: 1065487	E:6^{0}.5191807” N:9^{0}.6308373”	80.1	81.1	80
7.	Lister generator (big size)			2	X:0227805 Y: 1065497	E:6^{0}.5198994” N:9^{0}.6309328”	93.2	92.3	91
8.	Welding workshop			1	X:0227947 Y: 1065437	E:6^{0}.5211963” N:9^{0}.6303999”	95.5	80.3	90
9.	Tiger generator (small size)				X:0227999 Y: 1065437	E:6^{0}.5216698” N:9^{0}.6304033”	80.1	81.1	80
10	Welding workshop				X:0228045 Y: 1065387	E:6^{0}.522092” N:9^{0}.6299544”	95.5	80.3	90
11	Vulcanizing machine			2	X:0228098 Y: 1065347	E:6^{0}.5225772” N:9^{0}.6295964”	93.7	90.2	93
12	LISTER generator	15674ST 228-04	7.0KV A 30.4A	10	X:0228164 Y: 1065425	E:6^{0}.523173” N:9^{0}.6303056”	93.2	92.3	91
13	Viking exclusive generator		20KVA 400V 28.9A	3	X:0228206 Y: 1065428	E:6^{0}.5235553” N:9^{0}.6303355”	93.8	92.5	93
14	Honda generator	ES4500	3.6KV A 12V	7	X:0228368 Y: 1065340	E:6^{0}.5250362” N:9^{0}.6295508”	89.7	90.2	93

15	Tiger generator (small size)			1	X:0228366 Y: 1065500	E:6^{0}.5250074” N:9^{0}.6309966”	80.1	81.1	80
16	Vulcanizing machine		5.5HP	2	X:0228468 Y: 1065469	E:6^{0}.5259382” N:9^{0}.6307231”	93.7	95.6	91
17	ELE PAQ generator		9HP	1	X:0228575 Y: 1065478	E:6^{0}.5269119” N:9^{0}.6308114”	95.1	93.1	90
18	Tiger generator (small size)			2	X:0228559 Y: 1065479	E:6^{0}.5267662” N:9^{0}.6308194”	80.1	81.1	80
19	Honda generator	SH5000 DX	4.2KV A	1	X:0228520 Y: 1065439	E:6^{0}.5264137” N:9^{0}.6304554”	89.7	90.2	93
20	TEC generator		2.0KV A	6 mont h.	X:0228647 Y: 1065124	E:6^{0}.5275908” N:9^{0}.627617”	90.0	91.2	90
21	Vulcanizing machine				X:0228715 Y: 1065486	E:6^{0}.5281862” N:9^{0}.6308929”	93.2	92.4	91
22	Welding workshop				X:0228699 Y: 1065519	E:6^{0}.5280383” N:9^{0}.6311901”	95.5	80.3	90
23	YAMAHA generator		2.0KW	5	X:0228687 Y: 1065554	E:6^{0}.5279268” N:9^{0}.6315056”	95.5	93.1	96
24	SIMBA generator		15HP 1.03K W	1	X:0228711 Y: 1065592	E:6^{0}.5281428” N:9^{0}.6318506”	97.3	93.2	91

25	Tiger generator (medium size)	TG2700	2.0KW	3	X:0228806 Y: 1065550	E:6^0.5290106” N:9^0.6314772”	88.3	86.7	85
26	Grinding & milling machine		10HP & 15HP	7	X:0228752 Y: 1066025	E:6^0.5284877” N:9^0.6357663”	93.7	95.6	91
27	Grinding machine (petrol)		3.7KW		X:0228740 Y: 1066062	E:6^0.528376” N:9^0.6360999”	93.5	93.8	94
28	Tiger generator (medium size)	TG2700	2.0KW	4	X:0228755 Y: 1066140	E:6^0.5285074” N:9^0.6368058”	88.3	86.7	85
29	Grinding & milling machine		10HP & 15HP	4	X:0228753 Y: 1066293	E:6^0.5284791” N:9^0.6381883”	93.7	95.6	91
30	Grinding machine (petrol)			8	X:0228777 Y: 1065389	E:6^0.5286914” N:9^0.6390574”	93.5	93.8	94
31	Tiger generator (medium size)	TG2700	2.0KW	1	X:0229037 Y: 1066387	E:6^0.531059” N:9^0.6390563”	88.3	86.7	85
32	Lister generator		7.0KVA	4	X:0229137 Y: 1066448	E:6^0.5319656” N:9^0.6396141”	93.2	92.3	91
33	MIKANO generator			3	X:0229225 Y: 1066268	E:6^0.5327787” N:9^0.6379932”	95.3	95.8	96
34	TIGMAX generator (medium size)	TH3900 DX	3.5KVA	1	X:0229173 Y: 1066238	E:6^0.532372” N:9^0.6377187”	91.5	92.8	93

35	TIGMAX generator (medium size)	TH3900 DX	3.5KVA	2	X:0229172 Y: 1066241	E:6^0.5322979” N:9^0.6377457”	91.5	92.8	93
36	SUZUKI generator	SV7500	7.0KVA	3 month.	X:0229107 Y: 1066197	E:6^0.5317089” N:9^0.6373438”	87.1	85.9	90
37	Tiger generator (medium size)	TG2700	2.0KW	5	X:0229039 Y: 1066195	E:6^0.5310899” N:9^0.6373213”	88.3	86.7	85
38	HONDA generator (small size)			2	X:0229042 Y: 1066198	E:6^0.531117” N:9^0.6373486”	80.0	81.0	80
39	Tiger generator (medium size)	TG2700	2.0KW	8 month.	X:0227843 Y: 1065486	E:6^0.52024461” N:9^0.6308359”	88.3	86.7	85
40	Tiger generator (medium size)	TG2700	2.0KW	2	X:0227855 Y: 1065503	E:6^0.5203542” N:9^0.6309903”	88.3	86.7	85

CORRESPONDING GAS DATA LOG

S/N	SOURCE OF GAS	GPS VALUE		POLLUTANT	VALUES (ppm)			
		UTM VALUE	LOCAL COORD	GAS SAMPLES	1ST VAL	2ND VAL	3RD VAL	AV. VALUESS
1	Char coal	X: 0228049		SO_2	0.0081	0.0080	0.0082	0.0081
	Stove	Y: 1065332		CO	0.05	0.04	0.03	0.04
			E: $6^0.522132$	CL_2	0.02	0.04	0.03	0.030
				HCN	0.001	0.002	0.001	0.0033
			N: $9^0.6294577$	NO_2	0.0032	0.0030	0.0032	0.0031
				NH_2	0.02	0.01	0.00	0.01
				H_2S	0.0023	0.0021	0.000	0.0014
2	Diesel fuel grinding	X: 0228051		SO_2	0.073	0.071	0.074	0.0726
		Y: 1065324		CO	0.75	0.44	0.35	0.5133
	Engine		E: $6^0.522507$	CL_2	0.03	0.01	0.01	0.0166
				HCN	0.00	0.00	0.00	0.0000
			N: $9^0.6293855$	NO_2	0.0081	0.0083	0.0080	0.00813
				NH2	0.001	0.002	0.001	0.0040
				H_2S	0.098	0.093	0.094	0.0950
3	Fire wood	X: 0228021		SO_2	0.012	0.013	0.014	0.013
		Y: 1065359		CO	0.260	0.210	0.160	0.210
	(suya spot)		E: $6^0.5218753$	CL_2				
				HCN	0.001	0.002	0.003	0.002
				NO_2	0.073	0.072	0.071	0.072

			N: 9^0.6296998	NH2	0.010	0.010	0.020	0.013
				H_2S	0.00	0.01	0.020	0.010
4	Vulcanizing Machine	X: 0228003		SO_2	0.000	0.120	0.000	0.0323
		Y: 1065384		CO	0.380	0.330	0.410	0.1020
			E: 6^0.5217097	CL_2	0.02	0.300	0.300	0.0300
				HCN	0.004	0.006	0.003	0.0013
			N: 9^0.6299246	NO_2	0.0075	0.0080	0.00069	0.0030
				NH2	0.000	0.000	0.00	0.0166
				H_2S	0.0069	0.0000	0.000	0.0014
5	Tiger generator (medium)	X: 0227991		SO_2	0.0730	0.071	0.0074	0.073
		Y: 1065375		CO	0.750	0.440	0.35	0.513
			E: 6^0.521601	CL_2	0.030	0.010	0.010	0.020
				HCN				
			N: 9^0.6298425	NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.0930	0.094	0.095
6	Fire wood Smoke (suya spot)	X: 0227937		CO	0.260	0.210	0.160	0.210
		Y: 1065386		CL_2				
			E: 6^0.5211086	HCN	0.001	0.002	0.003	0.002
				NO_2	0.073	0.072	0.071	0.072
				NH2	0.010	0.010	0.020	0.013

			N: $9^{0}.6299383$	H_2S	0.00	0.01	0.020	0.010
				SO_2	0.012	0.013	0.014	0.013
7	Fire wood Smoke (kitchen)	X: 0227662		SO_2	0.012	0.013	0.014	0.013
		Y: 1065400		CO	0.260	0.210	0.160	0.210
			E: $6^{0}.5186037$	CL_2				
				HCN	0.001	0.002	0.003	0.002
			N: $9^{0}.6300468$	NO_2	0.073	0.072	0.071	0.072
				NH2	0.010	0.010	0.020	0.013
				H_2S	0.00	0.01	0.020	0.010
8	Tiger generator (small size)	X: 0227726		SO_2	0.074	0.072	0.074	0.0730
		Y: 1065487		CO	0.720	0.440	0.350	0.500
			E: $6^{0}.5191807$	CL_2	0.030	0.010	0.010	0.0200
				HCN	0.001	0.002	0.001	0.0013
			N: $9^{0}.6308373$	NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.093	0.094	0.095
9	Lista generator	X: 0227805		SO_2	0.0081	0.008	0.082	0.0081
		Y: 1065497		CO	0.009	0.007	0.005	0.007
			E: $6^{0}.5198994$	CL_2	0.020	0.040	0.030	0.030
				HCN	0.001	0.002	0.001	0.0013
			N: $9^{0}.6309328$	NO_2	0.0032	0.0030	0.0032	0.0031
				NH2	0.020	0.010	0.000	0.020

				H_2S	0.0023	0.0021	0.0021	0.0022
10	Tiger generator (medium)	X: 0227843		SO_2	0.0730	0.071	0.0074	0.073
		Y: 1065486		CO	0.750	0.440	0.35	0.513
			E: $6^0.5202461$	CL_2	0.030	0.010	0.010	0.020
				HCN				
			N: $9^0.6308359$	NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.0930	0.094	0.095
11	Tiger generator (medium)	X: 0227855		SO_2	0.0730	0.071	0.0074	0.073
		Y: 1065503		CO	0.750	0.440	0.35	0.513
			E: $6^0.5203542$	CL_2	0.030	0.010	0.010	0.020
				HCN				
			N: $9^0.6309903$	NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.0930	0.094	0.095
12		X: 0227947		SO_2	0.073	0.071	0.074	0.0726
		Y: 1065437		CO	0.75	0.44	0.35	0.5133
			E: $6^0.5211963$	CL_2	0.03	0.01	0.01	0.0166
				HCN	0.00	0.00	0.00	0.0000
			N: $9^0.6303999$	NO_2	0.0081	0.0083	0.0080	0.00813
				NH2	0.001	0.002	0.001	0.0040

				H_2S	0.098	0.093	0.094	0.0950
13	Tiger generator	X: 0227999		SO_2	0.074	0.072	0.074	0.0730
	(small size)	Y: 1065437		CO	0.720	0.440	0.350	0.500
			E: $6^{0}.5216698$	CL_2	0.030	0.010	0.010	0.0200
				HCN	0.001	0.002	0.001	0.0013
			N: $9^{0}.6304033$	NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.093	0.094	0.095
14	Lister generator	X: 0228045		SO_2	0.0081	0.008	0.082	0.0081
		Y: 10653887		CO	0.009	0.007	0.005	0.007
			E: $6^{0}.522092$	CL_2	0.020	0.040	0.030	0.030
				HCN	0.001	0.002	0.001	0.0013
			N: $9^{0}.6299544$	NO_2	0.0032	0.0030	0.0032	0.0031
				NH2	0.020	0.010	0.000	0.020
				H_2S	0.0023	0.0021	0.0021	0.0022
15	Vulcanizing Machine	X: 0228098		SO_2	0.000	0.120	0.000	0.0323
		Y: 1065347		CO	0.380	0.330	0.410	0.1020
			E: $6^{0}.5225772$	CL_2	0.02	0.300	0.300	0.0300
				HCN	0.004	0.006	0.003	0.0013
			N: $9^{0}.6295964$	NO_2	0.0075	0.0080	0.00069	0.0030

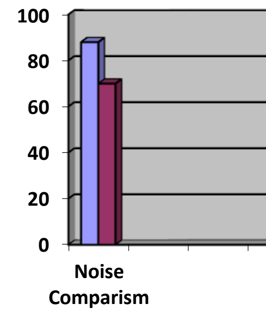
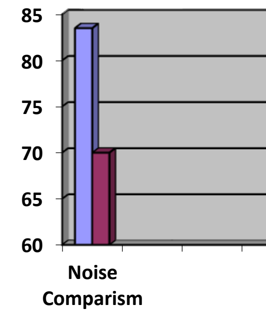
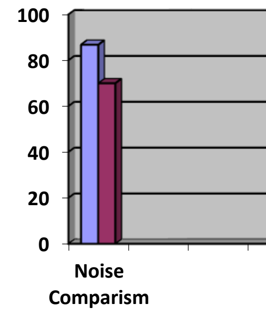
				NH2	0.000	0.000	0.00	0.0166
				H_2S	0.0069	0.0000	0.000	0.0014
16	Char coal stove	X: 0228097		SO_2	0.0081	0.0080	0.0082	0.0081
		Y: 1065399		CO	0.05	0.04	0.03	0.04
			E: 6^0.5225647	CL_2	0.02	0.04	0.03	0.030
				HCN	0.001	0.002	0.001	0.0033
			N: 9^0.6300663	NO_2	0.0032	0.0030	0.0032	0.0031
				NH_2	0.02	0.01	0.00	0.01
				H_2S	0.0023	0.0021	0.000	0.0014
17	Lista generator	X: 0228164		SO_2	0.0081	0.008	0.082	0.0081
		Y: 1065425		CO	0.009	0.007	0.005	0.007
			E: 6^0.523173	CL_2	0.020	0.040	0.030	0.030
				HCN	0.001	0.002	0.001	0.0013
			N: 9^0.6303056	NO_2	0.0032	0.0030	0.0032	0.0031
				NH2	0.020	0.010	0.000	0.020
				H_2S	0.0023	0.0021	0.0021	0.0022
18	CHARCOAL STOVE	X: 0228206		SO_2	0.0081	0.0080	0.0082	0.0081
		Y: 1065328		CO	0.05	0.04	0.03	0.04
			E: 6^0.5235553	CL_2	0.02	0.04	0.03	0.030
				HCN	0.001	0.002	0.001	0.0033
			N: 9^0.6303355	NO_2	0.0032	0.0030	0.0032	0.0031
				NH_2	0.02	0.01	0.00	0.01

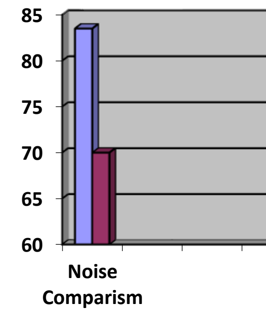
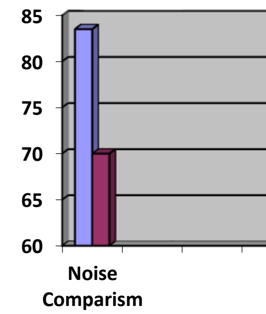
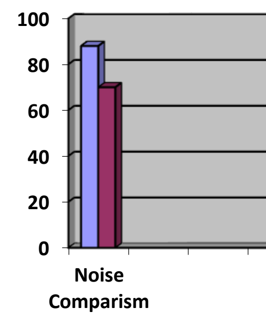
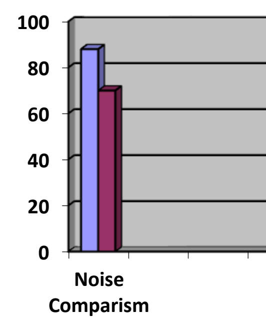
				H_2S	0.0023	0.0021	0.000	0.0014
19	Fire wood Smoke (kitchen)	X: 0228283		SO_2	0.012	0.013	0.014	0.013
		Y: 1065333		CO	0.260	0.210	0.160	0.210
			E: 6^0.5242626	CL_2				
			N: 9^0. 629482	HCN	0.001	0.002	0.003	0.002
				NO_2	0.073	0.072	0.071	0.072
				NH2	0.010	0.010	0.020	0.013
				H_2S	0.00	0.01	0.020	0.010
20	Tiger generator (small size)	X: 0228368	E: 6^0.5250362					
		Y: 1065340	N: 9^0.6295508	SO_2	0.074	0.072	0.074	0.0730
				CO	0.720	0.440	0.350	0.500
				CL_2	0.030	0.010	0.010	0.0200
				HCN	0.001	0.002	0.001	0.0013
				NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.093	0.094	0.095
21		X: 0228366		SO_2	0.074	0.072	0.074	0.0730

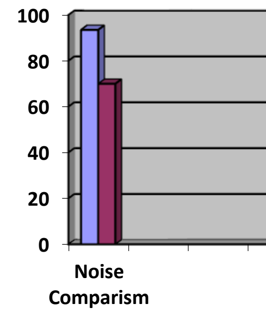
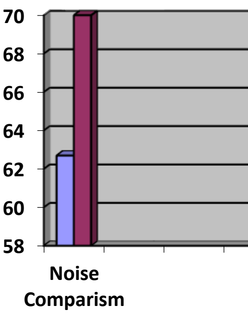
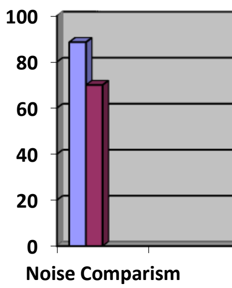
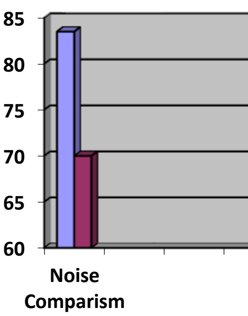
	Tiger generator (small size)	Y: 1065500		CO	0.720	0.440	0.350	0.500
			E: $6^0.5250074$	CL_2	0.030	0.010	0.010	0.0200
				HCN	0.001	0.002	0.001	0.0013
			N: $9^0.6309966$	NO_2	0.0081	0.0083	0.0080	0.0081
				NH2	0.001	0.002	0.001	0.0013
				H_2S	0.098	0.093	0.094	0.095
22	Vulcanizing Machine	X: 0228468		SO_2	0.000	0.120	0.000	0.0323
		Y: 1065469		CO	0.380	0.330	0.410	0.1020
			E: $6^0.529382$	CL_2	0.02	0.300	0.300	0.0300
				HCN	0.004	0.006	0.003	0.0013
			N: $9^0.6307231$	NO_2	0.0075	0.0080	0.00069	0.0030
				NH2	0.000	0.000	0.00	0.0166
				H_2S	0.0069	0.0000	0.000	0.0014
23	Fire wood smoke	X: 0228549		SO_2	0.012	0.013	0.014	0.013
		Y: 1065544		CO	0.260	0.210	0.160	0.210
			E: $6^0.5266709$	CL_2				
				HCN	0.001	0.002	0.003	0.002
			N: $9^0.6314062$	NO_2	0.073	0.072	0.071	0.072
				NH2	0.010	0.010	0.020	0.013
				H_2S	0.00	0.01	0.020	0.010

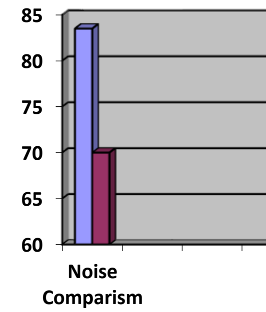
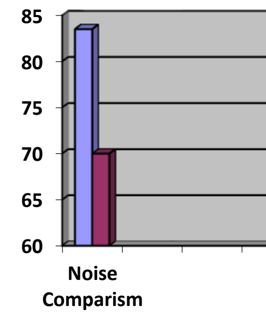
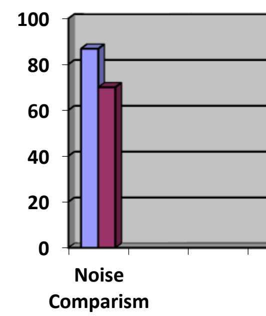
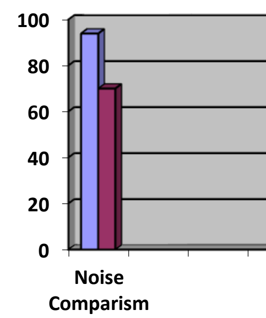
A2-M2: STATIONS' DATASET

