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THE STUDY
ON
WATER QUALITY MANAGEMENT PLAN
FOR
GANGA RIVER
IN
THE REPUBLIC OF INDIA

FINAL REPORT

VOLUME III MASTER PLAN FOR PROJECT CITIES

VOLUME III-7 RECOMMENDATIONS ON SOLID WASTE MANAGEMENT

JULY 2005

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FINAL REPORT
ON
WATER QUALITY MANAGEMENT PLAN FOR GANGA RIVER
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INTRODUCTION

RECOMMENDATIONS OF SOLID WASTE MANAGEMENT

CHAPTER 1 INTRODUCTION

This study on solid waste management for *The Study on Water Quality Management Plan for Ganga River in the Republic of India* (hereinafter referred to as "the Study") was carried out two times; once from 19 March to 17 April, 2003 during the First Stage Field Work and the second time from 2 November to 16 December, 2003 during the Second Stage Field Work of Phase I of the Study. The study was conducted in the four (4) objective cities, namely, Allahabad, Kanpur, Lucknow, Varanasi, by collecting the existing data on solid waste management in these four cities, getting information from the organisations concerned and observing the management conditions.

The ultimate purpose of this Chapter is to sum up the results of the study on the present condition of solid waste management (SWM), to qualitatively identify its impact on Ganga River water quality, and finally, to propose the appropriate SWM plan in the four (4) cities because the study is not quantitative. In addition, survey of solid waste dumping sites in and along *Nala* or open drain has been conducted in the SWM study to identify the location and the amount of solid waste in the four (4) cities. The following sections also include the results of the survey.

CHAPTER 2

SUMMARY OF FINDINGS

CHAPTER 2 SUMMARY OF FINDINGS

2.1 COMMENTS ON ADVERSE INFLUENCES

Based on the result of the surveys described in the following subsections, it is concluded that adverse influences caused by the present solid waste management system on the Ganga River water quality seem to be negligible. In comparison with pollution sources including domestic wastewater that is flowing into *Nala*, contaminants by solid waste dumping in and along *Nala* are judged to be minimal in terms of quantity and quality although this has been estimated by visual investigation. Additionally, street animals consume many organic substances in the waste and it may reduce a considerable amount of pollutant discharged into *Nala* and finally into the Ganga River.

2.2 GENERAL CONDITION OF SOLID WASTE MANAGEMENT

The result of the survey on the condition of solid waste management in all four (4) objective cities of the present Study is summarized below. The details on the conditions in the four cities are described in Chapter 2 to 5 of the Appendix I following this section.

- Domestic waste is discarded in open spaces because the waste is not collected regularly.
- Although roads are swept in the early morning, they are littered with waste in the afternoon.
- Waste is dumped into vacant lots and on road shoulders.
- Since more than half of street gutters and small drainage canals or *Nala* are buried in waste, domestic wastewater is stagnant.
- The total number of *Nalas* in the four cities flowing into the Ganga, Yamuna, Gomti, and Pandu are about 133.
- With the strong putrefactive smell in spite of the dry season, the living environment is unsanitary.
- Since wastes are also irregularly collected, secondary collection depots are also littered with waste.
- Street animals, such as cows, pigs, goats and dogs, eat domestic waste at primary and secondary collection points, and *Nala*, and this contributes to reduction of amount of waste to be managed.
- All machinery and equipment for the secondary collection are old and their number is decreasing.
- Scrap-and-build vehicles are remarkable but almost no material for maintenance is available at workshops.
- All final disposals are as the open dumping system and no leachate treatment is conducted.
- All final disposal sites are located in lowland areas or at places adjacent to rivers.
- Since the boundary of final disposal sites is unclear, the carrying in and dumping of waste is not well managed.
- Onsite approach roads are not well defined, and little or no heavy machinery for placement and compaction is available at final disposal sites.
- The number of scavengers at disposal sites is little, and they collect waste at the primary collection and secondary collection sites and the road litter. Materials collected are mainly plastic shopping bags and rags, as well as glass.
- Scavengers collecting valuable materials at disposal sites earn 30 to 50 Rs/day.

2.3 SUMMARY RESULTS OF THE SURVEY

The result of the survey on the location and the amount of solid waste dumping in and along *Nala* in all four (4) objective cities is summarized below. The details of the conditions in the four cities are described in Chapter 6 of the Appendix I following this section.

- A total of 89 *Nala* and 1,301 survey points were investigated to identify the location and to estimate the amount of solid waste dumping in and along *Nala*.
- In total 202,000 cubic meters, i.e. 70,000 tons of waste is dumped into *Nala* and the surrounding areas.
- Waste dumped in and along *Nala* in Allahabad, i.e. 153,000 cubic meters is the largest amount of four cities that is almost six to fifteen times the amount of other cities while the waste in Varanasi, i.e. 10,000 cubic meters is the smallest.
- Most solid waste in and along *Nala* originated from residential waste that is composed of kitchen waste, wrapping paper, plastic bags, etc.
- Since residents use *Nala* and or riverbank to throw their rubbish in their daily life, almost all places where a bridge is built over the *Nala* and *Nala* that is flowing adjoining houses are utilized as dumping sites.

CHAPTER 3

RECOMMENDATIONS

CHAPTER 3 RECOMMENDATIONS

3.1 REQUIRED ACTIONS FOR IMPROVEMENT OF SWM SYSTEM

Fundamentally, from the sanitation point of view, it is important to remove the waste from the living places of residents, such as wastes on roads, gutters and vacant lots, in the primary stage of solid waste management (SWM). However, considering the priority of the purpose of the Study, i.e. "to mitigate the adverse influences on the Ganga River," it may be necessary to temporarily keep the wastes as they are during primary stage, and rather prohibit the people from dumping of waste into the open drain or *Nala*, which may influence the water quality of the Ganga River.

For this purpose, firstly, it is indispensable for sweepers of the primary collection to transport the waste including containers to secondary collection depots precisely and regularly, and then the waste should be carried out to final disposal sites without prolonged retention of waste at the secondary collection depots. The following measures should therefore be undertaken in order to achieve these requirements:

1) Increase of Sweepers and their Education

If the present primary collection system is not improved, the number of sweepers is too little to take care of their territory. The number of sweepers should therefore be increased. Furthermore, it is also necessary to educate sweepers in order to practice them prohibit the illegal waste dumping into open spaces, especially sewerages, street gutters and *Nala*, and let them precisely transport to secondary collection depots. Consequently, this will reduce the adverse effects on City's environment and finally on the water quality of the Ganga River.

2) Improvement in Handcarts and Collection Tools

Not only the increase of sweepers and their education but also the improvement of sweepers' sweeping motivation and working efficiency is required. Considering the years of working, the degree of impairment and so forth, specific standards for repair and replacement is necessary because very old handcarts are still being used. This situation also can be applicable to brooms and dustpans. Tools for easier collection of waste should be used, and the increase of the number of handcarts is also required.

3) Facility Maintenance of Secondary Collection Depots and Sweeping of Surrounding Areas

Among the secondary collection depots where waste is brought from primary collection, the open collection depots should be eliminated while containers, concrete collection depots and roofed collection depots should be maintained. The number of secondary collection depots is very low under the present discharge volume of the waste in each city. The transport by container is efficient in general; however, from the economical point of view, the increase of concrete secondary collection depots should be given a higher priority than diffusion of the container system. Furthermore, sweepers should be stationed at secondary collection depots. This is simply because it is impossible to put the waste into secondary collection depots if the areas around these secondary collection depots are not always maintained clean without littered waste.

4) Increase of Open Dumper Trucks

Regular loading and transport are required to prevent the overflow of waste at secondary collection depots. Since the present machinery and equipment cannot handle the present amount of waste, the number of trucks should be increased. From the economical point of view, the increase of open dumping cars and loading staff is more advantageous than the increase of containers and container

trailers.

5) Recruitment of Loading Staff and their Education

Considering the working efficiency, it is necessary to recruit loading staff in the case of operating open dumping cars for the secondary collection. It is also important to educate the staff to keep their secondary collection depots clean.

3.2 NECESSITY OF IMPROVEMENT

3.2.1 Necessity of Formulating the Solid Waste Management Master Plan

The existing Solid Waste Management (SWM) Master Plan of each city is unfortunately not a full-dress master plan. The SWM originally prioritises sanitation and health of ordinary residents. In this sense, the SWM Master Plan, adjusting to the social and economic condition of the city with a long-term foresight, should be formulated and its validity evaluated. Also, action plans proposed in the Master Plan should be carefully considered step by step and precisely carried out in accordance with financial affordability of each city.

If makeshift measures are taken in each process regarding the primary and secondary collection, transportation, and final disposal under the present conditions, problems might occur in each process of the management. As a result, it might be impossible to ensure the hygienic and healthy life of residents.

3.2.2 Necessity of Developing Capacity of City Officers Concerned with SWM

More importantly, city officer's capacity for SWM should be developed to carry out the Master Plan appropriately. Some international experts should join the health department of the local authority and work together with their counterparts for a couple of years. The experts will teach them how to organize the department and staff, how to manage the collection vehicles and crew, how to control the landfill site, and so forth, which covers from administrative issues to technical considerations. This requires sufficient time, cost and manpower.

3.3 PROPOSED PROCEDURES AND POINTS OF CONCERN

This subsection describes how to conduct the solid waste management master plan study. The study items that are required to formulate the SWM Master Plan by the order of the study procedure are set out below:

1) Understanding of the Present Condition

For the formulation of the Master Plan, it is necessary to conduct detailed surveys on the present conditions and grasp the situations quantitatively. The required study items of the present conditions are listed as follows:

(a) Collection and compilation of related data and information; the data and information to be collected and compiled will be on natural conditions, social economy, land use, infrastructure, law system, financial condition, institutional setup of the city government, and so on.