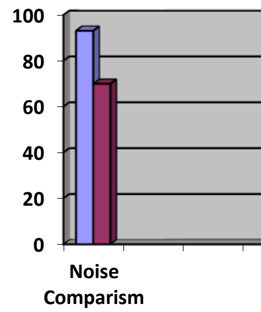
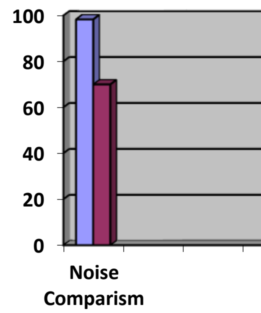
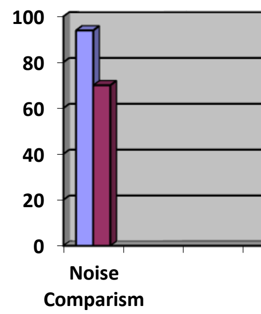
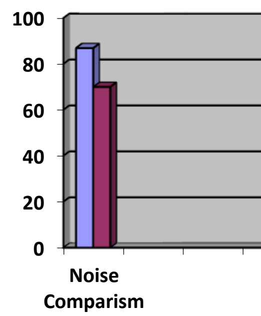
NOISE LEVEL DATA AQIUSITION LOG

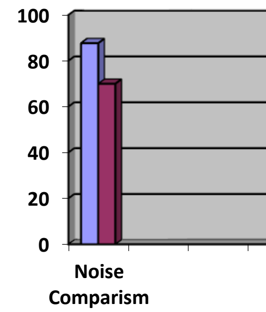
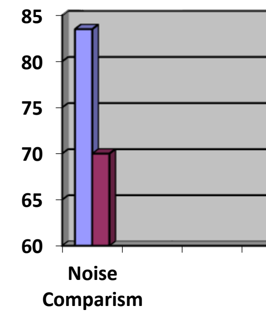
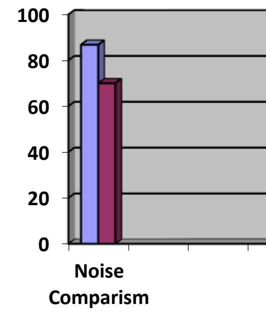
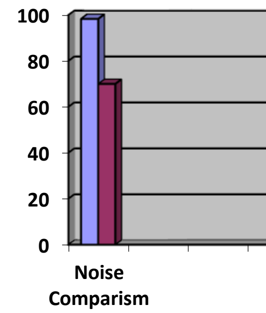
	GPS READINGS		NOISE LEVEL REDINGS (dBA)		BAR CHART RE
	UTM	LOCAL CORDINATES	AVERAGE VALUES	THRESHOLD NOISE VALUES	
1	X=0230595 Y1066893	N=09°38.624 E=006°32.713	88.0	70	
2	X=0230457 Y=1067067	N=09°38.718 E=006°32.637	83.5	70	
3	X=0230588 Y=1066933	N=09°38.646 E=006°32.709	86.8	70	

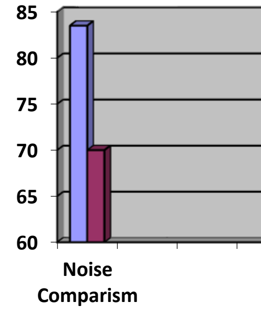
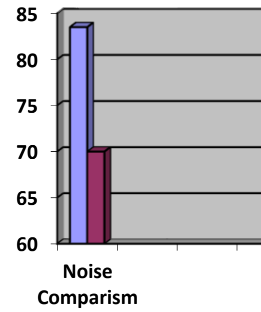
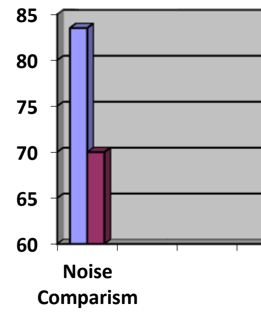
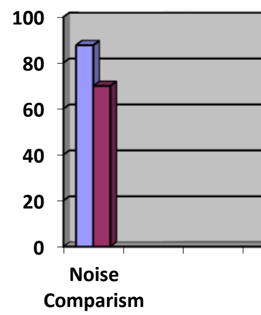
4	X=0230400 Y=1066820	N=09°38.584 E=006°32.607	83.5	70	
5	X=0230371 Y=1066819	N=09°38.586 E=006°32.591	83.5	70	
6	X=0230231 Y=1066632	N=09°38.481 E=006°32.515	88.0	70	
7	X=0230231 Y=1066632	N=09°38.481 E=006°32.515	88.0	70	

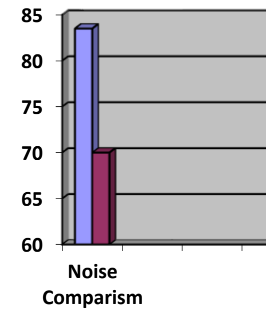
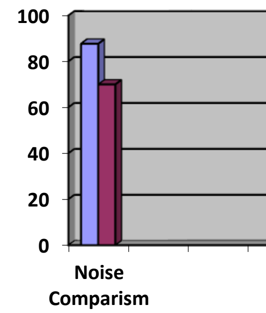
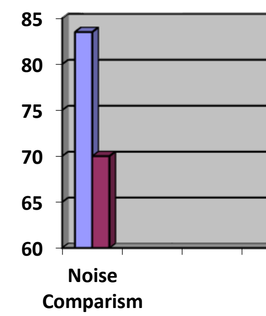
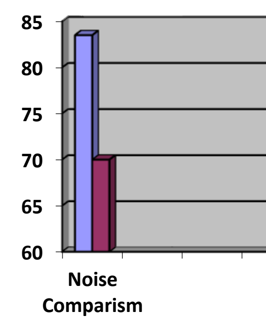
8	X=0229872 Y=1066666	N=09°38.498 E=006°32.319	93.5	70	
9	X=0229841 Y=1066642	N=09°38.485 E=006°32.302	62.7	70	
10	X=0229804 Y=1066635	N=09°38.481 E=006°32.282	88.6	70	
11	X=0229749 Y=1066615	N=09°38.470 E=006°32.252	83.5	70	

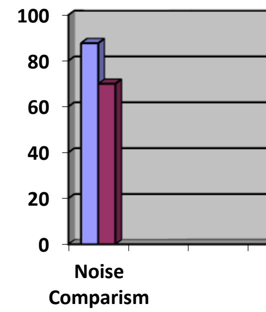
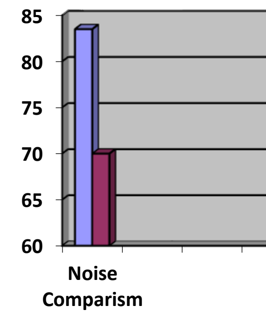
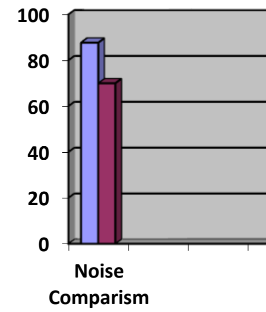
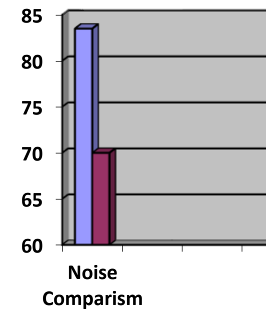
12	X=0229661 Y=1066603	N=09°38.463 E=006°32.204	83.5	70	
13	X=0229524 Y=1066631	N=09°38.478 E=006°32.129	83.5	70	
14	X=0229473 Y=1066621	N=09°38.472 E=006°32.101	86.8	70	
15	X=0229438 Y=1066617	N=09°38.470 E=006°32.082	93.9	70	

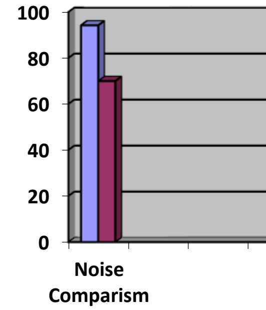
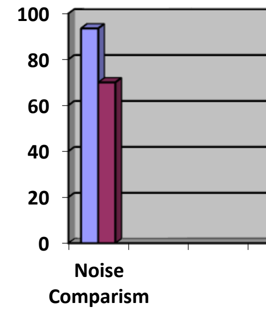
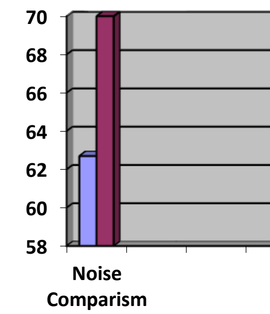
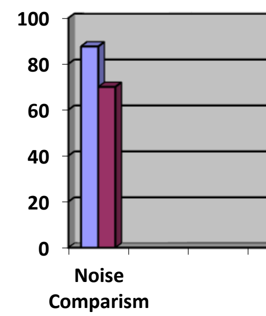
16	X=0229391 Y=1066745	N=09°38.581 E=006°32.056	93.1	70	
17	X=0229377 Y=1066739	N=09°38.536 E=006°32.048	98.3	70	
18	X=0229467 Y=1066886	N=09°38.616 E=006°32.097	93.9	70	
19	X=0029461 Y=1067012	N=09°38.684 E=006°32.093	86.9	70	

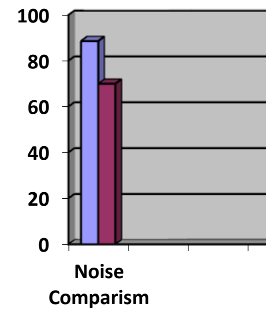
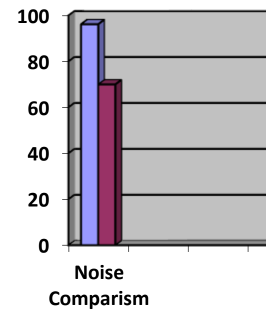
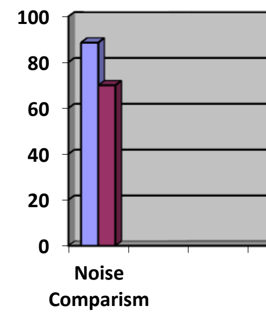
20	X=0229436 Y=1067034	N=09°38.696 E=006°32.079	87.7	70	
21	X=0229448 Y=1067118	N=09°38.782 E=006°32.108	83.5	70	
22	X=0229513 Y=1067139	N=09°38.752 E=006°32.121	86.8	70	
23	X=0229552 Y=1067140	N=09°38.754 E=006°32.142	98.3	70	

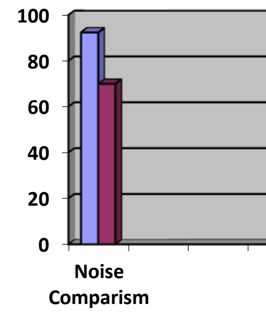
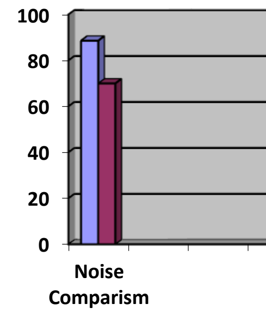
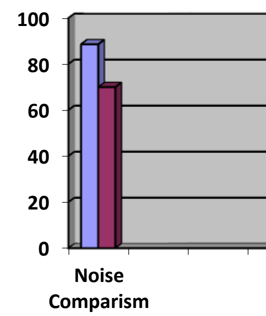
24	X=0229698 Y=1067139	N=09°38.754 E=006°32.222	83.5	70	
25	X=0229585 Y=1067149	N=09°38.759 E=006°32.160	83.5	70	
26	X=0229705 Y=1067128	N=09°38.748 E=006°32.226	83.5	70	
27	X=0229709 Y=1067109	N=09°38.738 E=006°32.228	87.7	70	

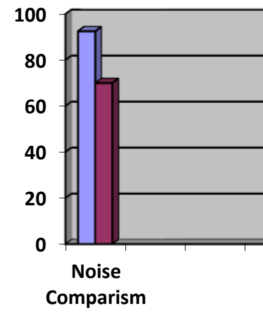
28	X=0229725 Y=1067078	N=09°38.721 E=006°32.237	83.5	70	
29	X=0229714 Y=1067032	N=09°38.696 E=006°32.231	87.7	70	
30	X=0228766 Y=1066990	N=09°38.672 E=006°32.260	83.5	70	
31	X=0229862 Y=1066990	N=09°38.674 E=006°32.312	83.5	70	

32	X=0229775 Y=1066936	N=09°38.644 E=006°32.265	87.7	70	
33	X=0229862 Y=1066990	N=09°38.674 E=006°32.312	83.5	70	
34	X=0229812 Y=1067024	N=09°38.692 E=006°32.285	87.7	70	
35	X=0229787 Y=1065967	N=09°38.119 E=006°32.205	83.5	70	

36	X=0229874 Y=1067123	N=09°38.746 E=006°32.318	94.2	70	
37	X=0229919 Y=1067250	N=09°38.815 E=006°32.338	93.5	70	
38	X=0229586 Y=1067400	N=09°38.895 E=006°32.160	62.7	70	
39	X=0229577 Y=1067372	N=09°38.880 E=006°32.155	87.6	70	

40	X=0229618 Y=1067455	N=09°38.925 E=006°32.177	88.6	70	
41	X=0229592 Y1067472	N=09°38.934 E=006°32.163	96.2	70	
42	X=0229631 Y=1067590	N=09°38.957 E=006°32.184	88.6	70	

43	X=0229498 Y=10675813	N=09°38.998 E=006°32.111	92.4	70	
44	X=0229472 Y=1065813	N=09°38.034 E=006°32.104	88.6	70	
45	X=0229304 Y=1065856	N=09°38.057 E=006°32.012	88.6	70	

46	X=0229401 Y=1065861	N=09°38.060 E=006°32.065	92.5	70	

CORRESPONDING GAS DATA LOG

	GPS VALUES		GAS SAMPLES	MEAN GAS VALUES (ppm)	MEAN GAS VALUES (mg/m^3)
	UTM VALUE	LOCAL COORDINATE			
1	X=0230595 Y1066893	N=09°38.624 E=006°32.713	SO2	0.0727	72700
			CO	0.0051	5100
			CL2	0.0167	16700
			HCN	0.079	79000
			NO2	0.0081	8100
			NH3	0.0133	13300
			H2S	0.095	95000
2	X=0230588 Y1066933	N=09°38.646 E=006°32.709	SO2	1.27	1270000
			CO	0.67	670000
			CL2	0.22	220000

			HCN	0.91	910000
			NO2	0.77	770000
			NH3	0.13	130000
			H2S	0.34	340000
3	X=0230457 Y=1067067	N=09°38.718 E=006°32.637	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
4	X=0230365 Y=1066981	N=09°38.671 E=006°32.587	SO2	0.0127	12700
			CO	0.047	47000
			CL2	0.25	250000
			HCN	0.3	300000
			NO2	0.027	27000
			NH3	0.073	73000
			H2S	0.062	62000
5	X=0230400 Y=1066820	N=09°38.584 E=006°32.607	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	15000

			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
6	X=0230371	N=09°38.583	SO2	0.0125	12500
	Y=1066819	E=006°32.591	CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
7	X=0230211	N=09°38.554	SO2	0.0127	12700
	Y=1066766	E=006°32.504	CO	0.047	47000
			CL2	0.25	250000
			HCN	0.3	300000
			NO2	0.027	27000
			NH3	0.073	73000
			H2S	0.067	62000
8	X=0230231	N=09°38.481	SO2	0.0727	72700
	Y=1066632	E=006°32.515	CO	0.0051	5100
			CL2	0.0167	16700
			HCN	0.079	79000
			NO2	0.0081	8100

			NH3	0.0133	13300
			H2S	0.095	95000
9	X=0230231 Y=1066632	N=09°38.498 E=006°32.437	SO2	0.00833	8300
			CO	1.0533	105300
			CL2	0.27	270000
			HCN	0.0026	2600
			NO2	0.01846	18460
			NH3	0.04	40000
			H2S	0.0074	7400
10	X=0229749 Y=1066615	N=09°38.470 E=006°32.252	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
11	X=0229661 Y=1066603	N=09°38.463 E=006°32.204	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000

			H2S	0.015	15000
12	X=0229473 Y=1066621	N=09°38.472 E=006°32.101	SO2	1.27	1270000
			CO	0.07	70000
			CL2	0.022	22000
			HCN	0.91	910000
			NO2	0.77	770000
			NH3	0.01	10000
			H2S	0.07	70000
13	X=0229438 Y=1066617	N=09°38.470 E=006°32.082	SO2	0.0081	8100
			CO	0.007	70000
			CL2	0.003	3000
			HCN	0.0013	13000
			NO2	0.0030	3100
			NH3	0.015	15000
			H2S	0.0022	2200
14	X=0229391 Y=1066745	N=09°38. E=006°32.	SO2	0.0081	8100
			CO	0.007	70000
			CL2	0.003	3000
			HCN	0.0013	13000
			NO2	0.0031	3100
			NH3	0.015	15000
			H2S	0.0022	2200

15	X=0229377 Y=1066739	N=09°38.537 E=006°32.056	SO2	0.083	83000
			CO	0.2	200000
			CL2	0.57	570000
			HCN	0.02	20000
			NO2	0.14	140000
			NH3	0.10	100000
			H2S	0.21	210000
16	X=0229461 Y=1067071	N=09°38.616 E=006°32.097	SO2	0.0081	8100
			CO	0.007	70000
			CL2	0.003	3000
			HCN	0.0013	13000
			NO2	0.0031	3100
			NH3	0.015	15000
			H2S	0.0022	2200
17	X=0229467 Y=1066886	N=09°38.684 E=006°32.093	SO2	1.27	1270000
			CO	0.07	70000
			CL2	0.022	22000
			HCN	0.91	910000
			NO2	0.77	770000
			NH3	0.01	10000
			H2S	0.07	70000
18	X=0229436	N=09°38.696	SO2	0.665	665000

	Y=1067034	E=006°32.079	CO	0.51	510000
			CL2	0.167	167000
			HCN	0.00	0.00
			NO2	0.08	80000
			NH3	0.13	130000
			H2S	0.65	650000
19	X=0229489	N=09°38.742	SO2	0.0125	12500
	Y=1067118	E=006°32.108	CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
20	X=0229513	N=09°38.753	SO2	1.27	1270000
	Y=1067139	E=006°32.121	CO	0.07	70000
			CL2	0.022	22000
			HCN	0.91	910000
			NO2	0.77	770000
			NH3	0.01	10000
			H2S	0.07	70000
21	X=0229552	N=09°38.754	SO2	0.083	83000
	Y=1067140	E=006°32.142	CO	0.2	200000

			CL2	0.57	510000
			HCN	0.02	20000
			NO2	0.14	140000
			NH3	0.10	10000
			H2S	0.21	210000
22	X=0229585 Y=1067140	N=09°38.759 E=006°32.160	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
23	X=0229698 Y=1067139	N=09°38.754 E=006°32.222	SO2	0.00	0.00
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
24	X=0229705 Y=1067128	N=09°38.748 E=006°32.226	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00

			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
25	X=0229709	N=09°38.738	SO2	0.072	72000
	Y=1067109	E=006°32.228	CO	0.513	513000
			CL2	0.167	167000
			HCN	0.00	0.00
			NO2	0.081	81000
			NH3	0.13	130000
			H2S	0.065	65000
26	X=0229725	N=09°38.721	S02	0.0125	12500
	Y=1067078	E=006°32.237	CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
27	X=0229714	N=09°38.696	SO2	0.072	72000
	Y=1067032	E=006°32.231	CO	0.513	513000
			CL2	0.16	167000
			HCN	0.00	0.00

			NO2	0.0081	81000
			NH3	0.01	130000
			H2S	0.065	65000
28	X=0229766 Y=1066987	N=09°38.672 E=006°32.260	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.0015	1500
			NO2	0.501	501000
			NH3	0.01	10000
			H2S	0.015	15000
29	X=0229775 Y=1066936	N=09°38.644 E=006°32.265	SO2	0.072	72000
			CO	0.513	513000
			CL2	0.016	167000
			HCN	0.00	0.00
			NO2	0.0081	81000
			NH3	0.01	130000
			H2S	0.065	65000
30	X=0229862 Y1066990	N=09°38.674 E=006°32.312	SO2	0.0125	12500
			CO	0.21	210000
			CL2	0.00	0.00
			HCN	0.015	1500
			NO2	0.501	501000

			NH3	0.01	10000
			H2S	0.015	15000
31	X=0229812 Y=1067024	N=09°38.692 E=006°32.285	SO2	0.072	72000
			CO	0.513	513000
			CL2	0.016	167000
			HCN	0.00	0.00
			NO2	0.0081	81000
			NH3	0.01	130000
			H2S	0.065	65000
32	X=0229812 Y=1065967	N=09°38.746 E=006°32.318	SO2	0.072	72000
			CO	0.513	513000
			CL2	0.016	167000
			HCN	0.00	0.00
			NO2	0.0081	81000
			NH3	0.01	130000
			H2S	0.065	65000

33	X=0229921 Y=1067095	N=09°38.731 E=006°32.344	SO2	0.12	
			CO	0.37	
			CL2	0.27	
			HCN	0.04	
			NO2	0.07	
			NH3	0.01	
			H2S	0.0069	
34	X=0229577 Y=1067372	N=09°38.880 E=006°32.155	SO2	0.072	72000
			CO	0.513	513000
			CL2	0.016	167000
			HCN	0.00	0.00
			NO2	0.0081	81000
			NH3	0.01	130000
			H2S	0.065	65000
35	X=0229592 Y=1067471	N=09°38.934 E=006°32.163	SO2	0.083	83000
			CO	0.2	200000
			CL2	0.57	570000
			HCN	0.02	20000
			NO2	0.14	140000
			NH3	0.10	100000
			H2S	0.21	210000
36	X=0224210	N=09°38.066	SO2	0.00833	8300

	Y=1065861	E=006°32.065	CO	1.0533	1053300
			CL2	0.27	270000
			HCN	0.0026	2600
			NO2	0.0186	18600
			NH3	0.04	40000
			H2S	0.0074	7400

A2-M3: STATIONS' DATASET

NOISE LEVEL DATA AQIUSITION LOG

S/N	DESCRIPTION OF NOISE SOURCES				GPS READINGS		NOISE LEVEL REDI		
	SOURCES OF NOISE	**MODEL/ SERIAL NO.**	**POWER RATING**	**AGE**	**UTM**	**LOCAL CORDINATES**	**1ST VALUE**	**2ND VALUE**	**3 V**
1	Suzuki generator		4.5KVA	3	X:227925 Y:1067729	9^0 39.067'N 6^0 31.251'E	87.1	85.9	9
2	Tiger generator		2.7KVA	5	X:227896 Y:1067756	9^0 39.081'N 6^0 31.235'E	88.3	86.7	8
3	Honda generator		5KVA	4	X:227860 Y:1067766	9^0 39.087'N 6^0 31.215'E	95.5	96.8	9
4	Perter Lister generator		15KVA	2	X: 227843 Y:1067806	9^0 39.108'N 6^0 31.206'E	97.3	93.2	9
5	Vulcanizing machine			2	X: 227753 Y:1068036	9^0 39.232'N 6^0 31.156'E	93.2	92.4	9
6	Yamaha generator		2.7KVA	2	X: 227698 Y:1067968	9^0 39.195'N 6^0 31.126'E	95.5	93.1	9
7	Yamaha generator		2.7KVA	1	X: 227600 Y:1067870	9^0 39.142'N 6^0 31.073'E	95.5	93.1	9
8	Suzuki generator		4KVA	3	X: 227407 Y:1067676	9^0 39.036'N 6^0 30.968'E	87.1	85.9	9
9	Tiger generator		2.7KVA	1	X: 227275 Y:1067554	9^0 38.969'N 6^0 30.896'E	88.3	85.7	8

10	Elemax generator		2.0KVA	1	X: 227742 Y:1067718	9^0 39.060'N 6^0 31.151'E	91.5	92.8	9
11	Yamaha generator		7.3KVA	2	X: 227825 Y:1067613	9^0 39.003'N 6^0 31.197'E	95.5	93.1	9
12	Diesel grinding engine			4	X: 227764 Y:1067672	9^0 39.035'N 6^0 31.163'E	93.7	95.6	9
13	F. G. Wilson P40P3 generator		110KVA	1	X: 227826 Y:1067544	9^0 38.966'N 6^0 31.197'E	93.2	92.3	9
14	Electric grinding engine			3	X: 227790 Y:1067466	9^0 38.924'N 6^0 31.178'E	93.8	93.5	9
15	Tiger generator		2.7KVA	7	X: 227751 Y:1067440	9^0 38.909'N 6^0 31.157'E	88.3	86.7	8
16	Electric grinding engine			4	X: 227689 Y:1067405	9^0 38.890'N 6^0 31.123'E	93.7	92.6	9
17	Honda generator		7.0 KVA	1	X: 227621 Y:1067457	9^0 38.918'N 6^0 31.086'E	95.5	96.8	9
18	Nissan generator		4KVA	2	X: 227753 Y:1067607	9^0 39.001'N 6^0 31.157'E	87.1	85.9	9
19	Nissan generator		4KVA	1	X: 227632 Y:1067588	9^0 38.999'N 6^0 31.157'E	86.2	85.7	9

20	Grinding engine		15HP	6	X: 227464 Y:1067457	9^0 38.917’N 6^0 31.000’E	95.5	96.8	9
21	Yamaha generator		3.6KVA	1	X: 227417 Y:1067475	9^0 38.927’N 6^0 30.974’E	82.0	84.4	8
22	Yamaha generator		0.65KVA	3	X: 227597 Y:1067351	9^0 38.860’N 6^0 31.073’E	87.7	86.3	8
23	Tigmas generator		5KVA	1	X: 227306 Y:1067288	9^0 38.825’N 6^0 30.914’E	89.0	87.5	8
24	Tiger generator		O.65KVA	3	X: 227384 Y:1067239	9^0 38.799’N 6^0 30.957’E	88.3	86.7	8
25	Suzuki generator		12.5KVA	1	X: 227414 Y:1067313	9^0 38.839’N 6^0 30.973’E	91.2	92.8	9
26	TEC generator		13HP	1	X: 227392 Y:1067360	9^0 38.865’N 6^0 30.961’E	93.7	95.6	9
27	Lister generator			2	X: 227353 Y:1067384	9^0 38.877’N 6^0 30.939’E	90.0	91.2	9
28	Suzuki generator		8KVA	1	X: 227329 Y:1067425	9^0 38.899’N 6^0 30.926’E	87.1	90.3	8
29	Lister generator		13HP	1	X: 227295 Y:1067442	9^0 38.909’N 6^0 30.908’E	90.7	85.9	9
30	Tiger generator		3.5KVA	2	X:2277113 Y:1067064	9^0 38.693’N 6^0 30. 809’E	89.0	87.2	8

31	Lister generator (for bricks)		6.7KVA	4	X: 227378 Y:1060134	9^0 34.946'N 6^0 30.982'E	87.1	85.9	8
32	Water pump machine(for water board)		8.8KVA	9	X: 227229 Y:1066217	9^0 38.244'N 6^0 30.876'E	93.8	92.2	9
33	SUMEC FIRMAN generator		4.3KVA	2	X: 227112 Y:1067062	9^0 38.702'N 6^0 30.809'E	85.6	86.4	8
34	Tiger generator		2.0KVA	1	X: 227072 Y:1067030	9^0 38.684'N 6^0 30.787'E	88.0	86.4	8
35	Metal workshop				X: 230948 Y:1062913	9^0 38.47'N 6^0 30.92'E			
36	Elemax generator		4.3KVA	5	X: 226997 Y:1066991	9^0 38.63'N 6^0 30.747'E	91.5	92.8	9
37	TEC generator		0.9KVA	1	X: 226996 Y:1067063	9^0 38.702'N 6^0 30.746'E	78.2	82.3	8
38	Marapco generator		110KVA	7	X: 226868 Y:1067238	9^0 38.796'N 6^0 30.675'E	90.0	91.2	9
39	Diesel grinding engine			2	X: 226524 Y:1067182	9^0 38.765'N 6^0 30.487'E	93.7	95.6	9
40	Perter lister generataor		15HP	3	X: 227135 Y:1067403	9^0 38.887'N 6^0 30.820'E	93.8	92.6	9

41	Techno generator		9.48KW	2	X: 227204 Y:1067202	9^0 38.778'N 6^0 30.859'E	92.3	93.3	9
42	Tiger generator		2.0 KVA	1	X: 227269 Y:1067310	9^0 38.837'N 6^0 30.894'E	88.3	86.7	8
43	Lister generator			10	X: 227335 Y:1067520	9^0 38.951'N 6^0 30.929'E	95.3	93.2	9
44	Metel works				X: 227294 Y:1067576	9^0 38.981'N 6^0 30.907'E	88.7	93.0	8
SHEET 26 FOR MINNA MAP									
1	Diesel lister generator (for bakery)			6	X:769571 Y:1063351	9^0 36.703'N 11^0 27.364'E	93.7	94.7	9
2	Grinding engine		15HP	4	X:769571 Y:1063350	9^0 36.702'N 11^0 27.364'E	93.5	93.9	9
3	Honda grinding enging			4	X:769633 Y:1063259	9^0 36.652'N 11^0 27.398'E	95.5	96.8	9
4	Diesel grinding engine			3	X:769696 Y:1063044	9^0 36.536'N 11^0 27.431'E	95.5	96.8	9
5	Yamaha generator		3.5KVA	3	X:769849 Y:1062922	9^0 36.469'N 11^0 27.514'E	95.5	93.1	9
6	Yamaha generator		2.7 KVA	5	X:769878 Y:1063199	9^0 36.619'N 11^0 27.531'E	89.7	90.2	9

7	Tiger generator		2.0 KVA	3	X:230074 Y:1063120	9^0 36.576'N 6^0 32.443'E	88.3	86.7	8
8	Electric grinding engine			1	X:230047 Y:1063089	9^0 36.559'N 6^0 32.428'E	93.5	93.8	9
9	Generator repairs				X:230295 Y:1063278	9^0 36.663'N 6^0 32.563'E	82.0	84.4	8
10	Vulcanizing machine			6	X:230132 Y:1063150	9^0 36.593'N 6^0 32.475'E	93.2	92.4	9
11	Generator repairs				X:229953 Y:1063011	9^0 36.516'N 6^0 32.377'E	82.0	84.4	8
12	15HP Lister generator		15HP	4	X:229802 Y:1062912	9^0 36. 462'N 6^0 32. 295'E	82.0	84.4	8
13	Metal drilling machine			3	X:229751 Y:1062767	9^0 36.383'N 6^0 32.268'E	95.5	80.3	9
14	Metel works				X:229617 Y:1062779	9^0 36.389'N 6^0 32.195'E	85.2	88.1	8
15	Tomato grinding engine			5	X:229964 Y:1063025	9^0 36.524'N 6^0 32.383'E	93.5	93.8	9
16	Grinding engine			2	X:229993 Y:1062999	9^0 36.510'N 6^0 32.399'E	95.5	96.8	9

17	Tiger generator		2.0KVA	1	X:229928 Y:1063108	9^0 36.568'N 6^0 32.363'E	88.3	86.7	8
18	Lister generator (for bakery)			20	X:229996 Y:1063137	9^0 36.585'N 6^0 32.400'E	95.3	95.8	9
19	Honda generator		1.2KVA	6	X:229965 Y:1063204	9^0 36.621'N 6^0 32.383'E	78.2	82.3	8
20	Yamaha generator		10KVA	4	X:229855 Y:1063142	9^0 36.587'N 6^0 32.323'E	95.5	90.0	9
21	Leventis power system	XP60P1		2	X:229778 Y:1063133	9^0 36.582'N 6^0 32.281'E	95.3	95.8	9
22	JMG power generator		24KVA	3	X:229682 Y:1063090	9^0 36.558'N 6^0 32.229'E	90.0	91.3	9
23	Power generator		15HP	6	X:229611 Y:1063105	9^0 36.566'N 6^0 32.190'E	91.2	91.2	9
24	Block construction engine			2	X:229657 Y:1063112	9^0 36.570'N 6^0 32.215'E	93.7	94.7	9
25	Sifang generator		6KVA	1	X:229706 Y:1063049	9^0 36.536'N 6^0 32.242'E	85.4	86.4	8
26	Vulcanizing			6	X:229671 Y:1062806	9^0 36.404'N 6^0 32.224'E	76.4	78.9	7

27	Lister diesel generator			1	X:229831 Y:1062677	9^0 36.335'N 6^0 32.312'E	95.3	93.2	9
28	Yamaha generator		3.5KVA	1	X:230777 Y:1063139	9^0 36.589'N 6^0 32.827'E	95.5	93.1	9
29	Elemax generator			2	X:230842 Y:1063026	9^0 36.528'N 6^0 32.863'E	91.5	92.8	9
30	Grinding engine			4	X:230436 Y:1062750	9^0 36.378'N 6^0 32.642'E	93.5	93.8	9
31	Diesel grinding engine			1	X:230495 Y:1062850	9^0 36.431'N 6^0 32.674'E	93.5	93.7	9
32	Elemax generator			2	X:230594 Y:1062794	9^0 36.401'N 6^0 32.728'E	91.5	92.7	9
33	Yamaha generator		3.5KVA	1	X:231014 Y:1062717	9^0 36.361'N 6^0 32.958'E	95.5	93.1	9
34	Grinding engine		15HP	3	X:230954 Y:1062498	9^0 36.242'N 6^0 32.926'E	93.7	95.6	9
35	F.G Wilson generator			6	X:230853 Y:1062172	9^0 36.065'N 6^0 32.872'E	93.8	92.6	9
36	Lister generator			5	X:230718 Y:1062299	9^0 36.133'N 6^0 32.798'E	95.3	93.2	9

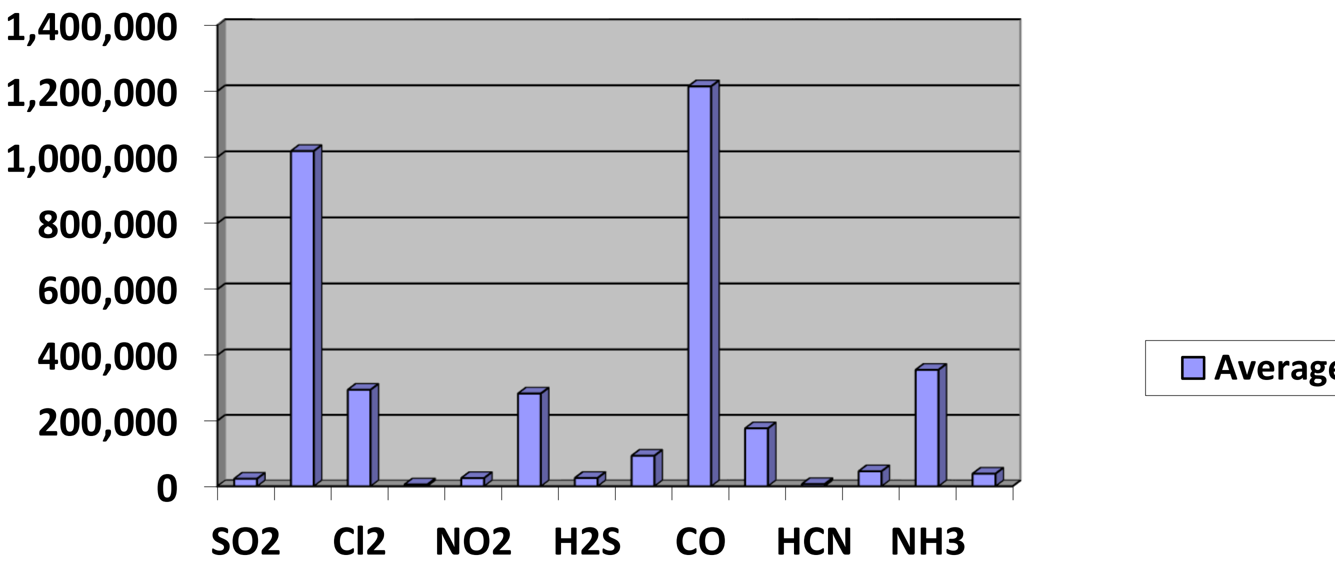
37	Yamaha generator		3.5KVA	2	X:230638 Y:1062340	9^0 36.155'N 6^0 32.754'E	95.5	93.1	9
38	Tiger generator		0.65KVA	1	X:230190 Y:1063737	9^0 35.911'N 6^0 32.504'E	88.3	86.7	8
29	Electric grinding engine			4	X:230143 Y:1063822	9^0 35.957'N 6^0 32.478'E	93.5	93.8	9
30	Lister generator			4	X:230168 Y:1063883	9^0 35.990'N 6^0 32.491'E	95.3	93.2	9
31	Honda generator		5KVA	5	X:230642 Y:1062611	9^0 36.302'N 6^0 32.755'E	82.3	78.2	8
32	Lister generator			3	X:229575 Y:1062984	9^0 36.500'N 6^0 32.171'E	95.3	93.2	9
33	Rice milling machine			6	X:229897 Y:1062989	9^0 36.504'N 6^0 32.347'E	93.7	95.6	9

CORRESPONDING GAS DATA LOG

	NEIGHBORHOODS	GAS SOURCES	GASES	SUM OF AVERAGES PER SOURCE		
				34 POWER GENERA-TORS	**4 GRINDING ENGINES**	**7 CHARC BURNIN**
1	BOSSO LOWCOST AND ESTATE	POWER GENERATORS, GRINDING ENGINES AND CHARCOAL BURNING	SO_2	1.7297	0.0320	2.4257
			CO	9.1600	0.0800	45.420
			Cl_2	5.2130	1.6000	1.1424
			HCN	0.1575	0.0328	0.1125
			NO_2	0.4093	0.0920	1.5570
			NH_3	6.2658	0.0520	9.6760
			H_2S	1.6763	0.0280	0.0384
				TOTAL FREQUENCY = **45 SOURCES**		

				29 POWER GENERA-TORS	**8 CHARCOAL BURNING**	**2 VUCANIZING MACHINES**	**3 GE RE**
2	KETEREN GWARI ROAD AND RAILWAY STATION AREAS.		SO_2	0.5570	0.0104	0.0166	0.38
			CO	3.0250	37.360	1.1200	1.29
			Cl_2	9.6850	1.3336	0.5400	0.81
			HCN	0.1984	0.0104	0.0052	0.01
			NO_2	0.5944	0.0192	0.0370	0.39
			NH_3	0.4009	10.666	0.8000	0.02
			H_2S	0.7470	0.0496	0.0148	0.24

				TOTAL FREQUENCY = **42 SOURCES**

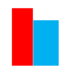
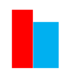
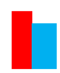
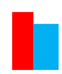
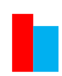
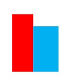


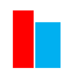
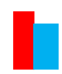
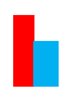
KETEREN GWARI ROAD AND RAILWAY STATION AREAS

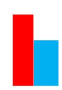
BOSSO LOWCOST AND ESTATE

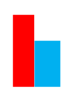
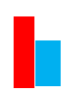
A2-M4: STATIONS' DATASET

NOISE LEVEL DATA AQIUSITION LOG

	GPS VALUE		**NOISE LEVEL VALUE** (dBA)		
	UTM VALUE	LOCAL CORDINATE	MEAN VALUE	THRESHOLD VALUE	BARCHART REPRESENTATION
1	X:0228051 Y: 1065324	E:6^0.5221507” N:9^0.6293855”	93.1	70	
2	X:0228003 Y: 1065834	E:6^0.52217097” N:9^0.6299246”	92.5	70	
3	X:0227991 Y: 1065375	E:6^0.5221601” N:9^0.6298425”	86.8	70	
4	X:0227964 Y: 1065390	E:6^0.52213542” N:9^0.6299762”	93.5	70	
5	X:0227943 Y: 1065392	E:6^0.5211629” N:9^0.6299929”	93.5	70	
6	X:0227726 Y: 1065487	E:6^0.5191807” N:9^0.6308373”	80.4	70	
7	X:0227805 Y: 1065497	E:6^0.5198994” N:9^0.6309328”	92.7	70	

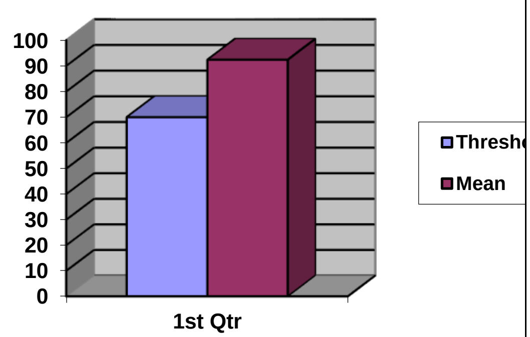
8	X:0227947 Y: 1065437	E:6^0.5211963” N:9^0.6303999”	88.6	70	
9	X:0227999 Y: 1065437	E:6^0.5216698” N:9^0.6304033”	80.4	70	
10	X:0228045 Y: 1065387	E:6^0.522092” N:9^0.6299544”	88.6	70	
11	X:0228098 Y: 1065347	E:6^0.5225772” N:9^0.6295964”	92.4	70	
12	X:0228164 Y: 1065425	E:6^0.523173” N:9^0.6303056”	92.4	70	
13	X:0228206 Y: 1065428	E:6^0.5235553” N:9^0.6303355”	93.3	70	
14	X:0228368 Y: 1065340	E:6^0.5250362” N:9^0.6295508”	91.0	70	
15	X:0228366 Y: 1065500	E:6^0.5250074” N:9^0.6309966”	80.4	70	
16	X:0228468 Y: 1065469	E:6^0.5259382” N:9^0.6307231”	93.5	70	
17	X:0228575 Y: 1065478	E:6^0.5269119” N:9^0.6308114”	92.9	70	
18	X:0228559 Y: 1065479	E:6^0.5267662” N:9^0.6308194”	80.4	70	