(b) Study on the present solid waste management; the study will cover waste storage, discharge, collection and transport, resource recovery and recycling, final disposal, condition of machinery and equipment for the management, industrial waste management, medical waste management, NGO activities, sanitary education and public awareness, environmental contamination by waste, etc.

(c) Waste amount and composition survey (WACS); the survey will be carried out at least two times during the rainy season and the dry season by source of discharge, income class and area condition.

(d) Incoming waste survey; the waste amount coming to the existing final disposal site will be surveyed by counting the number of collection vehicles. Actual measurement survey on the amount of waste at existing reclaimed land will be also carried out.

(e) Time & motion study; the study on the actual conditions of collection and transport for the primary collection and the secondary collection will be executed by measuring the collection and transport time. A collection and transportation route to and from final disposal sites will be also clarified in this survey.

(f) Study on public awareness: questionnaire and interview survey will be carried out considering gender, age, occupation, income class and area condition.

2) Confirmation of Necessary Procedures for the Master Plan Formulation

Confirmation of the following procedures should be carried out to implement the Master Plan Study:

(a) Procedures and timing required for the site acquisition for final disposal and secondary collection depots, if any.

(b) Measures towards establishment of mutual understanding between implementing agencies and stakeholders, and public involvement with the project.

(c) Procedures for environment impact assessment (EIA) and the implementing agencies of the assessment.

3) Evaluation of the Present Condition and Problem Identification

Based on the study results of Items 1) and 2) above, the present condition of SWM will be evaluated and problems on the management will be identified. These are the basics implemented for the formulation of the master plan in order that organisations concerned have a common realization of the problems based on their understanding of the present condition. The evaluation items are as follows:

(a) Related plans: urban planning, land use plan, consistency of infrastructure investment and finance, etc.

(b) Environment sanitation condition: general condition, environmental problems and sanitation problems caused by waste, distribution of the problematic area, etc.

(c) Solid waste management system: existing plans, operation and maintenance plans for waste management facilities, machinery, and equipment, plans for medical waste and industrial waste management, etc.

(d) Public awareness: consciousness of improving environmental sanitation, awareness against pollution to pay principle, willingness to pay for SWM services, etc.

(e) Institutional, organisational and financial setup: powers of each section of the implementing agencies, project implementation and management capacity of the staff concerned, charging method for waste collection, etc.

(f) Legal system: laws and regulations related to SWM, etc.

(g) Waste recycling and reduction: private carters, distribution system for valuable goods, collection cost, etc.

(h) Private sector: technical, financial and administrative level of waste management enterprises, work sharing with private sector, policy of privatization, etc.

4) Establishment of the Master Plan Framework

The framework plan is defined as the following information necessary for the estimation of "demand of services" and "capacity of supply" for the SWM system in the future.

(a) Social framework: population increase, form of houses and the change of living standards, and the urban planning until the target year of the Study.

(b) Economic framework: economic growth and the change of industrial structure, etc. up to the target year of the Study.

(c) Future forecast of the waste generation: forecast of the future amount of waste based on the result of Items (a) and (b) above and the unit of waste sources.

(d) Future forecast of the waste composition: forecast based on the result of the waste composition analysis referring to cases of other cities and countries.

5) Implementation of Pilot Projects

To identify the problems expected during project implementation proposed in the Master Plan, pilot projects shall be carried out in the study phase to evaluate the results and reflect them to the Master Plan. The following points will be considered as the pilot projects in the study.

(a) Capacity development for the municipal SWM; newly supposed collection and transportation system will be conducted by the management staff and collection charges will be actually collected. Public awareness survey will be carried out after the implementation to evaluate the residents' satisfaction with the services. The results including cash flow of the services as well as the system performance will be summed up and analyzed.

(b) Public involvement with the municipal SWM; several workshops will be held to explain actual solid waste management system to residents including concept of the sanitation and the waste reduction.

(c) Landfill experiment; "sanitary landfill" at the existing final disposal sites will be implemented by heavy machine and proper leachate treatment system, and the experimental work shall be recorded on video, etc.

(d) Information and Education Campaign; education for local residents and school children will be implemented regarding the appropriate solid waste management. A series of media, such as promotion videos, stickers, posters, banners and newsletters, will be used for proliferation of newly introduced SWM system.

6) Consideration of Proposed New Final Disposal Sites

The following items should be compared and considered, and finally concept with which the present responsible organisation for SWM can select the probable sites will be arranged.

(a) Difficulty level of site acquisition: legal system, cost of land acquisition, cooperation of surrounding residents, etc.

(b) Geographical conditions: land elevation, topographical features, watershed boundary, etc.

(c) Natural conditions: groundwater, river water, rainfall, portable water source, vegetation, soil characteristics, endangered species, etc.

(d) Social conditions: land utilization, community development plan, local customs, waste pickers, etc.

(e) Efficiency: transport distance, access road, etc.

(f) Economical viability: usable area, disposal capacity, construction cost of facilities, etc.

(g) Initial environmental study: determination of the environmental elements by screening and scooping.

(7) Implementation of Environmental Impact Assessment

Environmental Impact Assessment (EIA) study on the selected final disposal sites proposed should be implemented under the regulation in India by a proper organisation.

(8) Formulation of Solid Waste Management Master Plan and Transfer of Technology

The Master Plan should be formulated through the above procedures and technology transfer to the counterpart personnel should also be carried out in the course of formulating the Master Plan.

Appendix A

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APPENDIX A

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CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION OF THE STUDY

This Supporting Report concerning *The Study on the Water Quality Management Plan for the Ganga River in the Republic of India* (hereinafter referred to as "the Study") firstly presents the general conditions of solid waste management (SWM) in India (see Chapter 1), and then summarizes the current SWM condition in each objective city (see Chapter 2 to 5). Finally, results of the survey of solid waste amount dumping in and along *Nala* are described to evaluate adverse effects on the water quality of the Ganga River by these waste (Chapter 6).

1.2 GENERAL CONDITION OF SOLID WASTE MANAGEMENT IN INDIA

1.2.1 Judicial Power

"The Municipal Solid Waste (Management and Handling) Rules 1999" published in the Ministry of Environment and Forests No. S.O. 783(E) dated 27th September 1999 under the notification of the Government of India stipulates that the "Municipal Authority" should take the responsibility and authority on municipal waste management from collection to final disposal. The regulation has been enforced since the 25th day of September 2000.

The regulation refers to the municipal solid waste management responsibility, prohibition of illegal waste dumping, prohibition of food packing with reused plastics, prohibition of medical waste open dumping, handling of hazardous waste, and especially, approval system of persons handling PCB (Polychlorinated Biphenyl).

1.2.2 Solid Waste Management System

The municipal solid waste is openly dumped into final disposal sites through two (2) steps: primary collection and secondary collection. The primary collection is bell collection of domestic waste, collection of garbage in dustbins and transport of road sweeping waste to secondary collection depots. The secondary collection is loading of various wastes collected at secondary collection depots onto trucks, transport to disposal sites and dumping into final disposal sites.

1.2.3 Solid Waste Management in Class I Cities

Based on a summary report regarding solid waste management, namely, "*Solid Waste Management in Class I Cities in India; 27th September 1999,"* by the Central Pollution Control Board (CPCB), cities are classified according to population. The city whose population is over 1 million is classified as Class I City; therefore, all four (4) objective cities of the present Study fall under Class I.

The summary forecasts that rapid urbanization will enable the urban population to reach 30% of the total population by the year 2000 and the slum population of cities will reach 20% to 50% of the total. Especially, solid waste management problems of Class I Cities will be remarkable. Illegal dumping of general waste and construction waste disposed in open public spaces, such as vacant lots, parks, canals and roads, is an urgent problem from the viewpoint of sanitary environment. The main items concerning solid waste management in Class I Cities are summarized below.

(1) Waste Storage

Organic waste and other recyclable wastes have not been stored and discharged separately from final disposal waste. Therefore, all kinds of wastes are dumped together into final disposal sites.

(2) Domestic Waste

Domestic waste is stored and discharged in dustbins in general. The coverage population per dustbin is 130 to 2,400. The location of dustbins widely varies between 50 m and 500 m along roadside. It is pointed out that the number of location for installing dustbins is lacking, and the capacity of dustbins is limited. In addition, collection of domestic waste by sweepers is irregular.

(3) Road Sweeping Waste

Poor sweeping tools and the extent of a sweeper's coverage area widely ranges from 100 m to 1 km/capita, so that the standard of a sweeper's responsibility is unclear. Moreover, there is a disorderly discharge and dumping of wastes into roads from shops, stalls and houses on the roadside.

(4) Waste Transport

Mechanization of waste transportation system lags behind although various means of transport, such as cattle carts, tractors, trailers, open trucks, open dumper trucks, container trailers and packer trucks, are employed. Operation of transport vehicles is also not managed properly. Moreover, most machinery and equipment are outdated and there is lack of maintenance.

(5) Final Disposal

Open dumping results in the outbreak of diseases due to unhealthy environment caused by harmful insects and beasts as well as contamination of groundwater. There is also a shortage of heavy machinery like bulldozers at final disposal sites.

(6) Organisation of Scavengers

There is a need for scavengers to organize themselves into some sort of cooperative for effective collection and utilization of recyclable waste and reduction of disposed waste.

1.2.4 Waste Generation

In general, the Republic of India does not adapt the measurement of generated waste at source of discharge and instead adapts conversion by the volume of waste collected in primary collection. Accordingly, the waste generation per capita of each Class is as estimated in the following Table 1.1.

Table 1.1 Waste Generation per Capita

Population Range (In Lakhs*)	Average Waste Generation per Capita (g/capita/day)
1 to 5	210
5 to 10	250
10 to 20	270
20 to 50	350
50 Lakhs +	500

Note: *Lakhs means one hundred thousand.
Source: NEERI Strategy Paper on SWM in India, February 1996.