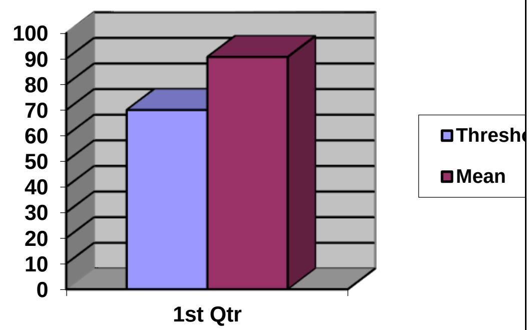
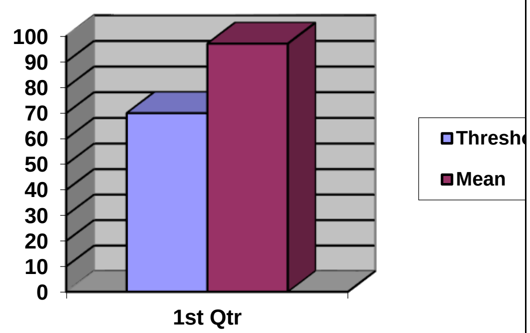
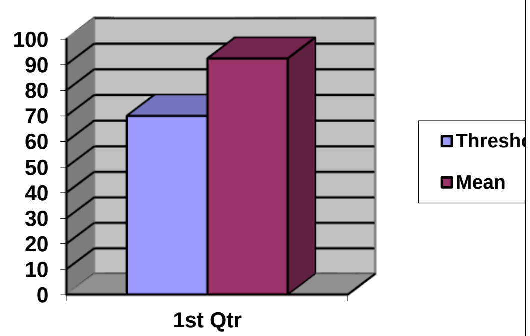
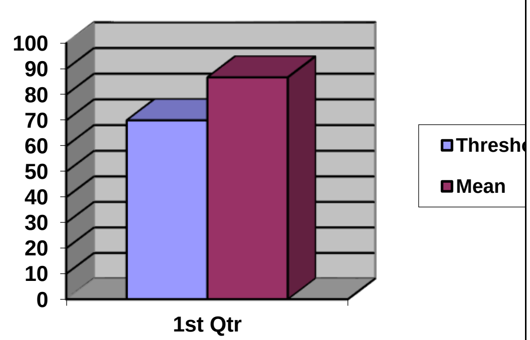
19	X:0228520 Y: 1065439	E:6^{0}.5264137” N:9^{0}.6304554”	91.0	70	
20	X:0228647 Y: 1065124	E:6^{0}.5275908” N:9^{0}.627617”	90.7	70	
21	X:0228715 Y: 1065486	E:6^{0}.5281862” N:9^{0}.6308929”	92.5	70	
22	X:0228699 Y: 1065519	E:6^{0}.5280383” N:9^{0}.6311901”	88.6	70	
23	X:0228687 Y: 1065554	E:6^{0}.5279268” N:9^{0}.6315056”	95.0	70	
24	X:0228711 Y: 1065592	E:6^{0}.5281428” N:9^{0}.6318506”	93.9	70	
25	X:0228806 Y: 1065550	E:6^{0}.5290106” N:9^{0}.6314772”	86.8	70	
26	X:0228752 Y: 1066025	E:6^{0}.5284877” N:9^{0}.6357663”	93.5	70	
27	X:0228740 Y: 1066062	E:6^{0}.528376” N:9^{0}.6360999”	93.8	70	
28	X:0228755 Y: 1066140	E:6^{0}.5285074” N:9^{0}.6368058”	86.8	70	
29	X:0228753 Y: 1066293	E:6^{0}.5284791” N:9^{0}.6381883”	93.5	70	

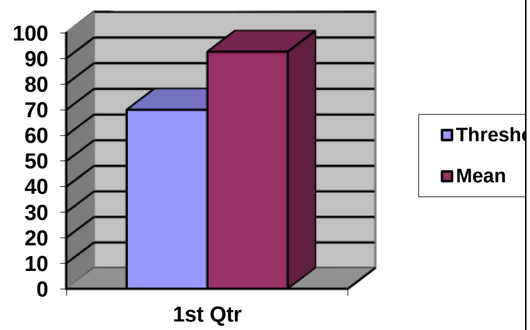
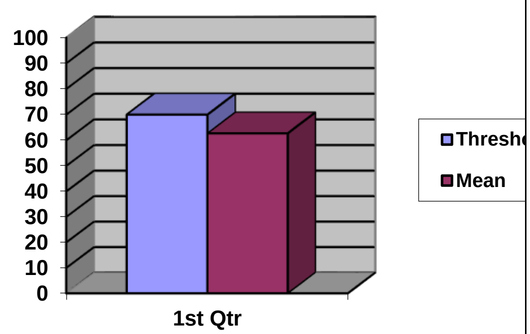
30	X:0228777 Y: 1065389	E:6^0.5286914” N:9^0.6390574”	93.8	70	
31	X:0229037 Y: 1066387	E:6^0.531059” N:9^0.6390563”	86.8	70	
32	X:0229137 Y: 1066448	E:6^0.5319656” N:9^0.6396141”	92.4	70	
33	X:0229225 Y: 1066268	E:6^0.5327787” N:9^0.6379932”	96.2	70	
34	X:0229173 Y: 1066238	E:6^0.532372” N:9^0.6377187”	92.7	70	
35	X:0229172 Y: 1066241	E:6^0.5322979” N:9^0.6377457”	92.7	70	
36	X:0229107 Y: 1066197	E:6^0.5317089” N:9^0.6373438”	87.7	70	
37	X:0229039 Y: 1066195	E:6^0.5310899” N:9^0.6373213”	86.8	70	
38	X:0229042 Y: 1066198	E:6^0.531117” N:9^0.6373486”	80.3	70	
39	X:0227843 Y: 1065486	E:6^0.52024461” N:9^0.6308359”	86.8	70	
40	X:0227855 Y: 1065503	E:6^0.5203542” N:9^0.6309903”	86.8	70	

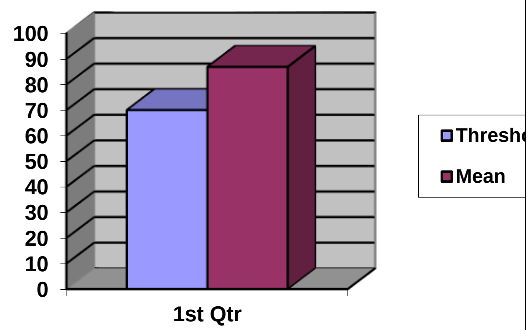
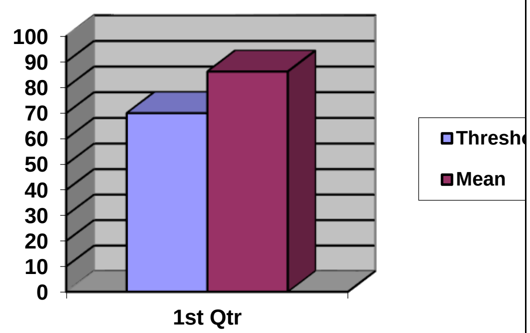
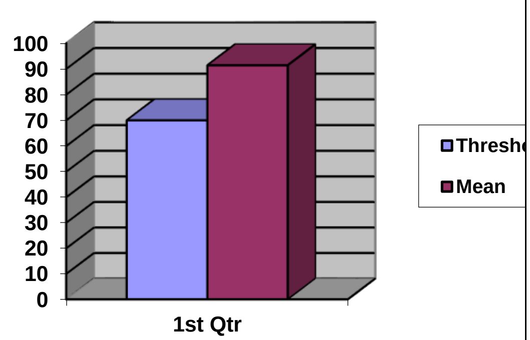
A2-M5: STATIONS' DATASET

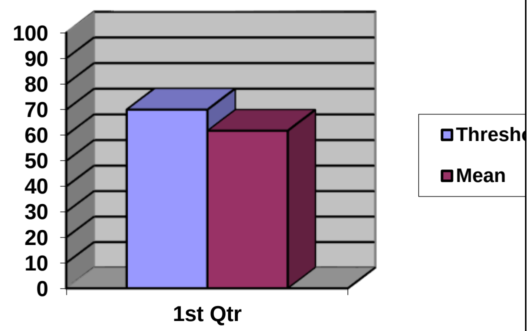
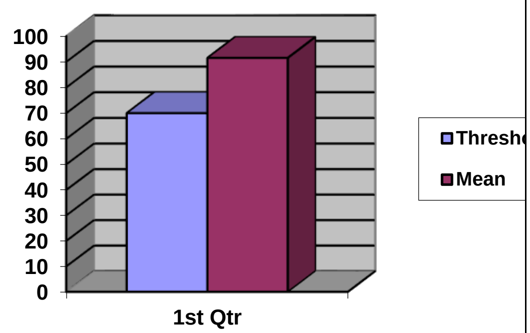
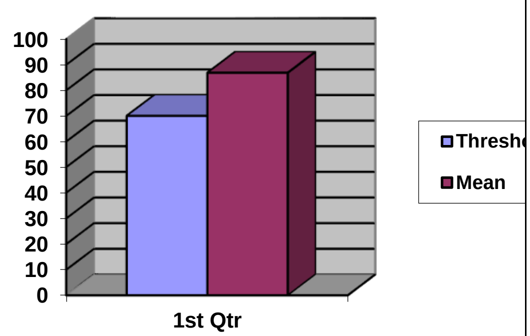
NOISE LEVEL DATA AQIUSITION LOG

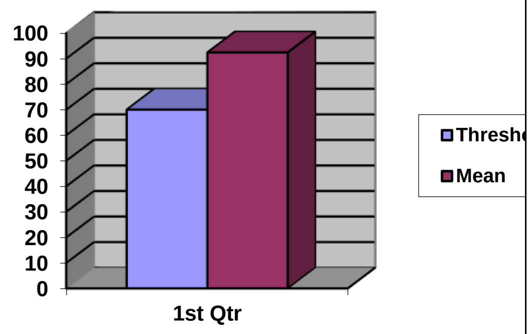
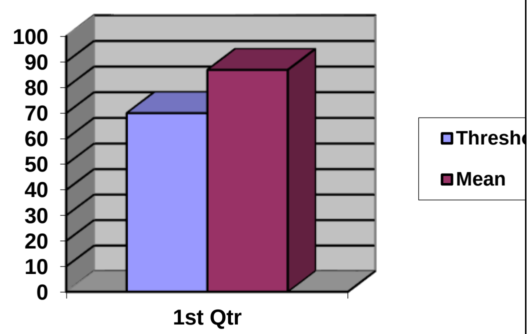
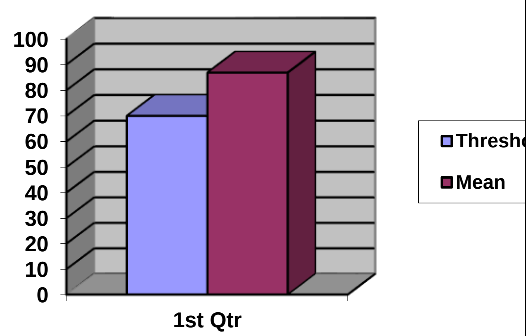
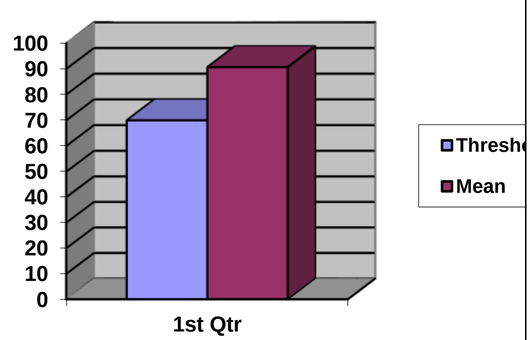
S/N	GPS VALUE: UTM VALUES	GPS VALUE: LOCAL COORDINATES	MEAN NOISE VALUES	TRESHOLD VALUE (dBA)	BAR CHART REPRESENTATION
1	X=227764 Y=1065442	N=09° 37.826' E=006° 31.172'	92.37	70	
2	X=227755 Y=1065525	N=09° 37.871' E=006° 31.167'	90.7	70	

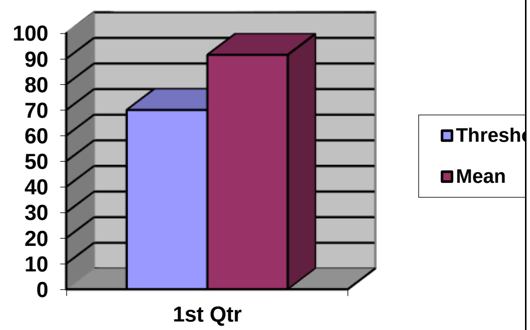
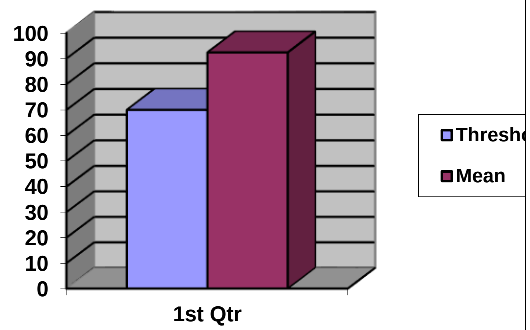
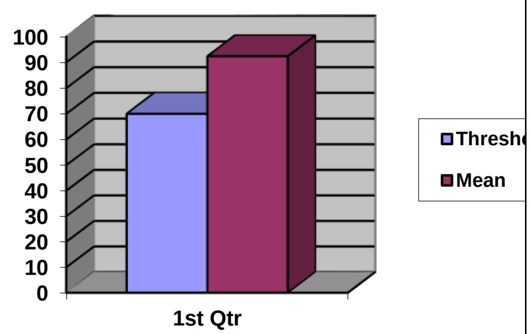
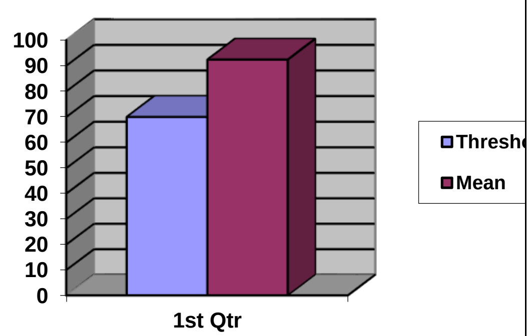
					
3	X=227 708 Y=106 5331	N=09° 37.766' E=006° 31.142'	97.07	70	
4	X=227 879 Y=106 5377	N=09° 37.791' E=006° 31.235'	92.37	70	
5	X=228 082 Y=106 5386	N=09° 37.797' E=006° 31.346'	86.7	70	

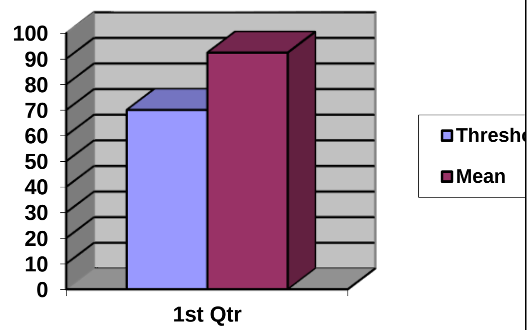
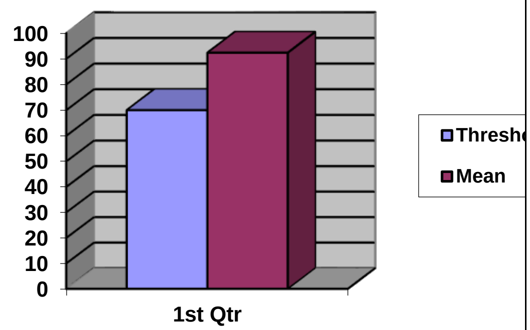
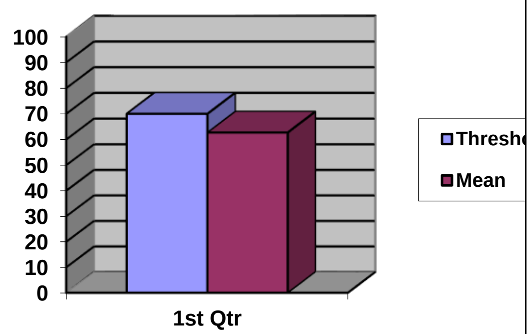
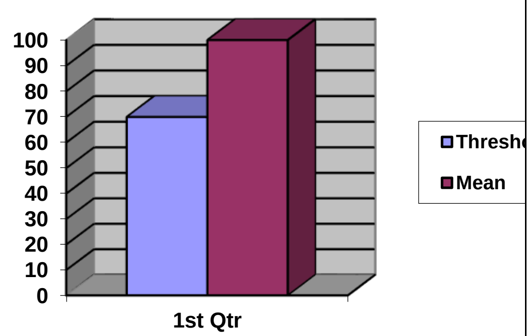
6	X=228 062 Y=106 5338	N=09˚ 37.771' E=006˚ 31.335'	92.6	70	
7	X=228 078 Y=106 5268	N=09˚ 37.733' E=006˚ 31.345'	62.7	70	
8	X=228 096 Y=106 5250	N=09˚ 37.723' E=006˚ 31.354'	86.87	70	

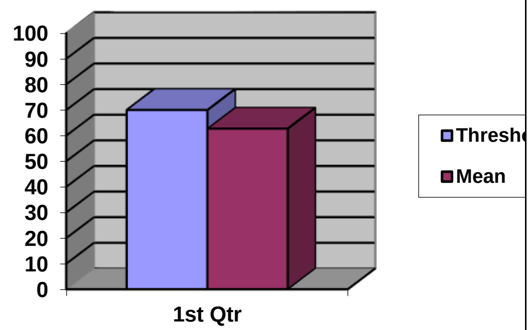
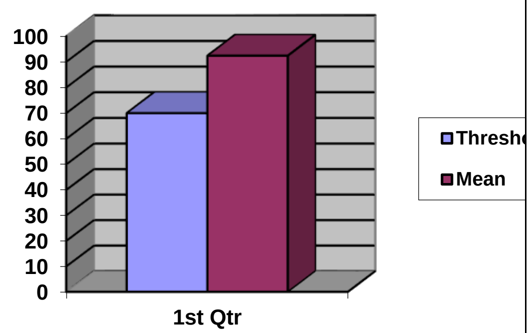
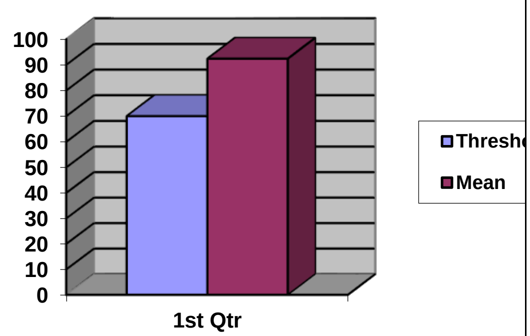
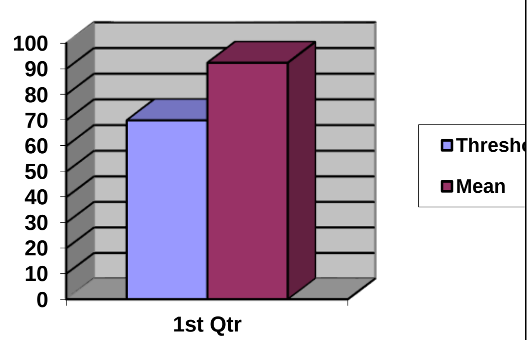
					
9	X=228 253 Y=106 5173	N=09˚ 37.682' E=006˚ 31.440'	86.2	70	
10	X=228 184 Y=106 5242	N=09˚ 37.719' E=006˚ 31.402'	91.4	70	
11	X=228 363	N=09˚ 37.704'	61.77	70	

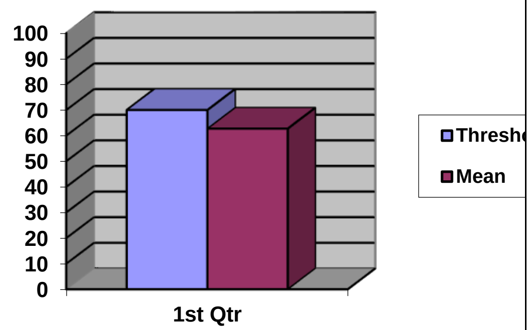
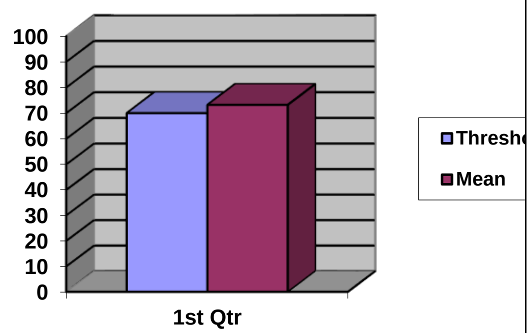
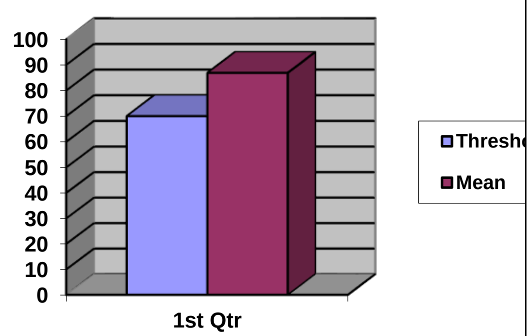
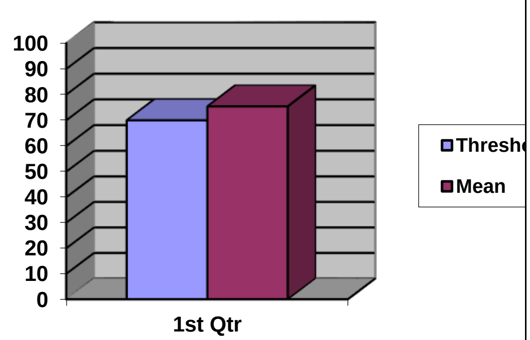
	Y=106 5213	E=006° 31.500'			
12	X=228 442 Y=106 5203	N=09° 37.699' E=006° 31.543'	91.5	70	
13	X=228 445 Y=106 5334	N=09° 37.770' E=006° 31.544'	86.83	70	

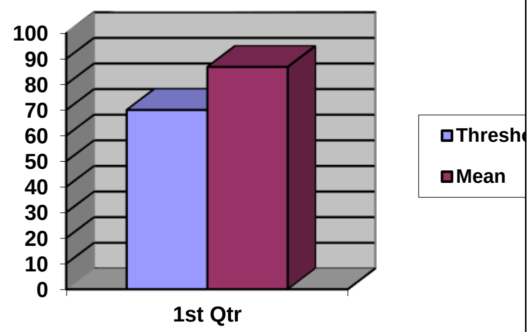
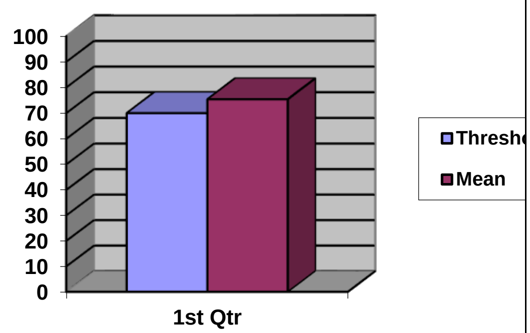
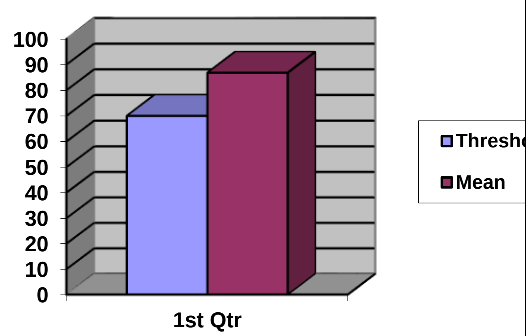
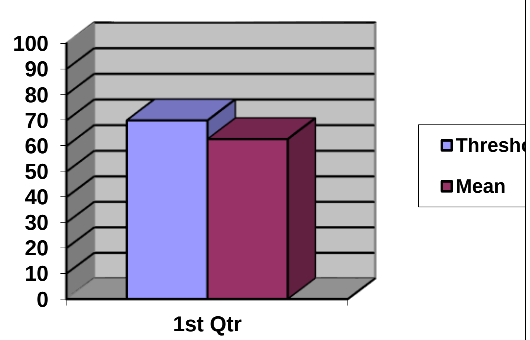
14	X=228 397 Y=106 5397	N=09˚ 37.804' E=006˚ 31.518'	92.37	70	
15	X=228 445 Y=106 5371	N=09˚ 37.790' E=006˚ 31.544'	86.83	70	
16	X=228 652 Y=106 5364	N=09˚ 37.787' E=006˚ 31.657'	86.83	70	
17	X=228 787 Y=106 5464	N=09˚ 37.842' E=006˚ 31.731'	90.7	70	

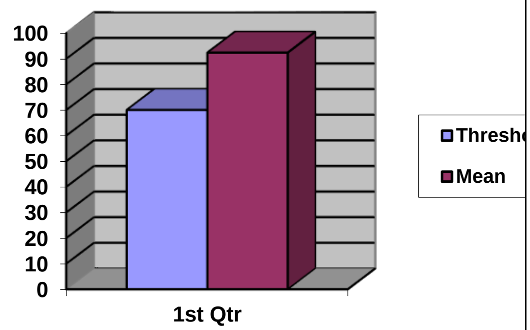
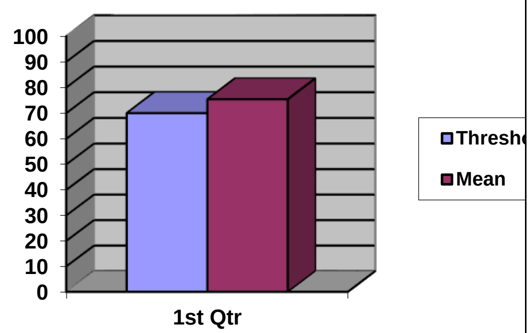
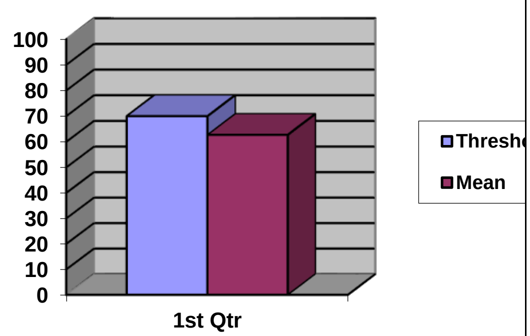
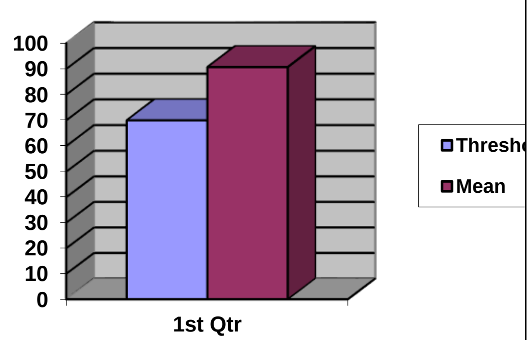
18	X=228 836 Y=106 5617	N=09˚ 37.925' E=006˚ 31.757'	91.5	70	
19	X=228 745 Y=106 4135	N=09˚ 37.121' E=006˚ 31.713'	92.37	70	
20	X=228 764 6Y=10 63939	N=09˚ 37.015' E=006˚ 31.724'	92.37	70	
21			92.37	70	

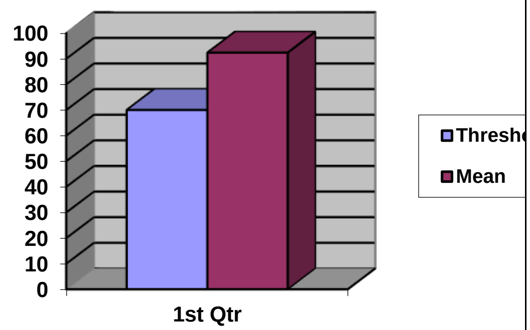
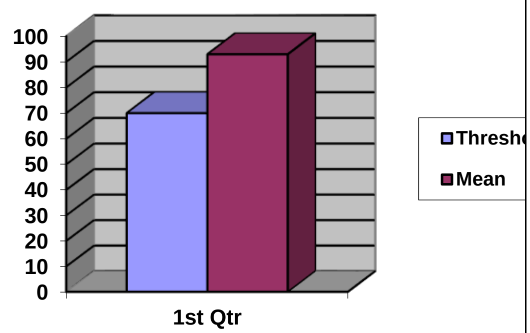
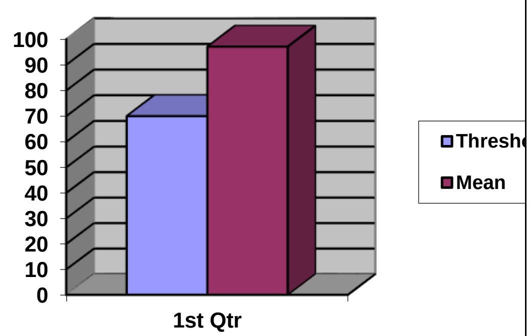
22	X=228 803 Y=106 5313	N=09° 37.760' E=006° 31.740'	92.37	70	
23	X=228 828 Y=106 5267	N=09° 37.735' E=006° 31.754'	92.37	70	
24	X=228 949 Y=106 5260	N=09° 37.732' E=006° 31.820'	62.70	70	
25	X=228 933 Y=106 5044	N=09° 37.615' E=006° 31.812'	195.7	70	

26	X=228 825 Y=106 4999	N=09˚ 37.590' E=006˚ 31.753'	62.70	70	
27	X=228 912 Y=106 5176	N=09˚ 37.686' E=006˚ 31.800'	92.37	70	
28	X=228 902 Y=106 4820	N=09˚ 37.493' E=006˚ 31.796'	92.37	70	
29	X=228 912 Y=106 4639	N=09˚ 37.395' E=006˚ 31.802'	92.37	70	

30	X=228 993 Y=106 4528	N=09˚ 37.335' E=006˚ 31.847'	62.7	70	
31	X=229 135 Y=106 2618	N=09˚ 36.300' E=006˚ 31.932'	73.2	70	
32	X=229 373 Y=106 2598	N=09˚ 36.290' E=006˚ 32.062'	86.83	70	
33	X=229 449 Y=106 2579	N=09˚ 36.280' E=006˚ 32.104'	75.4	70	

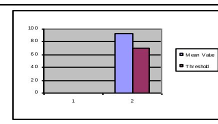
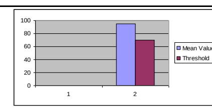
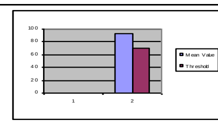
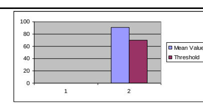
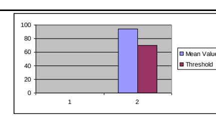
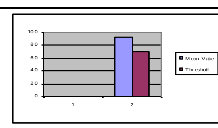
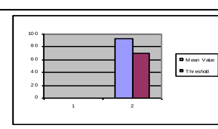
34	X=229 596 Y=106 2613	N=09° 36.299' E=006° 32.184'	86.8	70	
35	X=229 616 Y=106 2609	N=09° 36.297' E=006° 32.195'	75.4	70	
36	X=229 683 Y=106 2651	N=09° 36.320' E=006° 32.231'	86.8	70	
37	X=229 710 Y=106 2682	N=09° 36.337' E=006° 32.246'	62.7	70	

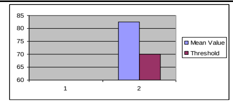
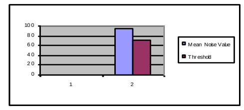
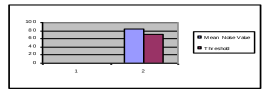
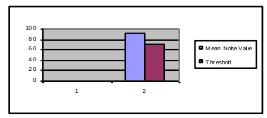
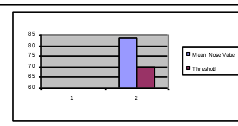
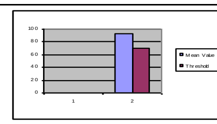
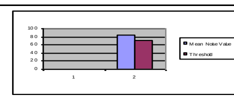
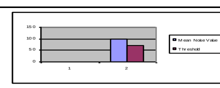
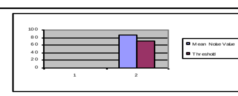
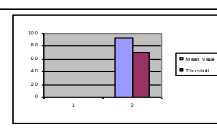
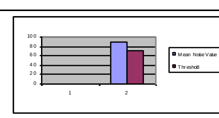
38	X=229 751 Y=106 2783	N=09˚ 36.392' E=006˚ 32.268'	92.37	70	
39	X=229 753 Y=106 2799	N=09˚ 36.401' E=006˚ 32.269'	75.4	70	
40	X=227 948 Y=106 3032	N=09˚ 36.520' E=006˚ 31.282'	62.7	70	
41	X=227 949 Y=106 3060	N=09˚ 36.535' E=006˚ 31.282'	90.7	70	

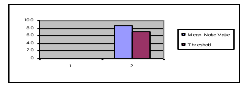
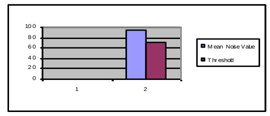
42	X=227 919 Y=106 3086	N=09˚ 36.549' E=006˚ 31.266'	92.37	70	
43	X=227 930 Y=106 3240	N=09˚ 36.633' E=006˚ 31.271'	92.93	70	
44	X=227 921 Y=106 3305	N=09˚ 36.668' E=006˚ 31.266'	97.07	70	

A2-M6: STATIONS' DATASET

NOISE LEVEL DATA AQIUSITION LOG

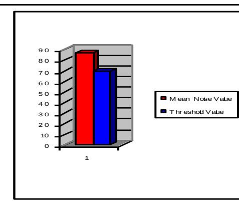
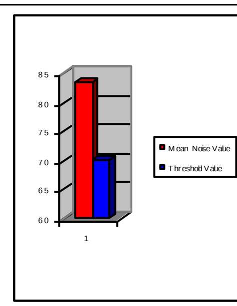
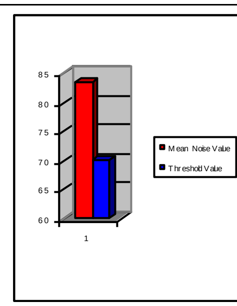
GPS VALUE		MEAN NOISE VALUE (dBA)	THRESHOLD VALUE (dBA	BAR CHART REPRESENTATION
UTM	LOCAL			
X:0770374 **Y:1150542**	**N:10.39914** **E:005.46907**	92.5	70	
X:0770345 **Y:1150470**	**N:10.398948** **E:005.46905**	95.0	70	
X:0770316 **Y:1150169**	**N:10.396234** **E:005.46877**	92.5	70	
X:0769157 **Y:1150857**	**N:10.402523** **E:005.45824**	90.7	70	
X:0766853 **Y:1150388**	**N:10.398451** **E:005.43717**	93.8	70	
X:0766994 **Y:1150454**	**N:10.399038** **E:005.43847**	92.5	70	
X:0767035 **Y:1150464**	**N:10.399125** **E:005.43884**	92.5	70	

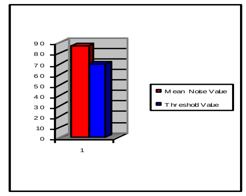
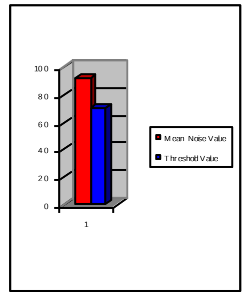
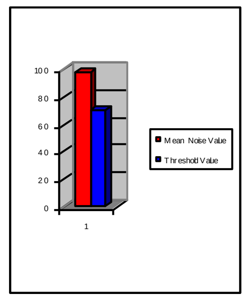
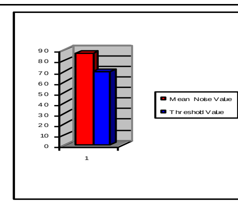
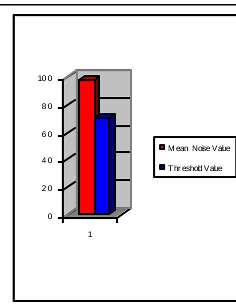
X:0767688 **Y:1506350**	**N:10.400881** **E:005.44818**	82.4	70	
X:0768037 **Y:1150712**	**N:10.401297** **E:005.448009**	93.9	70	
X:0770355 **Y:1150278**	**N:10.397212** **E:005.49139**	84.3	70	
X:0770529 **Y:1150391**	**N:10.397829** **E:005.47118**	92.4	70	
X:0225892 **Y:1070669**	**N:10.398176** **E:005.3656**	83.5	70	
X:0770514 **Y:1150369**	**N:10.398019** **E:005.47114**	92.5	70	
X:0766994 **Y:1150454**	**N:10.399038** **E:005.43847**	84.3	70	
X:0767035 **Y:1150464**	**N:10.399125** **E:005.43884**	98.3	70	
X:0767688 **Y:1506350**	**N:10.400881** **E:005.44818**	88.0	70	
X:0767778 **Y:1150667**	**N:10.400881** **E:005.44564**	92.5	70	
X:0768037	**N:10.401297**	90.7	70	

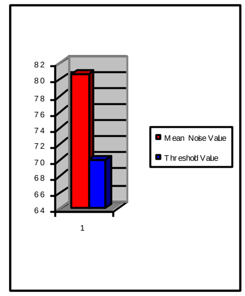
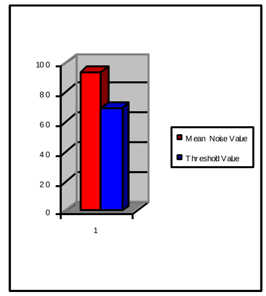
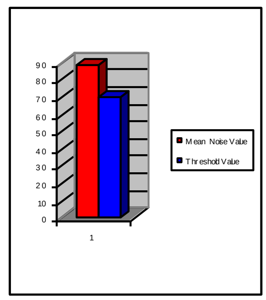
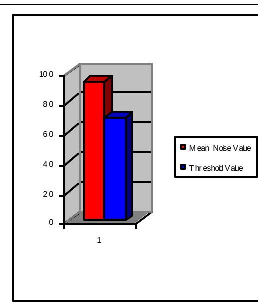
Y:1150712	**E:005.448009**			
X:0768116 **Y:1150725**	**N:10.401406** **E:005.44909**	88.0	70	
X:0770327 **Y:1150267**	**N:10.397115** **E:005.46889**	93.5	70	

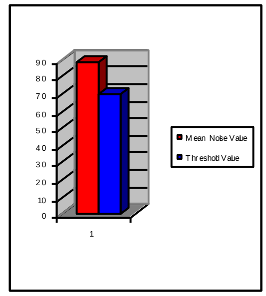
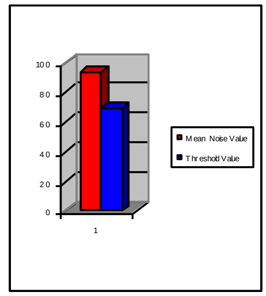
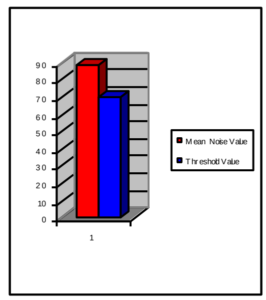
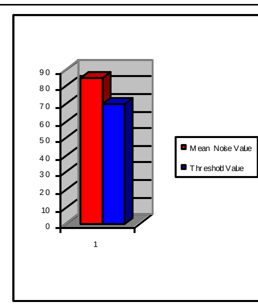
A2-M7: STATIONS' DATASET

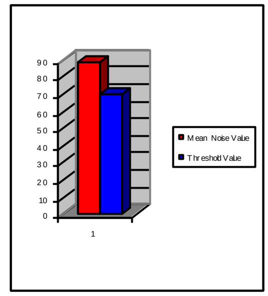
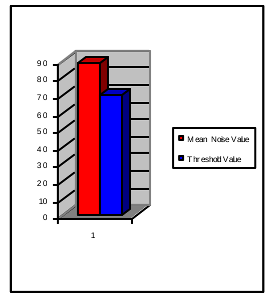
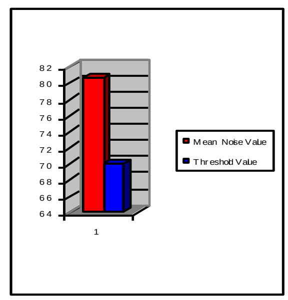
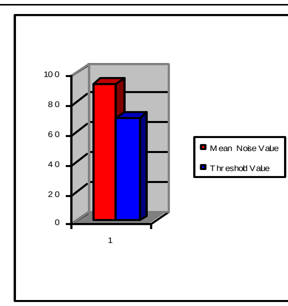
NOISE LEVEL DATA AQIUSITION LOG