The total quantity of waste generated by 217 million people living in the urban districts was 23.86 million tons per year in 1991. It is forecasted that this will reach 39 million tons per year by the year 2001.

1.2.5 Waste Composition

(1) Physical Characteristics of Waste

Rubber, leather, chemical composition goods, glass and metals all contribute less than 1%, while inorganic substances, such as debris, earth and sand, and organic substances are prominent. The amount of composting organic substances like kitchen waste is 30% to 45%. The physical characteristics of waste in India are given as shown in Table 1.2.

Table 1.2 Physical Characteristics of Municipal Solid Waste in Indian Cities

Population Range (in Lakhs)	No. of Cities surveyed	Paper (%)	Rubber, Leather & Synthetics (%)	Glass (%)	Metal (%)	Total Compostable Matter (%)	Inert Material (%)
1 to 5	12	2.91	0.78	0.56	0.33	44.57	43.59
5 to 10	15	2.95	0.73	0.56	0.32	40.04	48.38
10 to 20	9	4.71	0.71	0.46	0.49	38.95	44.73
20 to 50	3	3.18	0.48	0.46	0.59	56.67	40.07
50& above	4	6.43	0.28	0.94	0.80	30.84	53.90

Note: All values are in percent and are calculated on wet weight basis.
Source: NEERI Reports Strategy Paper on SWM in India, August 1995.

(2) Chemical Characteristics of Waste

The calorific value is low at 800 to 1010 Kcal/kg because of much inorganic substances. The apparent specific gravity of waste is 330 to 560 kg/m^3. Table 1.3 shows the chemical characteristics of waste in India.

Table 1.3 Chemical Characteristics of Municipal Solid Waste in Indian Cities

Population Range (in Lakhs)	Nitrogen as Total Nitrogen (%)	Phosphorus as P_2O_5 (%)	Potassium as K_2O (%)	C/N Ratio	Calorific Value (kcal/kg)
1 to 5	0.71	0.63	0.83	30.94	1009.89
5 to 10	0.66	0.56	0.69	21.13	900.61
10 to 20	0.64	0.82	0.72	23.68	980.05
20 to 50	0.56	0.69	0.78	22.45	907.18
50& above	0.56	0.52	0.52	30.11	800.70

Source: NEERI Strategy Paper on SWM in India, August 1995.

1.2.6 Situation of Privatization in Solid Waste Management

According to the study "*Financial Resource and Private Sector Participation in Solid Waste Management in INDIA, May 21, 2001,"* which was funded by the United States Agency for International Development, the situation of private sector participation in solid waste management in the Republic of India is summarized as follows. Some 56 cities related to collection and transport; 37 cities related to composting factory (including unknown 2 cities; total capacity of treatment: 8,325 t/d); 9 cities related to vermi compost (including unknown 5 cities: 714 t/d); 7 cities related to bio-energy (2,770 t/d) have started construction or operation since the later part of 1990's. This indicates that there is much more private enterprise participation in India compared to other countries.

Among the objective four (4) cities of the present Study, Lucknow had already introduced the vermi compost in private enterprises and NGOs, and started waste management for 11,000 households and

the contracted commercial waste. In Kanpur, NGOs mainly implement the waste management for 2,000 households or 10,000 persons.

Furthermore, the Uttar Pradesh State Electricity Board has the authority to decide on applications for purchase of electric power from bio-energy with the tax preference. Private enterprises had already submitted proposals for all four objective cities, and construction has already started at the site adjacent to the sewage treatment facility in Lucknow.

CHAPTER 2 ALLAHABAD

2.1 INTRODUCTION OF THE CITY

Allahabad has the area of around 71 km^2. The population based on the census in 1991 was 850,000 and the population based on the census in 2001 increased to around 1.05 million. The population increase for 10 years is approximately 200,000 at the annual increase rate of 12.43%.

The city is located on the junction of Ganga River and Yamuna River. The junction of these two rivers, adopting the nickname of two goddesses called Sangam, is an important religious spot for the Hindus. Festivals are held in every January to February and millions of pilgrims visit here. Especially during the Kumbh Mela Grand Festival held once every 12 years, 5 million pilgrims visit for four to five weeks to this place. Since several Hindu festivals are held here, it becomes a traffic hub with the concentration of roads and railways and the traffic gets heavier during these festivals.

2.2 ORGANISATION OF SOLID WASTE MANAGEMENT

Allahabad Nagar Nigam, the administrative body of the city, has responsibility for solid waste management (SWM) with its Health and the Cleansing departments in charge. The Health Department collects domestic and road sweeping wastes using 2,750 sweepers including 750 part-timers. A sweeper in charge of primary collection covers the waste discharged by around 380 people. The organisational structure engaged in SWM is illustrated in Figure 2.1.

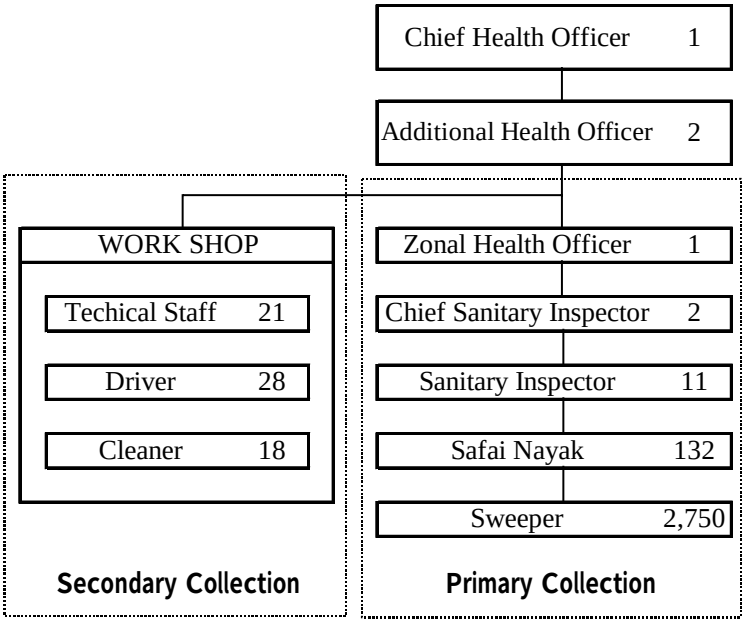

Figure 2.1 Organisational Structure Engaged in SWM in Allahabad Nagar Nigam

The Cleansing Department is responsible for vehicles, equipment, workshop management, fuel, secondary collection and final disposal. Twenty-eight (28) drivers of workshops and 18 loading helpers are engaged in the secondary collection. A total of 2,966 staff is engaged in the city's solid waste management.

2.3 CURRENT SWM CONDITION

2.3.1 Waste Generation

The latest data on the waste amount discharged has not been obtained yet and data regarding waste composition has not been collected either, but the amount is estimated to be 475 ton/day in 2000 and around 591 ton/day in 2005, as shown in Table 2.1. This estimation comes from the assumption that the growth rate of the waste generation per capita is 1.33% and the waste generated amount is 571 g/capita/day.

If the amount discharged in 2000 (475 ton/day) is multiplied by the population growth mentioned in Section 2.1, i.e. 12.43% per annum, the amount of waste discharged in 2001 is estimated at around 530 ton/day. If the collection rate is estimated at 70%, the amount of collection would be around 370 ton/day. Hence, the waste of around 160 ton/day seems to be uncollected or illegally dumped.

Table 2.1 Estimated Waste Generation in Allahabad

Item	**Unit**	**2000**	**2 005**	**2010**	**2015**
Growth rate of per capita solid Waste generation	%	1.33	1.33	1.33	1.33
Per capita solid waste generated	G	500	534	571	610
Solid waste generation for target Population	t/day	475	591	712	828
Maximum collection efficient	%	80	85	85	85
Garbage to be collected	t/day	380	502	606	809
Garbage density	kg/m^3	400			
Garbage to be collected	m^3/day	949	1,255	1,513	1,760

Source: Data from the Health Department of Allahabad Nagar Nigam.

2.3.2 Waste Discharge

(1) Condition of Roads

Similar to other cities, wastes are dumped on road shoulders and smell bad after remaining there for longtime. In many places, the waste swept and collected by sweepers is discarded without being transported to secondary collection depots. The areas surrounding those places have become dumping areas of waste discharged by residents and shops (see Photo 2.1).

Photo 2.1 Waste Discarded on the Footpath Part of a Road

If a small pile of waste collected by sweepers is not transported to a secondary collection depot, general citizens additionally dump waste into the site and it soon changes to a dumping area. The waste as shown in this photo was fired.

Handcarts used by sweepers to collect waste from houses are also discarded without being taken to the secondary collection depots. Scenes where domestic animals are eating the contents can be observed here and there (see Photo 2.2).

Photo 2.2 Cattle Foraging for Waste in a Handcart

A cattle is foraging for waste dumped into a handcart. Normally, the waste in a handcart must be transported to a secondary collection depot.

(2) Condition of Open Drains (*Nala*)

Regardless of size and structure of street gutters, waste is dumped into most of these gutters. Since domestic wastewater has become stagnant and smell bad, the outbreak of diseases caused by harmful insects such as mosquitoes is anticipated. Some spots of the gutter near a well pump are completely covered with waste (see Photo 2.3). It is assumed that the groundwater has been contaminated by leachate from the waste.

Not only the local citizens dump domestic waste everywhere in open drains or *Nala*, but also sweepers dump the waste collected from each household and roads in *Nala*, as confirmed. Furthermore, most parts of the connection between gutters and *Nala* are buried in a large quantity of waste. It is thus expected that the waste will flow into the *Nala* during the rainy season.

Photo 2.3 Condition of Small Street Gutter

A small street gutter is almost buried in the waste. The groundwater might be contaminated because a pumping well is located close by to the gutter.