GPS VALUES		MEAN NOISE VALUE (dBA)	THRESHOLD VALUE (dBA)	BAR CHART REPRESENTATION
UTM	**LOCAL**			
X: 0230999 **Y: 1065684**	**N:009.6328307** **E: 6.5489708**	**86.7**	70	
X: 0320976 **Y: 1065594**	**N:009.6320159** **E: 6.5487672**	**83.5**	70	
X: 0231008 **Y: 1065494**	**N: 009.6311142** **E: 6.5490651**	**83.5**	70	

X:0230902 **Y:1065273**	**N:009.6291101** **E:6.5481143**	**86.8**	70	
X:0230989 **Y:1065175**	**N:009.6282301** **E:6.5489129**	**92.2**	70	
X: 0231181 **Y: 1065034**	**N:009.6626983** **E: 6.55506704**	**98.3**	70	
X: 0231181 **Y: 1065034**	**N:009.6626983** **E: 6.55506704**	**86.8**	70	
X: 0231215 **Y: 1065250**	**N: 009.6289225** **E: 6.5509659**	**98.3**	70	

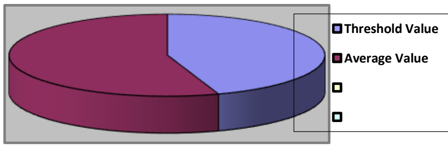
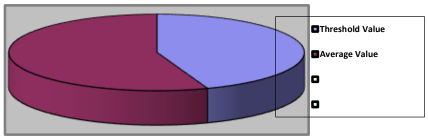
X:0231440 **Y:1065026**	**N: 009.6269398** **E: 6.5530291**	**80.7**	70	
X:0321429 **Y:1064875**	**N:009.6255474** **E:6.5552939**	**93.7**	70	
X: 0231725 **Y: 1064720**	**N:009.66241657** **E:6.5556443**	**88.6**	70	
X: 0231617 **Y: 1064684**	**N:009.6238334** **E: 6.5546632**	**93.7**	70	

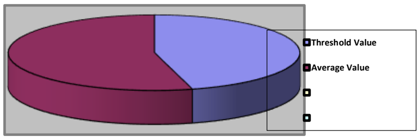
X: 0231697 **Y: 1064671**	**N:009.66237211** **E: 6.5553925**	**88.6**	70	
X:0231834 **Y:1064593**	**N: 009.6623025** **E: 6.5566451**	**93.7**	70	
X:0321854 **Y:1064552**	**N:009.6226557** **E: 6.5568299**	**88.6**	70	
X:0231865 **Y:1064321**	**N:009.6205688** **E: 6.556945**	**85.2**	70	

X: 0231940 **Y: 1064696**	**N:009.6 239627** **E: 6.55576036**	**88.6**	70	
X: 0232028 **Y: 1064789**	**N:009.6248088** **E: 6.5583989**	**88.5**	70	
X: 0232028 **Y: 1064789**	**N:009.6248088** **E: 6.5583989**	**80.7**	70	
X: 0232028 **Y: 1064789**	**N:009.6248088** **E: 6.5583989**	**92.3**	70	

A2-M8: STATIONS' DATASET

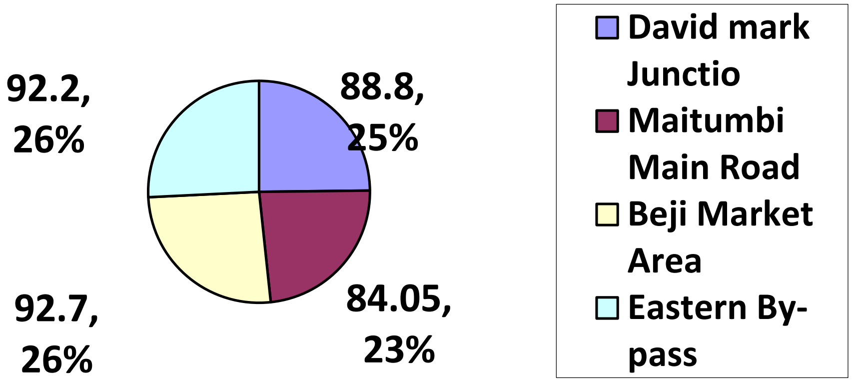
NOISE LEVEL DATA AQIUSITION LOG

NEIGHBOURHOOD	DISCRETE SOURCE OF NOISE IN THE NEIGHBOURHOOD	MEAN VALUE (dBA)	AVERAGE VALUE OF NOISE (dBA)	THRESHOLD VALUE (dBA)	PIE CHART REPRESENTATION
ENVIRONS OF EMIR'S PALACE, BOSSO	Generator	89.3	86.4	70	
	Grinding Machine	94.5			
	Welding Machine	63.7			
	Sound Amplifier	98.0			
AGWAN BIRI	Generator	90.0	87.5	70	
	Grinding Machine	97.9			
	Welding Machine	63.0			
	Sound Amplifier	99.0			

ABBATOIR & TAI VILLAGE	Generator	90.3	82.8	70	

A2-M9: STATIONS' DATASET

NOISE LEVEL DATA AQIUSITION LOG



SULEJA SHEETS

A2-S1: STATIONS' DATASET

NOISE LEVEL DATA LOG

	DESCRIPTION OF SOURCE OF NOISE				GPS VALUE		NOISE LEVEL VALUE READING		
	Source of noise	Model	Rating	Age	Local coordinates	UTM	1st	2nd	3rd
1	Generator Lister generator	Honda,	40KVA	8yrs	N=09 11.452 E=07 10.715	X=299870.62 Y=1016320.08	95.3	95.8	96.7
2	Lister generator	Honda,	5KVA	7 month	N=09 11.486 E=07 10.721	X=299882.18 Y=1016432.47	87.1	85.9	90.0
3	Bube business center	Tiger	750W	4yrs	N=09 11.514 E=007 10.746	X=299928.24 Y=1016483.85	88.3	86.7	85.5

4	Grinding machine	Honda	5.5hp	3yrs	N=09 11.583 E=007 10.762	X=299958.19 Y=1016610.8 9	95.5	96.8	98.9
5	Grinding Machine	Yamaha	5.5hp	4yrs	N=09 11.638 E=007 10.931	X=300268.29 Y=1016710.7 1	93.7	95.6	91.3
6	Barbing saloon	Yamaha	5KVA	3yrs	N=09 11.676 E=007 10.966	X=300332.75 Y=1016780.4 3	95.5	93.1	96.3
7	Fary Group Clinic	Honda	40KV A	5yrs	N=09 11.662 E=007 10.987	X=300371.09 Y=1016754.4 3	95.5	96.8	98.9
8	Vulcanizer Engine	Honda,	5.5hp	2yrs	N=09 11.642 E=007 11.026	X=300442.35 Y=1016717.6 2	57.8	62.3	68.0
9	Block making machine	Yamaha	10KV A	6yrs	N=09 11.675 E=007 11.057	X=300499.44 Y=1016777.7 4	93.7	95.6	91.3
10	Residential building	Tiger,	750W	2yrs years	N=09 11.746	X=302165.22	88.3	86.7	85.5

					E=007 11.966	Y=1016900.2 2			
11	Prime view guest house.	Elemax	52KV A	5yrs	N=09 11.624 E=007 11.042	X=300471.49 Y=1016683.5 5	95.7	91.3	89.6
12	Tsawa cyber café	Yamaha,	17.5K VA	6mont hs	N=09 11.624 E=007 11.076	X=300533.77 Y=1016683.5 5	91.2	86.2	86.7
13	Barbing Saloon	Tiger	750W	3yrs	N=09 11.624 E=007 11.076	X=300533.77 Y=1016683.5 5	88.3	86.7	85.5
14	Grinding Machine	Yamaha	5.5hp	2yrs	N=09 11.539 E=007 11.126	X=300624.57 Y=1016526.4	93.7	95.6	91.3
15	Residential Building	Yamaha	2200W	3yrs	N=09 11.490 E=007 11.063	X=300508.71 Y=1016436.6 6	95.5	93.1	96.3
16	Citizens hospital	Yamaha	52KV A	4yrs	N=09 11.445 E=007 11.986	X=302166.1 Y=1016345.3 5	93.7	95.6	91.3

17	Residential building	Yamaha,	52KVA	4yrs	N=09 11.571 E=007 11.027	X=300443.52 Y=1016586.31	93.7	95.6	91.3
18	Saida guest inn	Honda	40KVA	2yrs	N=09 11.571 E=007 11.027	X=300443.52 Y=1016586.31	95.3	95.8	96.7
19	Vulcanizer Engine	Honda Gx 270	9.0hp	2yrs	N=09 11.466 E=007 11.158	X=300682.51 Y=1016391.54	93.7	95.6	91.3
20	Disman bsiness center	Honda Gx 270	9.0hp	4yrs	N=09 11.450 E=007 11.180	X=300724.62 Y=1016387.64	93.7	95.6	91.3
21	Welding machine	Yamaha,	5.5hp	3yrs	N=09.1958153 E=07.1806883	X=0300105 Y=1016916	93.7	95.6	91.3
22	Welding machine	Yamaha	4.5hp	4yrs	N=9.1958153 E=7.1806883	X=0300201 Y=1016951	93.7	95.6	91.3

23	Mechanic site Generator	Honda T2700	2.2KW	1yr	N=9.1966426 E=7.1815939	X=0300205 Y=1017007	95.5	93.1	96.3
24	Residential Building	T2700	2.2KW ,	4yrs	N=9.1981987 E=7.1817861	X=0300227 Y=1017197	95.5	93.1	96.3
25	Grinding machine	Honda	5.5hp	6yrs	N=9.1981987 E=7.1817861	X=0300227 Y=1017197	93.7	95.6	91.3
26	Residential building	T900	650W	5yrs	N=9.1989759 E=7.1817093	X=0300219 Y=1017265	88.3	86.7	85.5
27	Residential building	Tiger, T900	650W	4yrs	N=9.1968413 E=7.1851413	X=0300695 Y=1017027	88.3	86.7	85.5
28	Welding machine	Honda T2700	4.5hp	3yrs	N=9.1972237 E=7.185667	X=0300653 Y=1017069	57.8	62.3	68.0
29	Welding machine	Honda T2700,	5hp	6yrs	N=9.1939257	X=0300697 Y=1016704	57.8	62.3	68.0

					E=7.186084 2				
30	Business center	Elemax SH 2900DX ,	6 hp	1yrs	N=9.193015 E=7.186589 2	X=0300752 Y=1016603	91.5	92.8	93.7
31	Grinding machine	Elemax SH 2900DX	6 hp	2 years	N=9.192925 1 E=7.186689 7	X=0300763 Y=1016593	91.5	92.8	93.7
32	Jinn Guest House	Honda,	4.5hp	4yrs	N=9.191437 1 E=7.187452 5	X=0300846 Y=1016428	95.5	96.8	98.9
33	Vulcanizer Machine	Honda	5.5hp	4yrs	N=9.189069 4 E=7.187682 9	X=0300870 Y=1016166	57.8	62.3	68.0
34	Barbing saloon Generator	Tiger T900	650W	5yrs	N=9.188905 9 E=7.187347 6	X=0300854 Y=1016148	88.3	86.7	85.5
35	Residential building generator	T900	650W	3yrs	N=9.196478 1 E=7.184833 8	X=0300561 Y=1017027	88.3	86.7	85.5

36	Residential building generator	T900	650W	3yrs	N=9.1964781 E=7.1848338	X=0300561 Y=1017027	88.3	86.7	85.5

A2-S2: STATIONS' DATASET

NOISE LEVEL DATA LOG

S/N	**SOURCE OF NOISE**	**MODEL SERIAL NO**	**RATING**	**AGE YRS**	**UTM VALUE**	**LOCAL CORDINATE**	**1ST READING (dBA)**	**2ND READING(dBA)**	**3RD READING**
1	Barber shop	Tiger Gen	950W	2 yrs	X=300091.64 Y=1014748.98	N=09^0 10'50.4" E=007^0 10'34.4"	91.2	95.8	99.9
2	Vulcanizer stand	Honda Gen	5.5HP	2 yrs	X=300082.53 Y=1014758.25	N=09^0 10'50.1" E=007^0 34.7"	95.2	95.7	95.8
3	Saloon shop	Elemax Gen	2.9KVA	1 yr	X=299997	N=09^0 10'43.1"	94.4	93.8	95.1

					Y=1014752.53	E=007^0 10’35.4”			
4	Vulcanize stand	Honda Gen	5.5HP	2 yrs	X=29986.91 Y=1014780.84	N=09^0 10’47.3” E=007^0 10’34.2	87.3	82.4	83.3
5	Video&Photo Production shop	Tiger Gen	1.9KVA	2yrs	X=299792.81 Y=101482.31	N=09^0 10’40.6” E=007^0 10’36.9”	88.3	86.7	85.6
6	Telecom shop	Tiger Gen	1.7KVA	1 yr	X=299780.62 Y=1014830.44	N=09^0 10’40.2” E=007^0 10’37.0”	91.3	92.7	95.5
7	Welding stand				X=299756.25 Y=1014842.85	N=09^0 10’39.4” E= 007^0 10’37.4”			
8	Barber shop	Tiger Gen	950W	3yrs	X=299744.2 Y=1014873.64	N=09^0 10’39.0” E=007^0 10’10.38”	91.2	95.8	99.9
9	Barber shop	Tiger Gen	950W	6mths	X=299704.40	N=09^0 10’37.7”	91.2	95.8	99.8

					Y=1014870.77	E=007^0 10’38.3”			
10	Welding stand				X=299695.47 Y=101489.47	N=09^0 10’37.4” E=007^0 10’39.2”			
11	Grinding machine	Honda	5.5HP	2yrs	X=299683.63 Y=1014972.26	N=09^0 10’37.0” E=007^0 10’41.6”	93.2	92.4	91.8
12	Vulcanize stand	Honda	5.5HP	3 yrs	X=299664.95 Y=1014901.69	N=09^0 10’36.4” E= 007^0 10’39.3”	95.6	96.8	99.9
13	Residential Home	Tiger Gen	950W	1 yrs	X=299627.85 Y=1014816.2	N=09^0 10’35.2” E=007^0 10’36.3”	91.2	95.8	99.9
14	Residential Home	Honda Gen	5.5HP	7mths	X=299560.71 Y=1014816.2	N=09^0 10’33.0” E=007^0 10’36.5”	95.6	96.6	99.9
15	Business centre	Honda Gen	5KVA	3yrs	X=299558.33 Y=1014948.32	N=09^0 10’32.9” E=007^0 10’40.8”	96.8	95.9	94.8

16	Residential Home	Tankee Gen	2.7KVA	6mths	X=299585.68 Y=1014923.6	N=09^{0} 10'33.8" E=007^{0} 10'42.0"	88.3	86.7	85.6
17	Business centre	Tiger Gen	2.9KVA	4mths	X=299418.18 Y=1015007.41	N=09^{0} 10'28.3" E=007^{0} 10'42.7"	91.3	92.7	95.5
18	Grinding machine	Honda	5.5HP	2yrs	X=299409.06 Y=1015016.67	N=09^{0} 10'28.0" E=007^{0} 10'43.0"	95.6	96.8	98.9
19	Grinding Machine	Honda	5.5Hp	3 yrs	X=299375.52 Y=1015026.06	N=09^{0} 10'26.9" E=007^{0} 10'43.3"	95.6	96.8	98.9
20	Grinding machine	Honda	5.5HP	2 yrs	X=299381.85 Y=1015069.04	N=09^{0} 10'27.1" E=007^{0} 10'44.7	92.8	94.8	94.8
21	Business centre	Elemax Gen.	5.5KVA	1 yr	X=299260.38 Y=1015198.7	N=09^{0} 10'23.1" E=007^{0} 10'48.9"	87.3	82.4	83.3
22	Welding stand			1 yr	X=299217.65	N=09^{0} 10'21.7"			

					Y=1015201.99	E=007^0 10’49.0”			
23	Grinding machine	Honda	5.5HP	2 yrs	X=299147.38 Y=1015193.13	N=09^0 10’19.4” E=007^0 10’48.7”	92.8	94.8	94.8
24	Grinding machine	Honda	5.5HP	1 yr	X=298990.74 Y=1015012.65	N=09^0 10’14.3” E=007^0 10’42.8”	92.8	94.8	94.3
25	Residential home	Tiger Gen.	950W	2 yrs	X=299201.34 Y=1014996.22	N=09^0 10’21.2” E=007^0 10’42.3”	91.2	95.8	99.9
26	Grinding machine	Honda	5.5HP	2yrs	X=299201.15 Y=1014959.35	N=09^0 10’21.2” E= 007^0 10’41.1”	95.6	96.8	98.9
27	Business centre	Tiger Gen	950W	1 yr	X=299289.69 Y=1014955.83	N=09^0 10’24.1” E=007^0 10’41.0”	91.2	95.8	99.9
28	Grinding machine	Honda	5.5HP	1yr	X=299477.28 Y=1015222.17	N=09^0 10’30.2” E=007^0 10’49.7”	93.2	92.4	91.8

29	Boutique centre	Tiger Gen	2.7KVA	1 yr	X=299495.79 Y=1015258.95	N=09^0 10’30.8” E=007^0 10’50.9”	91.3	92.7	95.5

A2-S3: STATIONS' DATASET

NOISE LEVEL DATA LOG

S/N	DESCRIPTION OF NOISE SOURCES				GPS READINGS		NOISE LEVEL REDINGS			
	SOURCES OF NOISE	**MODEL/ SERIAL NO.**	**POWER RATING**	**AGE (YEARS)**	**UTM**	**LOCAL COORDINATE**	**1ST VALUE**	**2ND VALUE**	**3RD VALUE**	**AVERAGE VALUE**
1	Tiger Generator	TG2700	2.5KVA	1	X:302048 Y:1011605	09^0 08' 52"N 07^0 11' 55"E	88.30	86.70	85.50	86.83
2	Yamaha Generator	DY9500 LXHB	0.65KVA	1	X:302018 Y:1011593	09^0 08' 52"N 07^0 11'54"E	95.50	93.10	96.30	94.96
3	Biryamaha generator	LG10000	800VA	2	X:301987 Y:1011596	09^0 08' 53"N 07^0 11' 53"E	91.20	86.20	86.70	88.03
4	Honda generator	SPG3800	3.1KV	3	X:301957 Y:1011594	09^0 08' 52"N 07^0 11' 52"E	91.50	92.80	93.70	95.53
5	Elemax generator	SH29000X	2.4KVA	1	X:301987 Y:1011593	09^0 08' 52"N 07^0 11' 53"E	91.50	92.80	93.70	95.53

6	Honda Milling Machine	GS160	5.5HP	1	X:301957 Y:1011589	09^0 08' 52"N 07^0 11' 50"E	95.50	96.80	98.90	97.06
7	John Holt generator	P60	60KVA	3	X:301896 Y:1011655	09^0 08' 54"N 07^0 11' 50"E	95.30	95.80	96.70	95.93
8	Tiger generator	T92700	2.5KVA	2	X:301865 Y:1011655	09^0 08' 54"N 07^0 11' 49"E	88.30	86.70	85.50	86.83
9	Suzuki Diesel engine	SV4500	4KVA	2	X:301866 Y:1011717	09^0 08' 56"N 07^0 11' 50"E	87.10	85.90	90.00	87.66
10	Techno Diesel generator	251110 NM	3.5KVA	2	X:301835 Y:1011625	09^0 08' 53"N 07^0 11' 48"E	90.00	91.20	90.90	90.70
11	Honda Miling machine	GS160	5.5HP	6	X:301804 Y:1011625	09^0 08' 53"N 07^0 11' 47"E	93.50	93.80	94.00	93.76

12	Generator	EC3800 CXE	3.5KVA	2	X:301804 Y:1011656	09^0 08' 54"N 07^0 11' 47"E	89.00	87.20	88.00	88.06
13	Milling machine	GX160	5.5HP	2	X:301743 Y:1011625	09^0 08' 53"N 07^0 11' 45"E	93.50	93.80	94.00	93.76
14	Robin generator		7500VA	3	X:301804 Y:1011622	09^0 08' 54"N 07^0 11' 47"E	85.60	86.40	88.10	86.70
15	Milling machine	GX160	5.5HP	2	X:301774 Y:1011687	09^0 08' 55"N 07^0 11' 46"E	93.70	95.60	91.30	93.53
16	Carterpillar generator	GACO2470	500KVA	1	X:301682 Y:1011626	09^0 08' 53"N 07^0 11' 43"E	98.30	98.40	98.30	98.33
17	Generator	JL260026HP	6KVA	1	X:301712 Y:1011595	09^0 08' 52"N 07^0 11' 44"E	85.60	86.40	88.10	86.70