Even on the embankment of Ganga River, a large quantity of waste is dumped (see Photo 2.4), and the waste bed collapses and flows directly into the Ganga River during the rainy season. Considering accumulated volume of wastes remained in *Nala* and the Ganga River, it is assumed that not only the general public but also the waste sweepers dump a large quantity of waste into them everyday. Twenty-four (24) *Nala* and drains flow into the Ganga River in Allahabad.

2.3.3 Waste Collection

Photo 2.4 Waste Dumped on the Embankment of Ganga River

The waste is piled up over the stable slope of the bank. If the waste on the bottom bed is dragged during the rainy season with much river flow, a pile of waste might burst into collapse and discharge into the Ganga River.

Mainly, handcarts are used for the primary collection of domestic waste and waste swept from roads. Although steel cylindrical dustbins are placed everywhere in towns for domestic waste as well as waste by passersby to be dumped into these dustbins, some waste is often scattered around them (see Photo 2.5).

Secondary collection depots are the collection depots with roof, concrete and steel containers. Waste is remarkable around each collection depot. The size of concrete secondary collection depots depends on the space available at the site. Wastes from large collection depots are carried out by a combination of small shovel car and open dumping car; however, wastes are scattered around because they are not swept after the transport.

Handcart for Primary Collection

Steel Cylindrical Dustbin

Photo 2.5 Handcart and Steel Dustbin in the City

Most steel containers are old and very impaired. Scattered waste is remarkable around these containers. The roofed collection depot is a newly-built depot whose dimensions are around 12m wide by 20m long (see Photo 2.6). The entrance for carrying in waste by handcart and the exit for carrying waste out are established along the road and enable shovel cars to come in and go out of the depot. Since wastes are dumped around each collection depot, it is difficult sometimes to bring wastes inside the depots.

Photo 2.6 Roofed-Type Secondary Collection Depot along GT Road

The small entrance at the back of the building is the entrance for carrying waste in by handcart. A shovel car approaches from the opening this side and loads a dumper truck with the waste. The left side faces GT Road.

2.3.4 Storage of Hazardous Waste

Karchana Ward, which crosses the Yamuna River from the central part of the city, is an industrial area. The spinning factory in the industrial area separates the hazardous waste from the general waste generated by the factory and manages it in the exclusive storage facilities inside the site.

2.3.5 Transport and Final Disposal

The present disposal site is located around 2 km at the south near the intersection of the Railway cum-Road Bridge on the Yamuna River and the Mirzapur State Highway, named Naini (see Photo 2.7). Although this site has been used for only around 2 years, Allahabad Nagar Nigam has acquired another disposal site on the low meadow part of the place near Phaphamau Ward at the end of the Curzon Bridge over the Ganga River. The predetermined area of around 20 acres is located 10 km

Photo 2.7 Present Final Disposal Site at Naini, Allahabad

Although little leachate seems to be produced in a dry season, a large amount of leachate will be brought from intensive rain in a rainy season and be finally flowing into the nearest rivers or *Nala*. Simultaneously, a considerable amount of garbage might be discharged into rivers or *Nala*. This may result in deterioration of water quality of the terminal points, i.e. Ganga River, more or less, while some of the waste are decomposed during the dry season.

from the central part of the city or Allahabad Junction and is now partially used from the roadside (see Photo 2.8). At any rate, no specific plan for final disposal sites can be seen; in other words, it is high possibility that any open spaces can be used for dumping.

Photo 2.8 Roadside Dumping Site

It is said that here is a new disposal site with the area of around 20 acre. The vertical interval from the left side of a road is around 3 m. It was already started carrying waste in. A part of the waste is burning.

2.3.6 Workshop

The workshop is located near the intersection of Leader Road and Dr. Katju Road near the Allahabad Junction Station in the central part of the city. Many dilapidated vehicles or handcarts are observed at the whole site of the workshop. New vehicles are only the dog van for carcasses of animals and the small refuse collector that can pass on narrow roads (see Photo 2.9). The repair space appears to be not utilized and equipment is few and old. Table 2.2 gives a list of the present machinery and equipment in the workshop.

Workshop

Dog Van

Small Refuse Collector

Photo 2.9 Workshop and Vehicles for SWM

Table 2.2 List of Present Machinery and Equipment for Waste Collection and Transport in Allahabad

Item	**Numbers**
Excavator Cum Loader	5
Tower Loader	3
Loader	7
Tipper	4
Dumper (8.5 m^3 size carrier vehicle)	15
Dumper (6.5 m^3 size carrier vehicle)	10
Tractor	21
Bulldozer (chain drive)	1
Dozer	1
RC (Refuse Collector) big	3
RC small	1
Nala Cleaning	1
Dog Van	1
Cattle Van	2
Maruti Gipsy	16
Handcart	1,000

CHAPTER 3 KANPUR

3.1 INTRODUCTION OF THE CITY

Kanpur is one of the eight largest cities in India and the largest industrial city in the Uttar Pradesh State. Both the Ganga River in the northern city and the Pandu River in the southern city flow to the south. The Upper Ganga Canal is formed as if it surrounds the urban district of the city. The city area is around 300 km^2 and urban area is 261 km^2. Commercial and residential areas are around 50%, industrial area is around 17% and agricultural area is around 14%, but it is known as an industrial city.

Kanpur Nagar Nigam consists of 6 administrative zones and 112 wards. Based on the census, the population in 1991 was around 2.03 million, which increased to around 2.69 million in 2001. It has increased by around 660,000 in 10 years and the annual growth rate is 13.25%. Slums cover around 190 areas in the 6 administrative zones. The spinning industry and the leather industry cover large portions in the industrial sector of Kanpur. Although the spinning industry used to have 30 large factories, most factories have been closed and only 3 exist at present. Table 3.1 shows the industrial type and the number of large factories.

Table 3.1 Number of Large Factories of Main Industries

Type of Industry	Numbers
Textile mill	3
Ordnance factory (military equipment)	5
Tannery	6
Fertilizer	1
Scooter factory	1

Source: Kanpur Nagar Nigam, *Solid Waste Management in Kanpur.*

Concerning the leather factory, there are around 350 factories and all are operated in Jajmau Ward of the eastern city. Table 3.2 shows the number of factories by capacity. Major operation areas are Dada Nagar, Fazalganj, Kalpi Road, Jajmau and Panki. Those industrial areas expand into the south-western part of the city.

Table 3.2 Number of Factories by Leather Production Capacity

Capacity (hides/day)	Number
Less than 50	225
50 to 200	113
200 to 300	10
More than 300	6

Source: Kanpur Nagar Nigam, *Solid Waste Management in Kanpur*.

There are 5 slaughterhouses in the city but facilities in the central district are to be moved 14 km away to the suburbs. Enterprises have the responsibility for the proper storage or management of hazardous waste among the wastes discharged from these facilities.

3.2 ORGANISATION OF SOLID WASTE MANAGEMENT

Kanpur Nagar Nigam has the responsibility for solid waste management with its Health and the Cleansing departments in charge. The Health Department is divided into 4 districts under the Health Officer and 4,650 sweepers collect the domestic waste and the waste swept from road. A sweeper in charge of the primary collection collects the waste generated by around 430 people.

The Cleansing Department is in charge of vehicles, equipment, workshop management, fuel, and the

secondary collection and final disposal. Seventy-five (75) drivers of workshops and 349 loading assistants are engaged in the secondary collection. A total of 5,281 staff is engaged in the city's solid waste management.

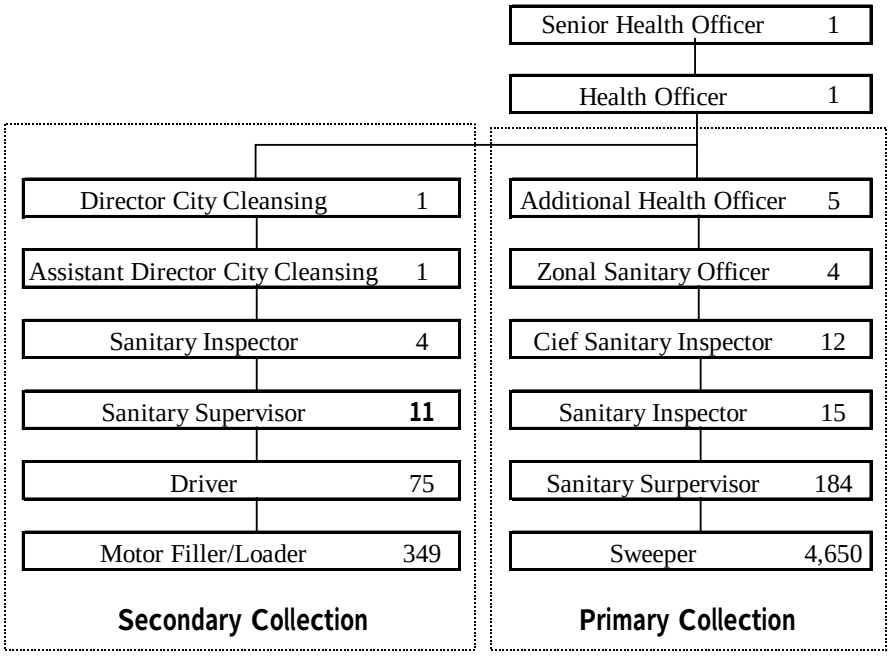

Figure 3.1 Organisational Structure Engaged in SWM in Kanpur Nagar Nigam

3.3 CURRENT SWM CONDITION

3.3.1 Budget and Other Related Projects

Although Kanpur Nagar Nigam spends 20% to 40% of its annual budget for the collection and final disposal of waste, it does not work in practice because of its relationships with other public services. In order to solve the problem and increase the efficiency of secondary collection, it introduced 15 refuse collectors, 1500 refuse containers, roller skip trucks, etc., through the loan of Rs. 21,700,000 from the World Bank. Furthermore, it got the loan of Rs. 9,722,000 from the solid waste management sector for the *"Indo-Dutch Environmental and Sanitary Engineering Project,"* from 1985 to 1994. However, the equipment procured by the Project is not properly maintained and managed.

3.3.2 Waste Generation

The *"Indo-Dutch Project"* studied by the National Environmental Engineering Research Institute (NEERI) had estimated that the amount of discharge is 1,755 ton/day under the condition that population was 2.70 million in 2001 and discharge was 0.65 kg per capita/day. On the other hand, *"Solid Waste Management in Kanpur,"* prepared by Kanpur Nagar Nigam has estimated that the waste generated amount is around 1,100 ton/day under the condition that the population is 2 million and the waste generation is 0.400 kg per capita/day. Supposing that the collection rate is 70 % according to the data of Ministry of Agriculture, in the former case the collected waste is around 1,200 ton/day and in the latter case the collected waste is around 770 ton/day.

3.3.3 Waste Composition

Tables 3.3 and 3.4 show the physical characteristics and the chemical characteristics of the solid waste, respectively. With regard to physical characteristics of waste, the ratio of Organic Waste (i.e., biodegradable, paper and fine organic) is very high, and is around 44% of Mixed Waste (Mixed) and

75% of Domestic Waste (Door to Door), based on the analysis of a dozen of samples. In contrast, the commercial area has 41% of Organic Waste and 52% of Earth and Sand. The ratio of Earth and Sand is high because road-sweeping waste is included.

Table 3.3 Physical Characteristics of Solid Waste in Kanpur (%)

Item	Mixed	LIG	Door to Door	Residential	MIG	Veg. M	Commercial Area	Industrial Area	Disposal site	Disposal site
Sample No.	1	2	3	4	5	6	7	8	9	10
Biodegradable	34.94	29.27	58.6	59.96	38.65	34.94	29.27	58.6	59.96	38.65
Paper	3.69	0.59	5.12	5.77	4.8	3.69	0.59	5.12	5.77	4.8
Plastics	6.22	4.18	5.4	5.91	5.1	6.22	4.18	5.4	5.91	5.1
Rubber & Leather	2.69	0.95	2.46	2.9	2.1	2.69	0.95	2.46	2.9	2.1
Rags	5.1	2.27	7.55	5.59	3.95	5.1	2.27	7.55	5.59	3.95
Metal	-	-	-	-	0.01	-	-	-	-	0.01
Ceramic	-	-	-	-	0.01	-	-	-	-	0.01
Insert & Fine Earth	38.8	51.46	17.12	16.3	37.22	38.8	51.46	17.12	16.3	37.22
Fine Organic	8.51	11.28	3.75	3.57	8.16	8.51	11.28	3.75	3.57	8.16

Furthermore, the ratio of valuable materials including Plastics, Rubber & Leather, Rags, Metal and Ceramic is around 14% and its ratio pattern for each sample is almost similar. Especially, Metal and Ceramic are almost negligible or close to zero. Therefore, it is assumed that the valuable materials collected by the scavengers consist mainly of plastics and rags. The average volume weight per unit is 873 kg/m^3. From this result, it is clear that the ratio of Earth and Sand is high.

Table 3.4 Chemical Characteristics of Solid Waste in Kanpur(% except pH)

Item	Mixed	LIG	Door to Door	Residential	MIG	Veg. M	Commercial Area	Industrial Area	Disposal site	Disposal site
Sample No.	1	2	3	4	5	6	7	8	9	10
Moisture	40.5	52.7	57.5	60	50	64.5	36.5	32.8	37.8	36.8
pH	3	8.5	7.47	7.44	7.8	6.9	7.7	8.2	7.2	6.75
Organic Matter	24.89	21.8	51.6	53	33.5	70.5	27.8	12	21.8	20.1
Organic Carbon	13.8	12.11	28.66	29.44	18.61	39.16	15.44	6.66	12.11	11.16
Total Nitrogen	0.45	0.39	0.8	0.85	0.5	1.05	0.5	0.18	0.35	0.32
Phosphorus	0.31	0.25	0.45	0.5	0.41	0.65	0.42	0.11	0.28	0.22
Potassium	0.82	0.68	0.59	0.6	0.8	0.45	0.38	0.85	0.9	0.85
C/N	30.72	31.05	35.82	34.63	37.22	37.29	30.88	37.03	34.6	34.89

3.3.4 Waste Discharge

(1) Condition of Roads

In the early morning, waste dumped near the road shoulders is littered on the trunk road. Roads with few shops and stalls have a relatively little waste while many other roads are dumping sites for waste (see Photo 3.1). At the primary stage, sweepers sweep the road using brooms and simple dustpans.

Photo 3.1 Road Condition in the Early Morning

Waste is littered near a street gutter before sweeping.

A sweeper collects and gathers the wastes into numerous small piles at an interval of several meters on roads with a broom, and then transports the waste to the secondary collection depot by handcart. In some places, scenes where a small pile of waste is burned can be observed (see Photo 3.2).

Photo 3.2 Burning Road Sweeping Waste

At inspected several places, road sweeping waste swept and collected by sweepers is burning.

Roads in residential area seem to be used as daily dumping site (see Photo 3.3). This suggests that the primary collection does not function well due to irregular collection, and lack of frequency and appropriate collection time. A pile of waste dumped on the road does not have only bad smell and landscape problems but also becomes the nest of harmful insects and beast, and a feeding area for dogs, cattle, pigs, goats, etc. Considering that these animals may be processed later into meat products, it is possible that the treatment of bacteria becomes a serious problem.

Photo 3.3 Dumping Waste on the Trunk Roadside

A large quantity of waste is dumped on the Trunk Roadside. From the condition of the waste, it is clear that the waste is daily and remains piled up like this.

(2) Condition of Open Drains (*Nala*)

Especially remarkable on narrow streets of slums and the surrounding areas, is the waste littered around the gutters, so that environmental problems similar to the roads are anticipated. It has been confirmed that the stagnant water as well as the waste in these gutters flow into the drainage canal (*Nala*) during the rainy season.

3.3.5 Waste Collection

At the primary stage, the domestic and road sweeping wastes are collected by handcart or put in dustbins or the small cylindrical steel dustbins on streets, then transported to secondary collection depots by handcart (see Photo 3.4). There is a large volume of waste at secondary collection depots in the city and most of the depots are surrounded by concrete walls.

Since the collection sites are fit into the available open spaces, the shapes and sizes vary. New roofed collection depots have been established at several spots in the city. There are many containers of three kinds with capacity from 0.75 m^3 to 4.5 m^3 exist, but all of them are old and deformed. At many collection depots, the waste is littered around. Some places are not only unsanitary but the littered wastes also hinder the approach to collection depots. This condition causes the vicious cycle of spread of littered waste. Scavengers collect valuable materials from dustbins, containers and secondary collection depots. In addition, stockbreeders having contracts with hotels or restaurants collect "saburra".

Photo 3.4 Handcart for Primary Collection

Along the GT Road, sweepers collected waste and put it in their handcart. They carried the waste to the nearest secondary collection depot.

Around 300 to 500 tons/day of the amount of collection subtracted from the waste generated are illegally dumped into vacant lots, numerous drainage canals (*Nala*) and the Ganga River, etc. Kanpur Nagar Nigam is earnestly considering the consignment of road sweeping to the private sector.

3.3.6 Waste Processing

The compost plant in Kanpur, one of the methods of waste processing, was constructed in 1979. The plant with the treatment capacity of 300 ton/day was managed by Kanpur Nagar Nigam itself but it had a lot of serious breakdowns caused by the technical and management problems. Although Kanpur Nagar Nigam had proposed the consignment of management and maintenance to the private sector, the private sector did not accept it because of the old-fashioned plant. Therefore, the compost plant is now closed.

At present, the six wards of Swaroop Nagar, Tilak Nagar, Arya Nagar, Ratan Lal Nagar, Dabauli, Kidwai, Lakhanpur and the VIP Road implement Vermi-Composting with the cooperation of an NGO, namely Centre for Development Communication (CDC), covering around 25 ton/day of waste generated by 2,000 households or 10,000 people on the experimental basis. At present, the CDC system is as follows:

- CDC collects garbage from the doorstep of each house and charges a nominal fee of Rs. 25-30 per month.
- CDC provides two plastic containers, one for kitchen waste and one for recyclable waste.
- CDC brings kitchen garbage to the site provided by Kanpur Nagar Nigam for Vermi—composting, and the recyclable waste is sent back for further operation.

- CDC charges Rs. 480,000 only once in 30 years for 2000 houses/10,000 population.

The model was a success and Kanpur Nagar Nigam is considering extension of the area of operation to new housing colonies.

3.3.7 Transport and Final Disposal

Four sites, namely Panki, Ganga Ganj, Krishna Nagar and COD By-pass, have been used as disposal sites. The present disposal site (see Photo 3.5) is located near the Lower Ganga Canal, western part of the city around 10 km from the central district of the city.

The present site is located in low-lying area, and the other side of the present dumping area stores water. The disposal site has no fence to indicate the site boundary and no signs showing like "Here is a Final Disposal Site." The waste is just coming and being dumped as it is. No systematic management can be observed at the site.

Photo 3.5 Present Final Disposal Site near Lower Ganga Canal

The waste is piled up along the roadsides (Above). The other side of the dumping area seems to be pond (Below).

On the other hand, the previous disposal site (see Photo 3.6) is located in the suburbs of Kaki Road, around 12 km from the central district of the city. The area is around 40 acres and the landfill system is the open dumping system. The waste had been reclaimed to the height of around 1.5 m from the road. This site was closed on September 2003 because of claim by the surrounding residents.