18	Milling machine	GX160	5.5HP	3	X:301621 Y:1011565	09^0 08' 51"N 07^0 11' 41"E	93.70	95.60	91.30	93.53
19	Milling machine	GX160	5.5HP	2	X:301559 Y:1011534	09^0 08' 50"N 07^0 11'39"E	93.70	95.60	91.30	93.53
20	John Holt generator	P60	60KVA	9	X:301529 Y:1011504	09^0 08' 49"N 07^0 11' 38"E	95.30	95.80	96.70	95.93
21	Generator repair	Various models		4	X:301315 Y:1011474	09^0 08' 48"N 07^0 11' 31"E	98.30	98.40	98.30	98.33
22	Milling machine	GX160	5.5HP	1	X:301468 Y:1011473	09^0 08' 47"N 07^0 11' 36"E	93.70	95.60	91.30	93.53
23	Cozily generator	UB3000	2KVA	2	X:301559 Y:1011442	09^0 08' 46"N 07^0 11' 39"E	81.50	85.10	83.90	83.50

24	Milling machine	GX160	5.5HP	1	X:301589 Y:1011442	09^0 08' 47"N 07^0 11' 40"E	95.30	96.80	98.90	97.00
25	Tiger Generator	TG2700	2.5KVA	1	X:301589 Y:1011380	09^0 08' 45"N 07^0 11' 40"E	88.30	86.70	85.50	86.83
26	Yamaha Generator	DY9500 LXHB	700VA	2	X:301711 Y:1011380	09^0 08' 45"N 07^0 11' 44"E	95.50	93.10	96.30	94.96
27	Cartepillar generator	G4CO2 470	500KVA	1	X:301712 Y:1011411	09^0 08' 47"N 07^0 11' 44"E	98.30	98.40	98.30	98.33
28	Elemax generator	SH2900 DX	2.4KVA	1	X:301742 Y:1011472	09^0 08' 48"N 07^0 11' 45"E	91.50	92.80	93.70	95.53
29	Milling machine	GX160	5.5HP	4	X:301773 Y:1011472	09^0 08' 48"N 07^0 11' 46"E	95.50	93.80	94.00	94.43

30	Generator repair	Various models		3	X:301834 Y:1011502	09^0 08’ 49”N 07^0 11’ 48”E	98.30	98.40	98.30	98.33
31	Tiger Generator	TG2700	2.5KVA	3	X:301865 Y:1011533	09^0 08’ 50”N 07^0 11’ 49”E	88.30	86.70	85.50	86.60
32	Generator workshop	Various models		2	X:301834 Y:1011533	09^0 08’ 49”N 07^0 11’ 48”E	98.30	98.40	98.30	98.33
33	Automobile workshop	Various models		3	X:301895 Y:1011502	09^0 08’ 50”N 07^0 11’ 50”E	98.30	98.40	98.30	98.33
34	Somec generator	SG2700	2.2KVA	1	X:301772 Y:1011379	09^0 08’ 45”N 07^0 11’ 46”E	93.20	92.30	91.60	92.36
35	Tiger Generator	SG2700	2.5KVA	2	X:301680 Y:1011257	09^0 08’ 41”N 07^0 11’ 43”E	88.30	86.70	85.50	86.83

A2-S4: STATIONS' DATASET

GAS DATA AQUISITION LOG

S/N	SOURCES OF GAS	GPS READINGS		GAS POLLUTANT VALUES (PPM)				
		UTM	LOCAL CORDINATES	GAS SAMPLE	1ST VALUE	2ND VALUE	3RD VALUE	AVERAGE VALUE
1	Charcoal cooking	N 09 06 38.6	X 292912	SO_2	0.0013	0.0012	0.0013	0.0013
				CO	0.0600	0.0500	0.0300	0.0467
		E 07 12 54.6	Y 1018602	Cl_2	0.2000	0.3000	0.0000	0.2500
				HCN	0.0010	0.0030	0.0000	0.0020
				NO_2	0.0024	0.0023	0.0026	0.0024
				NH_3	00001	00002	00001	1.3333
				H_2S	0.0024	0.0080	0.0082	0.0062
2	Yamaha Generator	N 09 06 38.8	X 292934	SO_2	0.0081	0.0080	0.0082	0.0081
				CO	0.0900	0.0700	0.0500	0.0700
		E 07 12 54.6	Y 101860	Cl_2	0.0200	0.0400	0.0300	0.0300
				HCN	0.0010	0.0020	0.0010	0.0013
				NO_2	0.0032	0.0030	0.0032	0.0313
				NH_3	0.0200	0.0100	0.0200	0.0167
				H_2S	0.0023	0.0021	1.0000	0.3348

3	Charcoal cooking	N 09 06 38.5 E 07 12 5.9	X 292970 Y 101605	**SO_2**	0.0013	0.0012	0.0013	0.0013
				CO	0.0600	0.0500	0.0300	0.0467
				Cl_2	0.2000	0.3000	0.0000	0.2500
				HCN	0.0010	0.0030	0.0000	0.0020
				NO_2	0.0024	0.0023	0.0026	0.0024
				NH_3	00001	00002	00001	1.3333
				H_2S	0.0024	0.0080	0.0082	0.0062
4	Tiger Generator	N 09 06 38.5 E 07 12 56.9	X 292982 Y 1018599	**SO_2**	0.0120	0.0130	0.0140	0.0130
				CO	0.2600	0.2100	0.1600	0.2100
				Cl_2	0.0000	0.0000	0.0000	0.0000
				HCN	0.0010	0.0020	0.0030	0.0020
				NO_2	0.0730	0.0720	0.0710	0.0720
				NH_3	0.0100	0.0100	0.0200	0.0133
				H_2S	0.0000	0.0100	0.0200	0.0150
5	Tiger Generator	N 09 06 38.6 E 07 12 57.4	X 292985 Y 1018602	**SO_2**	0.0120	0.0130	0.0140	0.0130
				CO	0.2600	0.2100	0.1600	0.2100
				Cl_2	0.0000	0.0000	0.0000	0.0000
				HCN	0.0010	0.0020	0.0030	0.0020
				NO_2	0.0730	0.0720	0.0710	0.0720
				NH_3	0.0100	0.0100	0.0200	0.0133
				H_2S	0.0000	0.0100	0.0200	0.0150

6	Tiger Generator	N 09 06 37.3 E 07 12 57.1	X 292988 Y 1018562	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0120 0.2600 0.0000 0.0010 0.0730 0.0100 0.0000	0.0130 0.2100 0.0000 0.0020 0.0720 0.0100 0.0100	0.0140 0.1600 0.0000 0.0030 0.0710 0.0200 0.0200	0.0130 0.2100 0.0000 0.0020 0.0720 0.0133 0.0150
7	Charcoal cooking	N 09 06 36.9 E 07 12 57.4	X 292997 Y 1018549	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0013 0.0600 0.2000 0.0010 0.0024 00001 0.0024	0.0012 0.0500 0.3000 0.0030 0.0023 00002 0.0080	0.0013 0.0300 0.0000 0.0000 0.0026 00001 0.0082	0.0013 0.0467 0.2500 0.0020 0.0024 1.3333 0.0062
8	Charcoal cooking	N 09 06 36.4 E 07 12 57.5	X 293000 Y 1018534	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0013 0.0600 0.2000 0.0010 0.0024 00001 0.0024	0.0012 0.0500 0.3000 0.0030 0.0023 00002 0.0080	0.0013 0.0300 0.0000 0.0000 0.0026 00001 0.0082	0.0013 0.0467 0.2500 0.0020 0.0024 1.3333 0.0062

9	Charcoal cooking	N 09 06 36.1 E 07 12 57.4	X 292997 Y 1018525	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
10	Mechanic Workshop	N 09 06 36.1 E 07 12 57.1	X 292988 Y 1018525	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0000 0.3800 0.2000 0.0035 0.0072 0.0100 0.0071	0.1200 0.7800 0.3000 0.0024 0.0042 0.0100 0.0078	0.0130 0.0200 0.4000 0.0021 0.0440 0.1000 0.0073	0.0665 0.4267 0.3000 0.0027 0.0053 0.0040 0.0074
11	Charcoal cooking	N 09 06 30.0 E 07 12 56.7	X 292975 Y 1018338	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200

12	Lista generator	N 09 06 31.5 E 07 12 53.7	X 292884 Y 1018384	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0081 0.0900 0.0200 0.0010 0.0032 0.0200 0.0023	0.0080 0.0700 0.0400 0.0020 0.0030 0.0100 0.0021	0.0082 0.0500 0.0300 0.0010 0.0032 0.0200 1.0000	0.0081 0.0700 0.0300 0.0013 0.0313 0.0167 0.3348
13	Yamaha Generator	N 09 06 27.9 E 07 12 56.0	X 292953 Y 1018273	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0081 0.0900 0.0200 0.0010 0.0032 0.0200 0.0023	0.0080 0.0700 0.0400 0.0020 0.0030 0.0100 0.0021	0.0082 0.0500 0.0300 0.0010 0.0032 0.0200 1.0000	0.0081 0.0700 0.0300 0.0013 0.0313 0.0167 0.3348
14	Suya joint	N 09 06 27.8 E 07 12 55.8	X 292947 Y 1018270	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200

15	Charcoal cooking	N 09 06 26.5 E 07 12 55.4	X 292935 Y 1018230	**SO_2**	1.2000	1.2000	1.2000	1.2000
				CO	1.5200	1.5400	1.5500	1.5367
				Cl_2	1.1000	0.0300	0.0800	0.4033
				HCN	0.0800	0.0200	0.0600	0.0533
				NO_2	0.7920	0.8000	0.0750	0.7960
				NH_3	0.0100	0.0100	0.0100	0.0100
				H_2S	0.0200	0.0000	0.0300	0.0200
16	Mechanic work shop	N 09 06 26.5 E 07 12 55.4	X 292935 Y 1018215	**SO_2**	0.0000	0.1200	0.0130	0.0665
				CO	0.3800	0.7800	0.0200	0.4267
				Cl_2	0.2000	0.3000	0.4000	0.3000
				HCN	0.0035	0.0024	0.0021	0.0027
				NO_2	0.0072	0.0042	0.0440	0.0053
				NH_3	0.0100	0.0100	0.1000	0.0040
				H_2S	0.0071	0.0078	0.0073	0.0074
17	Charcoal cooking	N 09 06 26.1 E 07 12 54.5	X 292907 Y 1018218	**SO_2**	0.0013	0.0012	0.0013	0.0013
				CO	0.0600	0.0500	0.0300	0.0467
				Cl_2	0.2000	0.3000	0.0000	0.2500
				HCN	0.0010	0.0030	0.0000	0.0020
				NO_2	0.0024	0.0023	0.0026	0.0024
				NH_3	00001	00002	00001	1.3333
				H_2S	0.0024	0.0080	0.0082	0.0062

18	Charcoal cooking	N 09 06 25.2 E 07 12 54.2	X 292898 Y 1018160	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
19	Charcoal cooking	N 09 06 24.8 E 07 12 54.2	X 292898 Y 1018160	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
20	Charcoal cooking	N 09 06 19.0 E 07 12 56.2	X 292958 Y 101799	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0013 0.0600 0.2000 0.0010 0.0024 00001 0.0024	0.0012 0.0500 0.3000 0.0030 0.0023 00002 0.0080	0.0013 0.0300 0.0000 0.0000 0.0026 00001 0.0082	0.0013 0.0467 0.2500 0.0020 0.0024 1.3333 0.0062

21	Charcoal cooking	N 09 06 17.9 E 07 12 56.2	X 292958 Y 1017999	**SO_2**	1.2000	1.2000	1.2000	1.2000
				CO	1.5200	1.5400	1.5500	1.5367
				Cl_2	1.1000	0.0300	0.0800	0.4033
				HCN	0.0800	0.0200	0.0600	0.0533
				NO_2	0.7920	0.8000	0.0750	0.7960
				NH_3	0.0100	0.0100	0.0100	0.0100
				H_2S	0.0200	0.0000	0.0300	0.0200
22	Yamaha Generator	N 09 06 17.4 E 07 12 56.0	X 292955 Y 1017950	**SO_2**	0.0081	0.0080	0.0082	0.0081
				CO	0.0900	0.0700	0.0500	0.0700
				Cl_2	0.0200	0.0400	0.0300	0.0300
				HCN	0.0010	0.0020	0.0010	0.0013
				NO_2	0.0032	0.0030	0.0032	0.0313
				NH_3	0.0200	0.0100	0.0200	0.0167
				H_2S	0.0023	0.0021	1.0000	0.3348
23	Yamaha Generator	N 09 06 16.5 E 07 12 56.0	X 292951 Y 1017907	**SO_2**	0.0081	0.0080	0.0082	0.0081
				CO	0.0900	0.0700	0.0500	0.0700
				Cl_2	0.0200	0.0400	0.0300	0.0300
				HCN	0.0010	0.0020	0.0010	0.0013
				NO_2	0.0032	0.0030	0.0032	0.0313
				NH_3	0.0200	0.0100	0.0200	0.0167
				H_2S	0.0023	0.0021	1.0000	0.3348

24	Charcoal cooking	N 09 06 16.3 E 07 12 56.2	X 292957 Y 1017917	**SO_2**	0.0013	0.0012	0.0013	0.0013
				CO	0.0600	0.0500	0.0300	0.0467
				Cl_2	0.2000	0.3000	0.0000	0.2500
				HCN	0.0010	0.0030	0.0000	0.0020
				NO_2	0.0024	0.0023	0.0026	0.0024
				NH_3	00001	00002	00001	1.3333
				H_2S	0.0024	0.0080	0.0082	0.0062
25	Mechanic shop	N 09 06 15.9 E 07 12 56.5	X 292966 Y 1017895	**SO_2**	0.0000	0.1200	0.0130	0.0665
				CO	0.3800	0.7800	0.0200	0.4267
				Cl_2	0.2000	0.3000	0.4000	0.3000
				HCN	0.0035	0.0024	0.0021	0.0027
				NO_2	0.0072	0.0042	0.0440	0.0053
				NH_3	0.0100	0.0100	0.1000	0.0040
				H_2S	0.0071	0.0078	0.0073	0.0074
26	Tiger Generator	N 09 06 14.0 E 07 12 56.7	X 292977 Y 1017846	**SO_2**	0.0120	0.0130	0.0140	0.0130
				CO	0.2600	0.2100	0.1600	0.2100
				Cl_2	0.0000	0.0000	0.0000	0.0000
				HCN	0.0010	0.0020	0.0030	0.0020
				NO_2	0.0730	0.0720	0.0710	0.0720
				NH_3	0.0100	0.0100	0.0200	0.0133
				H_2S	0.0000	0.0100	0.0200	0.0150

27	Charcoal cooking	N 09 06 14.3 E 07 12 55.6	X 292960 Y 1017855	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
28	Charcoal cooking	N 09 06 44.9 E 07 12 54.8	X 292914 Y 1017874	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0013 0.0600 0.2000 0.0010 0.0024 00001 0.0024	0.0012 0.0500 0.3000 0.0030 0.0023 00002 0.0080	0.0013 0.0300 0.0000 0.0000 0.0026 00001 0.0082	0.0013 0.0467 0.2500 0.0020 0.0024 1.3333 0.0062
29	Commercial Fire Wood Burning	N 09 06 15.7 E 07 12 54.0	X 292890 Y 1017899	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0089 0.1000 0.0300 0.0032 0.0034 1.0000 0.0010	0.0073 0.1100 0.0200 0.0035 0.0037 2.0000 0.0030	0.0068 0.1200 0.0400 0.0032 0.0031 4.0000 0.0020	0.0077 0.1100 0.0300 0.0033 0.0034 2.3333 0.0200

30	Commercial Fire Wood Burning	N 09 06 15.9 E 07 12 56.5	X 292966 Y 1017895	**SO_2**	0.0089	0.0073	0.0068	0.0077
				CO	0.1000	0.1100	0.1200	0.1100
				Cl_2	0.0300	0.0200	0.0400	0.0300
				HCN	0.0032	0.0035	0.0032	0.0033
				NO_2	0.0034	0.0037	0.0031	0.0034
				NH_3	1.0000	2.0000	4.0000	2.3333
				H_2S	0.0010	0.0030	0.0020	0.0200
31	Automobile Workshop	N 09 06 14.3 E 07 12 55.6	X 292990 Y 1017899	**SO_2**	0.0000	0.1200	0.0130	0.0665
				CO	0.3800	0.7800	0.0200	0.4267
				Cl_2	0.2000	0.3000	0.4000	0.3000
				HCN	0.0035	0.0024	0.0021	0.0027
				NO_2	0.0072	0.0042	0.0440	0.0053
				NH_3	0.0100	0.0100	0.1000	0.0040
				H_2S	0.0071	0.0078	0.0073	0.0074
32	Tiger Generator	N 09 06 22.2 E 07 12 48.6	X 292708 Y 1018099	**SO_2**	0.0120	0.0130	0.0140	0.0130
				CO	0.2600	0.2100	0.1600	0.2100
				Cl_2	0.0000	0.0000	0.0000	0.0000
				HCN	0.0010	0.0020	0.0030	0.0020
				NO_2	0.0730	0.0720	0.0710	0.0720
				NH_3	0.0100	0.0100	0.0200	0.0133
				H_2S	0.0000	0.0100	0.0200	0.0150

33	Tiger Generator	N 09 06 22.6 E 07 12 47.4	X 292690 Y 10178112	**SO_2**	0.0120	0.0130	0.0140	0.0130
				CO	0.2600	0.2100	0.1600	0.2100
				Cl_2	0.0000	0.0000	0.0000	0.0000
				HCN	0.0010	0.0020	0.0030	0.0020
				NO_2	0.0730	0.0720	0.0710	0.0720
				NH_3	0.0100	0.0100	0.0200	0.0133
				H_2S	0.0000	0.0100	0.0200	0.0150
34	Yamaha Generator	N 09 06 23.8 E 07 12 48.9	X 292736 Y 1018148	**SO_2**	0.0081	0.0080	0.0082	0.0081
				CO	0.0900	0.0700	0.0500	0.0700
				Cl_2	0.0200	0.0400	0.0300	0.0300
				HCN	0.0010	0.0020	0.0010	0.0013
				NO_2	0.0032	0.0030	0.0032	0.0313
				NH_3	0.0200	0.0100	0.0200	0.0167
				H_2S	0.0023	0.0021	1.0000	0.3348
35	Charcoal cooking	N 09 06 14.0 E 07 12 56.7	X 292977 Y 1017846	**SO_2**	0.0013	0.0012	0.0013	0.0013
				CO	0.0600	0.0500	0.0300	0.0467
				Cl_2	0.2000	0.3000	0.0000	0.2500
				HCN	0.0010	0.0030	0.0000	0.0020
				NO_2	0.0024	0.0023	0.0026	0.0024
				NH_3	00001	00002	00001	1.3333
				H_2S	0.0024	0.0080	0.0082	0.0062

36	Charcoal cooking	N 09 06 22.6 E 07 12 51.7	X 292799 Y 1018111	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0013 0.0600 0.2000 0.0010 0.0024 00001 0.0024	0.0012 0.0500 0.3000 0.0030 0.0023 00002 0.0080	0.0013 0.0300 0.0000 0.0000 0.0026 00001 0.0082	0.0013 0.0467 0.2500 0.0020 0.0024 1.3333 0.0062
37	Charcoal cooking	N 09 06 21.7 E 07 12 52.3	X 292854 Y 1018083	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
38	Charcoal cooking	N 09 06 22.2 E 07 12 53.1	X 292764 Y 1018098	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200

39	Charcoal cooking	N 09 06 28.1 E 07 12 53.7	X 292883 Y 1018280	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
40	Commercial Fire Wood Burning	N 09 06 28.6 E 07 12 53.6	X 292879 Y 1018295	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0013 0.0600 0.2000 0.0010 0.0024 00001 0.0024	0.0012 0.0500 0.3000 0.0030 0.0023 00002 0.0080	0.0013 0.0300 0.0000 0.0000 0.0026 00001 0.0082	0.0013 0.0467 0.2500 0.0020 0.0024 1.3333 0.0062
41	Lista generator	N 09 06 28.8 E 07 12 53.7	X 292883 Y 1018307	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0081 0.0900 0.0200 0.0010 0.0032 0.0200 0.0023	0.0080 0.0700 0.0400 0.0020 0.0030 0.0100 0.0021	0.0082 0.0500 0.0300 0.0010 0.0032 0.0200 1.0000	0.0081 0.0700 0.0300 0.0013 0.0313 0.0167 0.3348