This site has also no signboards and no fence. Furthermore, there is also no person in charge of the waste carrying in the site. Only one small bulldozer was working for levelling waste. The Nagar Nigam wants to reopen this site for dumping. While the opposite side of the road was not a disposal site, wastes were dumped into the road shoulder for a stretch of around 1 km long. If such a practice continues, the extent of dumping might be extended or the waste might be dumped deep into the back of the road shoulder. These facts clearly indicate that this disposal site had not been managed by a comprehensive SWM plan and it resulted in no landfill plan and no approach road. The drivers of waste collection vehicles therefore decided where the waste carried was to be dumped on a daily basis. The number of scavengers who collect valuable materials was observed to be around 20 in number.

Photo 3.6 Former Final Disposal Site Along Kaki Road

This site with area of about 40 acres along Kaki Road is the previous disposal site. Probably due to unplanned approach road, the waste was piled up along the roadsides.

3.3.8 Plan for New Final Disposal Site

Aside from the above final disposal site, the city has a predetermined area for a new disposal site with around 40 acres. Since the future site is located in Rooma Ward, 15 km away from tanning industries and the sewage treatment plant, it could become operational after the environmental impact study. The Dutch-Funded Project planned to construct this site, and around 15 t/d of hazardous waste including chromium are to be disposed at this new area.

3.3.9 Workshop

The Indo-Dutch Projects (IDP-I) under the World Bank used to construct and manage four (4) workshops: Panki, Fazalganj, Guptar-Ghat and Jajmau. At present only two (2) workshops, i.e. Fazalganj and Chuniganj, are operating. The city has total 54 vehicles consisting of 20 Loaders, 28 Dump Trucks and 6 Refuse Collector vehicles for the waste transport to disposal sites. Table 3.5 shows the types and numbers of vehicles.

Photo 3.7 Fazalganj Workshop

The parking space for collection vehicles is approximately 5,000 m^2. The workshop for vehicle repair and maintenance is about 1,500 m^2.

Table 3.5 List of Present Machinery and Equipment for Waste Collection and Transport in Kanpur

Item	Numbers
Excavator Cum Loader	3
Loader	20
Tipper	55
Dumper (8.5 m^3 size carrier vehicle)	10
Dumper (6.5 m^3 size carrier vehicle)	16
Tractor	12
Bulldozer (chain drive)	1
Bobcat Loader	1
DCM	7
Dozer	1
RC (Refuse Collector) big	3
RC small	3
Handcart	1,200

3.3.10 Outline of the Solid Waste Management Plan

The solid waste management plan that the Kanpur Nagar Nigam has kept is composed of the following three components; however, the data for waste generation and composition is not clearly identified and mentioned in the report.

Construction of bio-medical waste incinerators
Construction of hazardous waste incinerator sites
Bio-energy of general waste
Plant capacity : 21.6 MW
Daily feed : 1,000 ton/day

CHAPTER 4 LUCKNOW

4.1 INTRODUCTION OF THE CITY

Lucknow facing the Gomti River is the second largest city among the objective study areas next to Kanpur. Since it is the capital of Uttar Pradesh State and the center of political and economic activities in the State, various administrative organisations concentrate therein.

The population based on the census in 1991 was around 1.67 million and the population based on the census in 2001 increased to around 2.27 million. It has the increase of around 60,000 for 10 years and the annual growth rate of 13.58%. It is the highest increase rate among objective four cities. Gomti River divides the city area into north and south. The area on the south side is a larger urban district and Sarda Canal is located on the south of the urban district. The jurisdictional area of Lucknow Nagar Nigam that is the administrative body of the city is divided into 6 administrative zones and 111 wards.

4.2 ORGANISATION OF SOLID WASTE MANAGEMENT

Lucknow Nagar Nigam has responsibility for solid waste management (SWM) and its Health and Cleansing departments are in charge. The Health Department collects the domestic and waste swept from roads using around 4,600 sweepers including part-timers and NGOs. A sweeper in charge of the primary collection covers the waste generated by around 500 people. The Cleansing Department is responsible for vehicles, equipment, workshop management, fuel, secondary collection and final disposal. The organisational structure engaged in SWM in Lucknow was not available during this survey period.

4.3 CURRENT SWM CONDITION

4.3.1 Waste Generation and Composition

According to the *"Mini-Master Plan for SWM for the City of Lucknow,"* by Lucknow Nagar Nigam, the amount of waste collected in 2001 was 1,267 ton/day (see the breakdown in Table 4.1). Furthermore, according to the other source, *"Urban Statistics, Handbook 2000,"* by the National Institute of Urban Affairs, the waste is generated at 1,500 t/day, the amount of collection is 1,000 t/day and the collection rate is therefore around 67%.

If it is assumed that the collection rate of 67% evaluated in the above statistics is correct, based on the amount of collection of the Mini-Master Plan, i.e. 1,267 ton/day, the amount of generated waste will be estimated around 1,900 ton/day and the amount of uncollected waste will be around 630 ton/day.

Table 4.1 shows that the rates of collected Household Waste, Construction Waste and Others are around 70%, 25% and 5%, respectively. The Waste swept from roads is supposed to be counted as Household Waste.

Table 4.1 Total Quantity of Waste Collection by Municipal Service (ton/day)

Item	1996	2001	2011	2021
Household Waste (6 days/week)	595	877	1,650	2,868
Commercial waste; Institutional Waste; Municipally Collected Industrial Waste	50	70	130	225
Construction Waste	230	320	600	1,040
TOTAL	875	1,267	2,380	4,133

Source: Lucknow Nagar Nigam, *Mini-Master Plan for SWM for the City of Lucknow.*

4.3.2 Waste Composition

Tables 4.2 and 4.3 show the physical characteristics and the chemical characteristics of waste, respectively. Concerning the physical characteristics of waste, since earth and sand occupy around 40%, it is certain that the sample includes a lot of construction waste. The details of "Others" are unknown. However, in comparison with the detail analysis values of Lucknow Nagar Nigam, organic waste is estimated to be 40.7%, which is calculated by adding the value of Others (28.5%) to the difference between 100% and the total value (88.8%), i.e., (100% - 88.8% = 12.2%).

Table 4.2 Physical Composition of Solid Waste in Lucknow

Contents	Percentage Weight
Stone	11.6
Paper	2.3
Cloth	5.8
Plastic	6.0
Dust (Fine Earth)	39.3
Leather	5.3
Others	28.5

Source: Lucknow Nagar Nigam, *Mini-Master Plan for SWM for the City of Lucknow*.

Table 4.3 Chemical Composition of Solid Waste in Lucknow

Contents	Percentage Weight
pH (30g in 75ml water)	8.29
Moisture Content	38.6
Volatile Matter	67.3
Non-volatile Matter	32.71
Calorific Value (kcal/kg)	1,658
Calorific Value (kcal/kg)	2,865
Total Nitrogen	0.45
Phosphorus	4.33
Potassium	0.75

Source: Lucknow Nagar Nigam, *Mini-Master Plan for SWM for the City of Lucknow*.

4.3.3 Waste Discharge

(1) Condition of Roads

On road shoulders and footpaths, there are small piles of waste collected by sweepers at intervals of several meters (see Photo 4.1). The small piles are non-segregated waste, and since the piles are still

Photo 4.1 Waste Dumped on the Roadside

A small pile of waste can be observed in places on the road shoulder and the footpath. The waste is supposed to be dumped over the waste collected by road sweepers.

there after a number of days have passed, it is clear that secondary collection is not practiced daily. A large quantity of mostly construction and domestic wastes are dumped into the vacant lots at the roadside. Judging from the enormous amount of dumped waste, it can be surmised that these wastes were not dumped by individuals but by the primary collectors, or dumped during the process of secondary collection.

(2) Condition of Open Drains (*Nala*)

Since the roadside soil gutters and concrete gutters are buried with dumped waste so deep that it is difficult to distinguish their shapes, the domestic wastewater has become stagnant and emit a putrefactive smell all around (see Photo 4.2). Roads are often submerged and hinder the traffic because drainage canals or *Nala* cannot carry all the rainwater during the rainy season.

Photo 4.2 Condition of Small Street Gutter

Most part of the section of a relatively small street gutter is buried in waste. The waste is littered near a telegraph pole at the center.

The stagnant domestic wastewater might cause the outbreak of harmful insects and infectious diseases. Drainage canals (*Nala*) on the relatively large roadside have similar conditions as well and, especially, culvert under-drains are completely blocked. A half of the cross-sectional area of flow in *Nala* is buried in waste. Waste is also littered all around and the littered wastes may flow into *Nala* during the rainy season. At the Wazirganj pumping station, a large quantity of dumped waste is absorbed near the pump (see Photo 4.3). Even the wastewater treatment plants have similar conditions. The expulsion of waste inflow is required to keep the pumping operation smooth with the use of screening equipment.

Photo 4.3 Drainage Pump Station

The water of the drainage canal (*Nala*) is pumped up directly without using storage tanks. A large amount of waste is absorbed in front of screens.

The waste inflow to the pumping station is removed by workers and the amount of waste collected is recorded daily (see Photos 4.4 and 4.5).
According to the records, the daily maximum of waste removed reaches 1,355 kg/day with the monthly average of 873 kg/day, and the monthly total reaches 19,200 kg/month.

Although the waste is expelled with screening in the Nala having pump facilities, the waste is discharged

directly into the Gomti River adversely influencing river water quality. The illegal dumping of waste into the embankment and flood channel of the Gomti River is also remarkable. The dumping location is also a feeding area for domestic animals. There are 28 Nalas and drains flowing into the Gomti River.

Photo 4.4 Removal of Inflowing Waste (Left)

Workers are expelling the choked waste in front of screen.

Photo 4.5 Daily Records of the Collected Waste at the Pumping Station (Right)

The waste amount collected is shown at the Ghasiyari Mandi Pumping Station.

4.3.4 Waste Collection

In the same manner as in other cities, the domestic and the road sweeping wastes are collected by handcart or put in dustbins or small cylindrical steel dustbins on streets, then transported to secondary collection depots. There are many secondary waste collection depots in the city and most of them are surrounded with concrete walls. Several roofed collection depots or collection depots without fences have been newly constructed. Since these collection sites are constructed in the available open spaces, they have various shapes and sizes.

Although there are three (3) kinds of containers, capacity ranging from 0.75 m^3 to 4.5 m^3, all containers are very old and deformed. Containers store only the waste collected from households during the primary collection, or waste swept from road that include around 30% of organic waste, plastics for food packing, earth and sand.

At many secondary collection depots, the waste is littered around. A new roofed secondary collection depot is established in parallel with a road at the central district of the city, and the exterior of the depot is covered with elaborate tiles (see Photo 4.6, left). One side of the depot has a small door where handcarts can approach, and the other side has a large door to enable vehicles carrying out waste to approach the depot backward. Scavengers gather valuable materials inside the depot (see Photo 4.6, right). Problems encountered here are similar to those of dustbins or containers. If the waste is dumped near the small entrance for carrying in waste, late coming sweepers could not carry the waste deep into the back of the depot.

Front View

Inside View

Photo 4.6 Roofed Secondary Collection Depot

A roofed secondary collection depot is newly built in a central district of the city. The surface of the building is covered with elaborate tiles.

An open dumper truck transports the waste from the secondary collection depot to the final disposal site (see Photo 4.7). The truck carries the waste without a plate or sheet covering the back of carrier because the efficiency of waste loading and dumping is a priority matter. The loaded waste thus might spill out.

Photo 4.7 Open Dumper Truck

An open dumper truck is heading for a final disposal site from a secondary collection depot.

4.3.5 Waste Processing

(1) Medical Waste Incinerator

The medical waste incinerator was established around 1 km southeast from the workshop and has been operating since April 2000. Although the city has 233 hospitals, nursing homes, dental clinics, pathology centres, etc., the medical waste from 15 relatively large hospitals is brought into the incinerator and then disposed. Data on the scale and incineration system could not be obtained.

(2) Bio-energy Plant

The bio-energy plant located adjacent to the sewage treatment plant sandwiched between the north side of the Hardoi Road and the Forest Project has just started test operation with BOOM (Build-Operate-Own-Maintain) system. While detailed data on the scale and incineration system,

and so on, could not be identified, electricity is being generated from methane gas produced by collected waste. The only information received is shown below:

(a) Amount of waste management : 300 t/day
(b) Amount of power generation : 5.1MW (not including the usage at plant of 0.5MW)
(c) Amount of waste used for power generation : 400 t/hour
(d) Amount of generated organic fertilizer : 75 t/day

In addition, there are the facilities of Vermi Compost whose capacity is 50 t/day adjacent to the plant. Detailed information on Vermi Compost also could not be available.

4.3.6 Transport and Final Disposal

The city had two disposal sites. One disposal site was located near the Sitapur National Highway No. 24, around 7 km north from the Iron Bridge over the Gomti River and around 9 km from the Lucknow Junction Station at the centre of the city. While the disposal site had no division signs, and no operation and maintenance facilities like a truck scale, wide cross-shaped approach roads were built in the site and the division area looked tidy (see Photo 4.8). Soil gutters around 1m deep for rainwater and leachate from the waste were installed on the division border. However, a dozen of scavengers picked up valuable materials and domestic animals forage for food, and some waste was burned in the landfill area. This site had been used for around 20 years and was closed probably in October 2003.

The other disposal site was located near the Aishbagh Road near the centre of the city around 3 km from the Lucknow Junction Station. A large quantity of waste was disposed here in spite of the narrow area. Since houses concentrate around the disposal site, adverse influences on the living environment of local residents were anticipated.

Photo 4.8 Former Final Disposal Site along Sitapur Road

The site that was tidily sectioned and well maintained by establishment of cross-shaped approach roads. Soil gutters were also well maintained to drain storm water and leachate.

The present disposal site is located near the above mentioned bio-energy plant, named “Dubagga”. At this site, dumping has been started since July 2003; however, there are no operation and maintenance facilities (see Photo 4.9).

Photo 4.9 Present Final Disposal Site near Bio-energy Plant

Several open dumpers are dumping waste. A dozer is pushing and leveling the waste while no facilities for storm water and leachate drainage can be seen.

4.3.7 Workshop

The workshop is located in Bhikhamor Ward, around 1 km from the left end of the bridge over the Gomti River. The Ashok Marg Road goes on the bridge. There were few vehicles during site visit because they had left for operation while the site is large (see Photo 4.10). Table 4.4 shows the vehicles owned for solid waste management. In comparison with the population and amount of waste generated in Lucknow, the present number of machinery and equipment seems to be very little. This workshop is the most organized and best maintained among four cities.

Photo 4.10 Workshop for SWM in Lucknow

The site is largest area of the subjective four cities. Repair machinery and equipment are old but tidy and the site including mechanical and electrical rooms looks well maintained.

Table 4.4 List of Present Machinery and Equipment for Waste Collection and Transport in Lucknow

Item	Numbers
Mechanical Loader	15
TATA Tipper	33
Leyland Tipper	14
Leyland Truck	3
Dumper Placer	5
Refuse Collector	5
Loader Backhoe	5
Tower	6
Dozer (D-50, D-80)	2
Tractor	19
Tractor Scraper	2
Pavement Machine	1
Road Sweeper	1
Fausy (Leyland Mounted)	1
Skid Steer Loader	2
Vikram Tipper	5
TOTAL	167

Source: Rubbish Removal & Maintenance Department, Lucknow Nagar Nigam

CHAPTER 5 VARANASI

5.1 INTRODUCTION OF THE CITY

Varanasi is known as one of the oldest cities located on the west bank of the holy Ganga River, which is extremely important from the religious, cultural and educational point of view. The administrative zone extends through an area of 118.89 km^2. The population based on the census in 1991 was around 1.03 million and the population based on the census in 2001 increased to around 1.21 million with the increase rate of 7.5%. According to the annual hearing survey, the city has 200,000 visitors for sightseeing and pilgrimage daily and the total population of 1.4 million including this number. The city has 270 slums with 350,000 people, 7 sightseeing spots, 320 hotels and restaurants, and 114 hospitals.

Being an ancient city, the width of city roads is narrow and the roads themselves are not straight in comparison with the other objective cities. Although the width of trunk road itself is wide, it is always crowded with vehicles since the pavement width is narrow. Unpaved parts without the vehicular traffic become the best sites for waste discharge. In terms of waste collection and transport, narrow and winding roads leads to various constraints.

5.2 ORGANIZATION OF SOLID WASTE MANAGEMENT

The Municipal Health Department is in charge of solid waste management (SWM) in this city. The Department is divided into 5 districts under the Health Officer and 2,138 sweepers collect domestic and road sweeping wastes as the primary collection. Figure 5.1 shows the organizational structure for SWM in Varanasi. Thirty-six (36) drivers and 37 loading assistants (Cleaner) of workshops work for the secondary collection. Thirty-six (36) technical staff members are in charge of the maintenance of machinery and equipment. The total number of staff is 2,377. A sweeper in charge of the primary collection is supposed to collect the waste generated by around 650 people. The total budget for SWM is 231 million Rs/year and the breakdown is shown in Table 5.1. Based on the table, the cost of collection contributes 82.3% of the total budget.

Table 5.1 Annual Budget for SWM in Varanasi

Item	Budget (Million Rs/year)
Management	5
Collection	190
Disposal	26
Others	10
Total	231

Source: Data based on the hearing investigation in March 2003

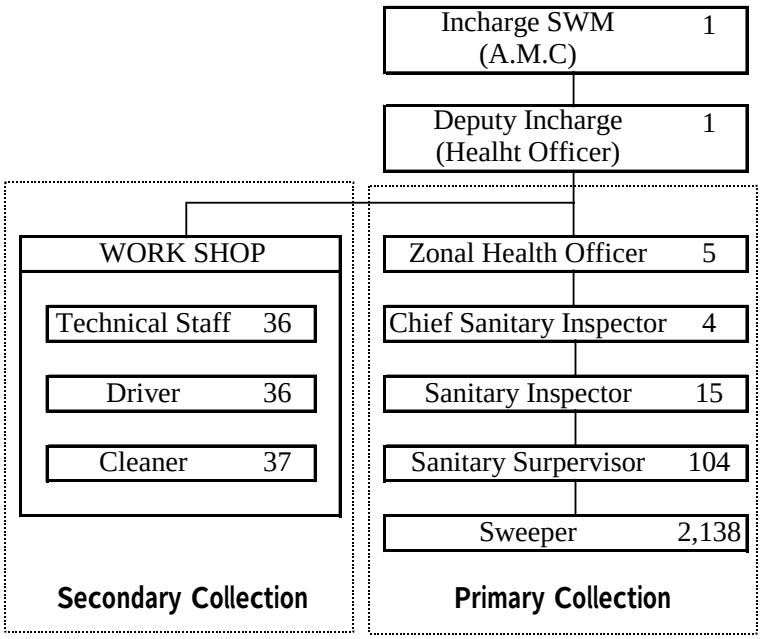

Figure 5.1 Organisational Structure Engaged in SWM in Varanasi Nagar Nigam

5.3 CURRENT SWM CONDITION

5.3.1 Waste Generation

The municipal authority formulated *"The Integrated Solid Waste Management Plan for Varanasi City"* on September 2002. Although some figures have been taken from this report, the following figures are mainly based on hearing surveys during the study period.