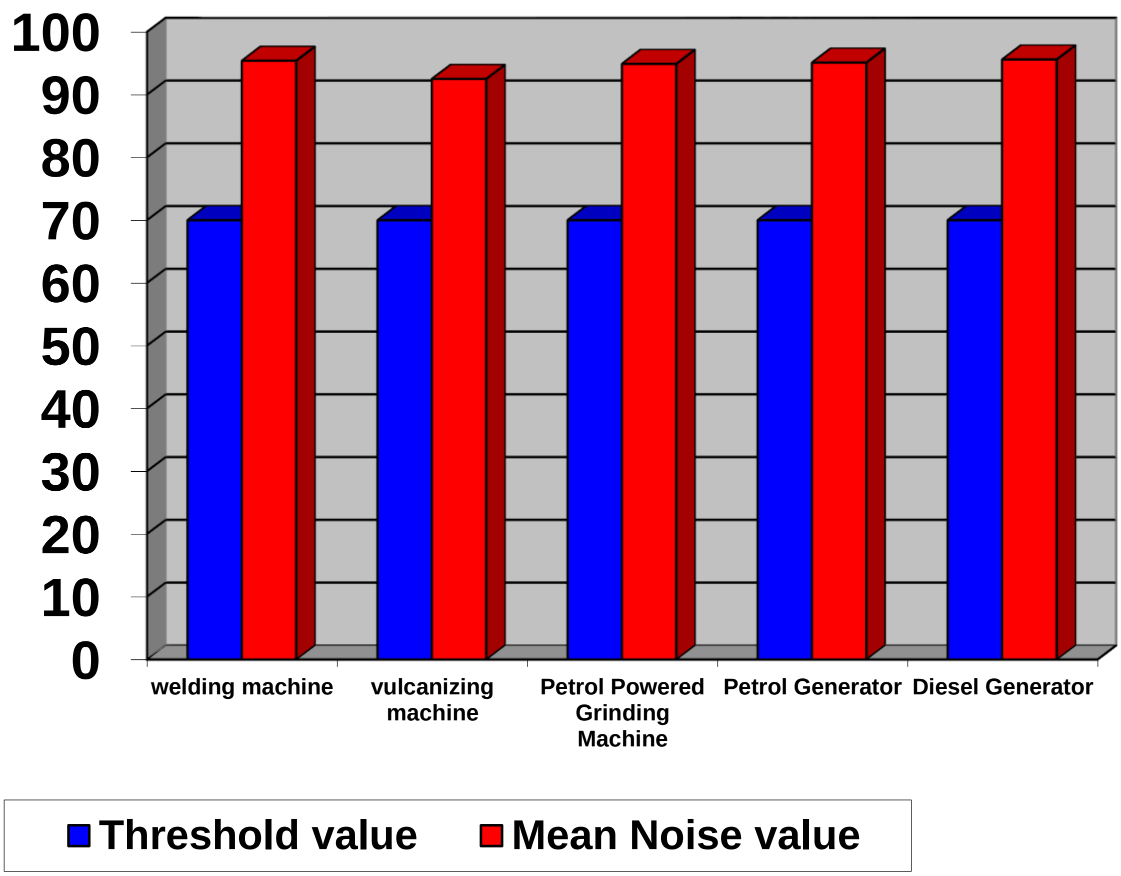
42	Bila Yamaha Generator	N 09 06 29.3 E 07 12 53.6	X 292862 Y 1018317	**SO_2**	0.0730	0.0720	0.0710	0.0720
				CO	0.7600	0.4300	0.0360	0.5167
				Cl_2	0.0300	0.0200	0.0100	0.0200
				HCN	0.0000	0.0000	0.0000	0.0000
				NO_2	0.0082	0.0080	0.0081	0.0081
				NH_3	0.0010	0.0030	0.0010	0.0017
				H_2S	0.0990	0.0920	0.0930	0.0940
43	Generator (JL2600)	N 09 06 29.4 E 07 12 53.6	X 292880 Y 1018338	**SO_2**	0.0081	0.0080	0.0082	0.0081
				CO	0.0900	0.0700	0.0500	0.0700
				Cl_2	0.0200	0.0400	0.0300	0.0300
				HCN	0.0010	0.0020	0.0010	0.0013
				NO_2	0.0032	0.0030	0.0032	0.0313
				NH_3	0.0200	0.0100	0.0200	0.0167
				H_2S	0.0023	0.0021	1.0000	0.3348
44	Sumec Generator	N 09 06 28.6 E 07 12 53.6	X 292879 Y 1018295	**SO_2**	0.0730	0.0720	0.0710	0.0720
				CO	0.7600	0.4300	0.0360	0.5167
				Cl_2	0.0300	0.0200	0.0100	0.0200
				HCN	0.0000	0.0000	0.0000	0.0000
				NO_2	0.0082	0.0080	0.0081	0.0081
				NH_3	0.0010	0.0030	0.0010	0.0017
				H_2S	0.0990	0.0920	0.0930	0.0940

45	Commercial Fire Wood Burning	N 09 06 29.1 E 07 12 53.5	X 292877 Y 1018310	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	1.2000 1.5200 1.1000 0.0800 0.7920 0.0100 0.0200	1.2000 1.5400 0.0300 0.0200 0.8000 0.0100 0.0000	1.2000 1.5500 0.0800 0.0600 0.0750 0.0100 0.0300	1.2000 1.5367 0.4033 0.0533 0.7960 0.0100 0.0200
46	Tiger Generator	N 09 06 29.3 E 07 12 53.6	X 292862 Y 1018317	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0120 0.2600 0.0000 0.0010 0.0730 0.0100 0.0000	0.0130 0.2100 0.0000 0.0020 0.0720 0.0100 0.0100	0.0140 0.1600 0.0000 0.0030 0.0710 0.0200 0.0200	0.0130 0.2100 0.0000 0.0020 0.0720 0.0133 0.0150
47	Tiger Generator	N 09 06 14.0 E 07 12 56.7	X 292977 Y 1017846	**SO_2** **CO** **Cl_2** **HCN** **NO_2** **NH_3** **H_2S**	0.0120 0.2600 0.0000 0.0010 0.0730 0.0100 0.0000	0.0130 0.2100 0.0000 0.0020 0.0720 0.0100 0.0100	0.0140 0.1600 0.0000 0.0030 0.0710 0.0200 0.0200	0.0130 0.2100 0.0000 0.0020 0.0720 0.0133 0.0150

48	Elemax Generator	N 09 06 20.6 E 07 12 55.8	X 292946 Y 1018049	**SO_2**	0.0040	0.0080	0.0120	0.0080
				CO	0.0300	0.0200	0.0100	0.0200
				Cl_2	0.0300	0.0200	0.0700	0.0400
				HCN	0.0082	0.0083	0.0082	0.0082
				NO_2	0.0200	0.0100	0.0400	0.0233
				NH_3	0.0100	0.0200	0.0100	0.0133
				H_2S	0.0100	0.0000	0.0000	0.0100

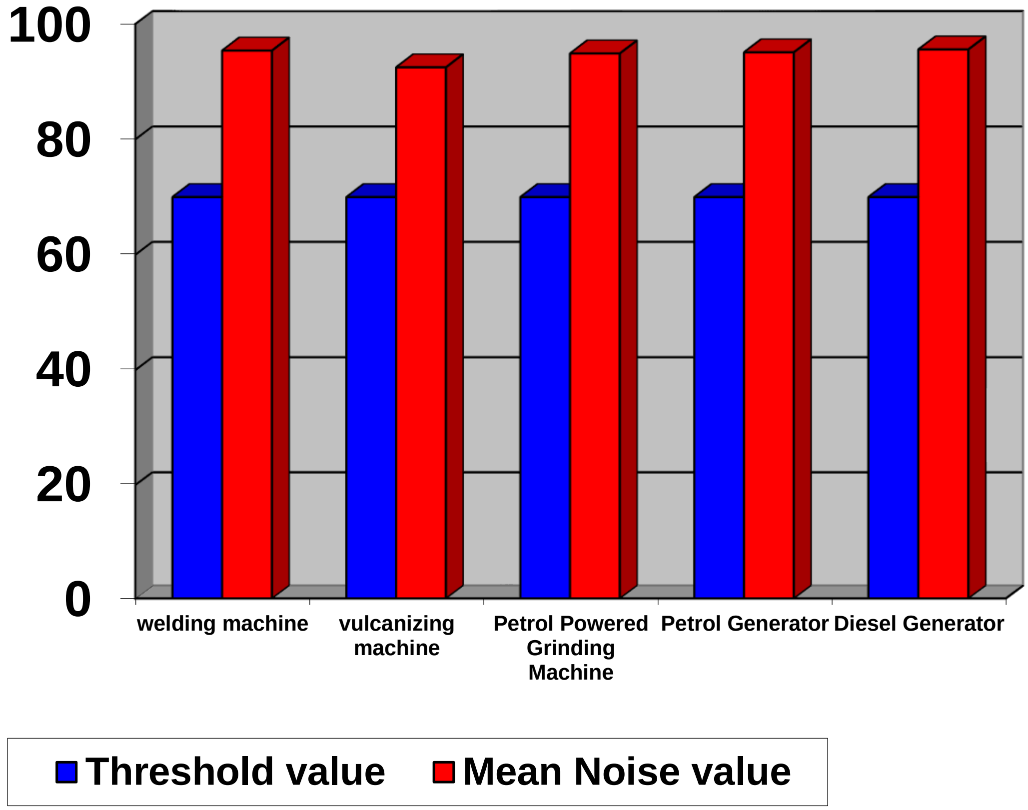
Randomly-Selected Sheet-by-Sheet Analysis: Noise Level Data

Bar Chart Representation of the Values of the Sources of Noise: Minna Sheet 18



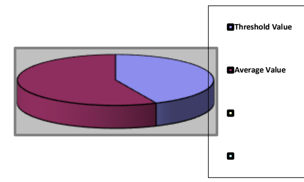
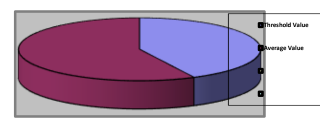
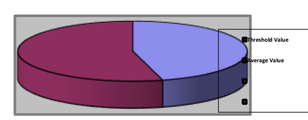
Bar Chart Representation of the Values of the Sources of Noise of Minna Sheet 18. Unit of vertical axis in dBA.

Bar Chart Representation of the Values of the Sources of Noise: Suleja Sheet 300/015/SE

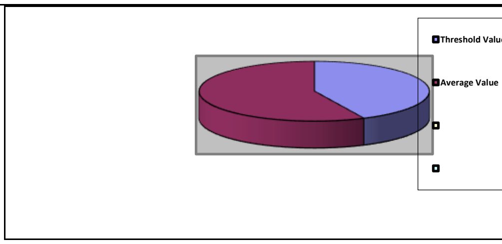
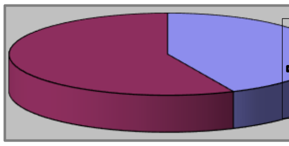
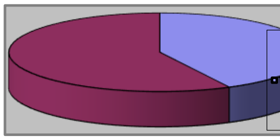


Bar Chart Representation of the Values of the Sources of Noise of Suleja Sheet 300/015/SE. Unit of vertical axis in dBA.

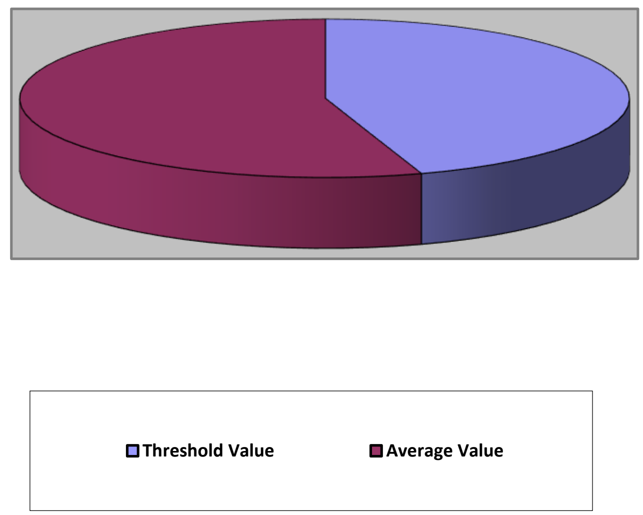
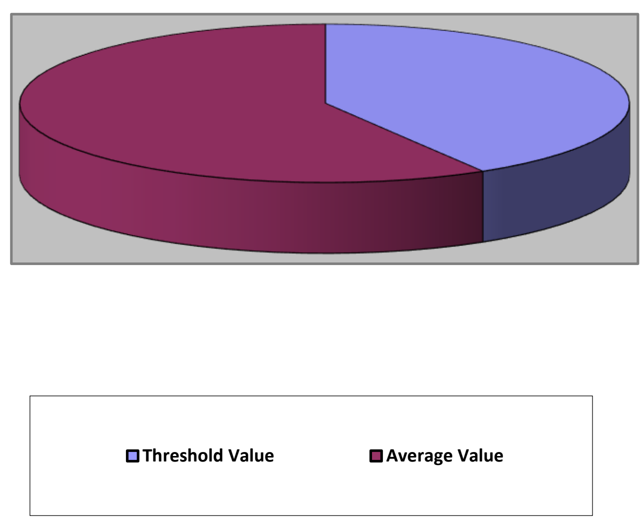
Pie Chart Representation of the Noise Level Characteristics of Neighbourhoods: Minna Sheet 18

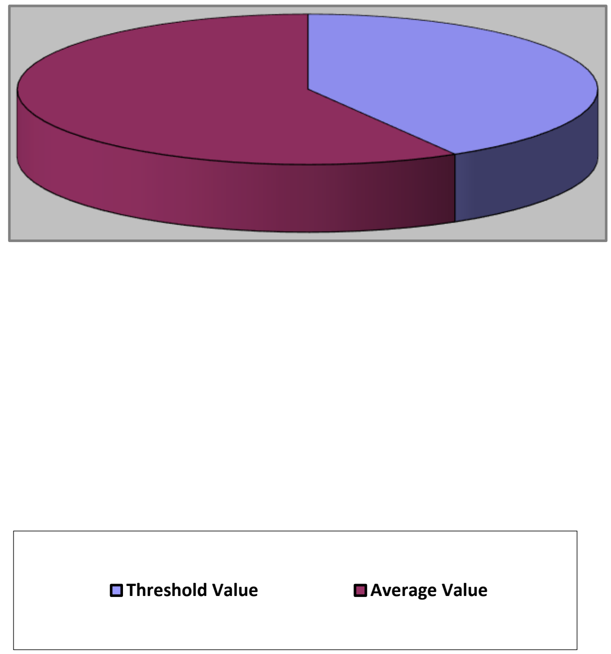
NEIGHBOURHOOD	DISCRETE SOURCE OF NOISE IN THE NEIGHBOURHOOD	MEAN VALUE (dBA)	AVERAGE VALUE OF NOISE (dBA)	THRESHOLD VALUE (dBA)	PIE CHART REPRESENTATION
COMMISSIONERS QUARTERS AND ENVIRONS	Generator	91.11	91.93	70	
	Welding Machine	92.2			
	VULCANIZING MACHINE	92.47			
CENTRAL MOSQUE AND ENVIRONS	Generator	95.83	94.32	70	
	Grinding Machine	92.2			
	Welding Machine	92.2			
	VULCANIZING MACHINE	97.03			
DR. UMARU FARUK ROAD & ENVIRONS	Generator	90.3	82.83	70	

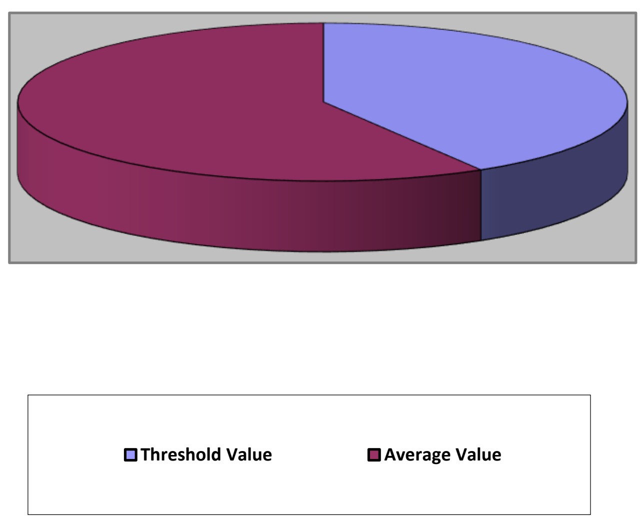
Pie Chart Representation of the Noise Level Characteristics of Neighbourhoods: Minna Sheet 23

NEIGHBOURHOOD	DISCRETE SOURCE OF NOISE IN THE NEIGHBOURHOOD	MEAN VAL. (dBA)	AV. VAL. (dBA)	THRESHOLD VALUE (dBA)	PIE CHART REPRESENTATION
SABON GARI MARKET	Generator	94	93	70	
	Grinding Machine	88			
	Welding Machine	94			
	Vulcanizer	94			
MOPOL BASE	Generator	88	92	70	
	Grinding Machine	91			
	Welding Machine	94			
	Vulcanizer	94			
RAIL WAY CLUB	Generator	95	95	70	
	Grinding Machine	96			
	Welding Machine	93			

4.1.1 Pie Chart Representation of the Noise Level Characteristics of Neighborhoods: Suleja Sheet 320/0065E

S/N	NEIGHBORHOOD	SOURCE OR NOISE	THRESHOLD VALUE	PIE CHART
1	MADALLA JUNCTION, SULEJA.	Power Generators	70	
		Recording Studio	70	

2	GWARI AREAS, SULEJA.	Power	70	

		Generators		
		Recording Studio	70	

DISCUSSION

It is seen from the tables for the noise levels of the different GPS points and their corresponding relational plots for Minna and Suleja that the prevailing mean noise values are greater than the internationally recommended value of 70 dB. Also it can be inferred that the various sources of noise identified in this project work emit sounds which value are generally greater than 70dB, this means that individuals present in this environments are exposed to noise pollution in varying degrees. In the analysis of sound level based on neighbourhood classification, all the sources of noises present therein were examined and the average of the noise which they emit was taken, this mean value was compared with the internationally recommended threshold value of 70dB. On examining the pie chart representation of the noise level characteristics of neighbourhoods we observe that Minna and Suleja have a noise value about 28% and 30% above the safe value respectively. The seven gases measured in the course of this project work are sulphur dioxide (SO_2), carbon monoxide (CO), chlorine (Cl_2), nitrogen (IV) oxide (NO_2), hydrogen cyanide (HCN), ammonia (NH_3), hydrogen sulphide (H_2S) and the results of these measurements show appreciable concentration in the different neighbourhoods that were investigated. The various sources of these gases were catalogued and they range from the simple firewood household hearths to industrial power generating plants.

CONCLUSION

From the result of the dataset acquired by the research team members, it was observed that nearly all the stations identified for survey suffer from prevailing high noise values which in effect constitute environmental pollution. Most of the the neighbourhoods identified in this survey suffer from prevailing high noise levels at peak activity periods. All of the major sources of noise identified in this survey are actually agents of environmental noise pollution. The predominant noxious gas measured in this survey is carbon monoxide (CO). This is not surprising because all internal combustion engine burn hydrocarbon fuels which are compounds of carbon and hydrogen. Technical literature has pointed out that exposure to gas concentration above $50mg/m^3$ or $50{,}000\mu g/m^3$ over a short period of time is injurious to health. Nevertheless, the cumulative effect of the gases whose values are less than the toxic threshold becomes a menace to health over a comperatvely long period of time.

RECOMMENDATION

Based on the findings of the research data it was noticed that one of the major source of noise and vehicular emissions is the use of generators, which is due to the insufficient power supply in the country making home and business owners to resort to other means of generating electrical power. To this effect, the G-54 is recommending the introduction of alternate sources of electrical energy generation; such sources include the use of solar panels, inverter (a type of generator which is noise and effluent free). Also some form of public enlightenment is recommended, such as to explain the dangers of noise pollution and vehicular emissions to the average citizen. Industries and factories should be located in places away from residential areas, also people who work in environments with high noise or vehicular emissions should be geared with some sort of protection. Finally, we recommend that some sort of law be put in place to prohibit noise levels above the internationally accepted level (i e. 70dBA). Environmental pollution studies is a discipline that has not really been examined, due to this fact we are recommending that basic courses on environmental studies and practices hazardous to the environment be integrated into our educational curriculum at all levels. Continuity is another factor that must be put into consideration when examining environmental pollution studies; we are recommending that the sort of study we have carried out be repeated on an annual basis, this is to update the knowledge available on the pollution indices of the towns where the research was carried out. Expansion of research scope is another recommendation we wish to make, this sort of study should be repeated in all states of the federation in order to provide a veritable document on the level of environmental pollution and its consequence to the populace ad the national economy.

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