Total amount of discharge is 600 t/d and the breakdown is shown in Table 5.2. Concerning the generated amount of waste by the hearing survey, Road Sweeping Waste, 450 t/d, is at the top, contributing around 75.0% of the total. The second is Commercial Waste, 80 t/d or 13.3%. Among other wastes are mainly Building Dismantling Waste, 40 t/d or 4.2%; Clinical Waste, 20 t/d or 3.3%; and Industrial Waste 15 t/d or 2.5%. While the amount of Domestic Waste is not added, it is tallied as Road Sweeping Waste considering the collection patterns.

What is remarkable is that the waste amount including Nala Cleaning Waste (10 t/d) being dumped into the drainage canals or *Nala* where directly discharged into the Varuna and Ganga rivers is counted; this means that the waste dumping into *Nala* is one of their daily work. The amount of discharge per unit is estimated at 400 g/capita/day. However, it has been reported in the Management Plan that the total generation amount is 631 t/d, or 425 g/capita/day. Waste collection is 6 times a week.

Table 5.2 Estimated Waste Generation in Varanasi

Item	Generation Amount (ton/day)
Commercial Waste	80
Industrial Waste	15
Road Sweeping Waste	450
Clinical Waste	20
Nala Cleaning Waste	10
Construction Others	25
Total	600

Source: Data based on the hearing survey in March 2003.

5.3.2 Waste Discharge

Generally in Varanasi, the putrefactive smell of waste is strong and waste is littered everywhere in spite of the dry season like in other cities.

(1) Condition of Roads

Road sweeping is practiced in the early morning from around 6:30 am to 9:00 am and small piles of collected waste are made on the roadside at intervals of several meters. Some sweepers or residents burn the small piles of waste. Therefore, roads are maintained clean until the opening hours of shops and restaurants (see Photo 5.1). In the afternoon after shops or stalls have opened, however, waste are dumped and littered on the roadside.

Since the pavement width of trunk road is narrow, waste dumping into the unpaved part of roadside is remarkable. Furthermore, the waste is dumped everywhere such as vacant lots, dilapidated buildings without tenants, etc. This suggests that in spite of practicing the door-to-door collection, this collection system is not functioning due to irregularity or shortage of sweepers. As a result, the waste dumped on roads becomes not only hotbed of harmful insects such as cockroaches and rats but also feeding area for domestic animals such as pigs and goats. Adverse influences on human beings are therefore probably anticipated.

Photo 5.1 Road after Morning Cleanup
Road is very clean after sweeping in the morning. There is no dust and garbage even in the gutter.

(2) Condition of Open Drains (*Nala*)

Since the narrow streets hinder traffic, the littered waste is relatively little. On the other hand, many street side gutters are buried in waste and thereby not able to carry designed flow because a large quantity of waste is dumped daily on slope of the relatively large *Nala*. Stagnant drainage can be seen here and there. This leads to increased number of mosquitoes. Additionally, most

Photo 5.2 Pigs Eating Garbage at a Dumping Site along *Nala*

places are feeding areas or watering spots for domestic animals and this might adversely influence human beings. Varanasi has 15 Nalas flowing into the Ganga River and 14 Nalas flowing into the Varuna River.

(3) Condition of the Varuna River

The nearer the central district of the city, the more the waste is dumped into the riverside of the Varuna River. Especially on the approaches of bridge crossing the River, both roadsides swell with waste. Although the water volume is relatively little because of the dry season, waste on the riverbed can be observed. This suggests that waste is dumped on this place on a daily basis.

5.3.3 Waste Collection

At the primary stage, the waste is put in dustbins (see Photo 5.3) or small cylindrical steel dustbins on streets, and transported to secondary collection depots. Varanasi has total of thirty (30) secondary collection depots for the solid waste, and most depots are surrounded by concrete walls similar to the cases in other cities.

Photo 5.3 Concrete Dustbin

Dustbins are placed mainly in residential area. In spite of installment of the dustbin, the waste is littered around.

Since the collection sites are fit into the open spaces, they have various shapes and sizes. Several roofed collection depots are established on various locations. Although three kinds of containers, volume of 0.75 m^3 to 4.5 m^3, are placed on 137 spots, all containers are very old and deformed (see Photo 5.4). At many secondary collection depots, the waste is littered around. Some places are not only unsanitary but also the littered waste hinders the approach to the collection depots. This causes the vicious cycle of waste-litter-spread.

Photo 5.4 Steel Container

Waste carried by handcart and littered around the container is put inside. Chute for waste is too small to make putting waste so hard.

The new roofed secondary collection depot is built in parallel with a road. One side has a small door where handcarts can approach, and the other side has a large door to enable vehicles for carrying out waste to approach backward. Scavengers collect valuable things at dustbins, containers and secondary collection depots. Valuable materials are also collected in roofed collection depots.

5.3.4 Transport and Final Disposal

The waste collected to secondary collection depots and containers is loaded into dumper trucks by various shovel loaders or manpower, and transported to final disposal sites. Arm-system container trailers (see Photo 5.5) are used for the loading of containers. Most of the present machinery looks very old.

Photo 5.5 Arm-system Container Trailer

The loaded waste is transported to final disposal sites by open dumper trucks. Since many trucks have no plates or sheets covering the back, there is a high possibility that litter will fall out during transportation.

According to the hearing survey, the amount of disposed waste is 550 t/day. Waste of around 50 t/d that is not equivalent to the amount generated is therefore discarded in open spaces, such as vacant lots and squares, old buildings without tenants, gutters, drainage canals or *Nala*, the Varuna River and the riverbed of the Ganga River.

Photo 5.6 Former Final Disposal Site at Raj Ghat

The waste is dumped as utilized for a gentle slope from an approach road. There were no operation and maintenance facilities, such as fence and signboard.

Table 5.3 shows three (3) former final disposal sites that were identified during the first field survey in March 2003. One of the sites, i.e., Raj Ghat, is located on the roadside of the Rabindranath Tagore Road, around 4 km east of the central district of the city (see Photo 5.6).

Table 5.3 Name and Area of Former Final Disposal Site in Varanasi

Name of Disposal Site	Acre
Palang Shahid	10
Nahi Ghat	2
Kabir Math	1

Source: Data on the hearing survey on March 2003

This site is located at around 200 m away from the Ganga River, or midway between the north of many Ghat in the Ganga River and the Varuna River. The disposal site has no fence and compartment signs, and there is no management vehicles and supervisors for carrying in waste. Taking the population into consideration, the scale of the final disposal site was small because there is a plan to use the site just for several years. Whenever the site is full, it is supposed to be moved to another appropriate location. Those three sites had been abandoned when the second field survey was carried out in October 2003.

The landfill system was open dumping system in gentle slopes. The leachate from the waste at the disposal site may be directly discharged into the *Nala* and the Ganga River. This will contribute to contamination of groundwater, and consequently, adverse effects on the water quality of Ganga River will be anticipated more or less.

Inside the disposal site, an excavator and a shovel loader were operated for the placement of piles of wastes carried in and dumped at the site. A dozen scavengers collected valuable materials such as plastic bags, cloth, glass, etc. The number of scavengers at disposal sites was extremely little in comparison with other countries. This is because the system of collecting valuables is completed at the stages of primary and secondary collections. However, this is equivalent to the fact that the waste is littered all over the town. The income of scavengers is said to be 30 Rs to 50 Rs per capita/day. There is already a full disposal site on the roadside of the Rishpattan Road near the Raj Ghat Disposal Site. Nine (9) disposal sites have been used so far as of November 2003.

The present final disposal site is located along Sarnath Road, 6 km from the corner of Azamgarh

Road. This site seems to be one of the temporary dumping sites that can be seen here and there in the city. There are no operation and maintenance facilities, such as fence and signboard (see Photo 5.7).

Photo 5.7 Present Final Disposal Site along Sarnath Road

The waste is just dumped on a low-lying area. There were no operation and maintenance facilities, such as fence and signboard.

5.3.5 Proposed New Disposal Sites

The municipal authority, i.e. Varanasi Nagar Nigam, has already considered the proposed disposal site located 1.6 km north of the Varuna River or around 3.5 km from the central district of the city and along the Gautam Buddha Rajpath Road (see Photo 5.8). Geographically, the whole area of around 20 acres is lower by around 3 m than the surrounding areas. Geographically, it is also the best location because there are no houses around the site. A hygienic landfill and an appropriate transport control should be implemented.

Photo 5.8 Future Candidate Final Disposal Site at Hokol Ganj

5.3.6 Workshop

There is a municipal workshop near the crossing of the Raja Bazaar Road and the Patel Road in the central district of the city (Photo 5.9). The site is around 750 m^2. Repair equipment are the hand grinder, hand drill, air compressor, welding machine, drill machines, electrical grinders, batteries,

chargers and tool kits.

The vehicles of the workshop are shown in Table 5.4. Among the vehicles used, the new cars are only the 2 compression-type waste collection vehicles and most of others are very old ones. The workshop employs the scrap-and-build system of repair work with parts taken from the old vehicles.

Photo 5.9 Entrance of the Workshop

Table 5.4 List of Present Machinery and Equipment for Waste Collection and Transport in Varanasi

Item	Numbers
Dumper	16
Tractor & trailer	17
Rickshaw trailer	50
Hoppers placers (three wheelers)	5
Dumper placers	12
Dumper placer containers 4.5 m^3	137
Loaders	9
Bulk refuse collects	2
Handcart	1,000

Source: Data based on hearing survey in March 2003

5.4 OUTLINE OF THE INTEGRATED SOLID WASTE MANAGEMENT PLAN

Varanasi Urban Agglomeration (VUA) formulated the Integrated Solid Waste Management Plan on September 25, 2002. The outline is as follows:

(1) Present Condition

(a) Population: 148.5 million (1991)
(b) Total abundance of the waste: 631 t/day
(c) Abundance per capita: 425 g/capita/day

(2) Plan

(a) Target year: 2015
(b) Total abundance of the waste: 1,339 t/day
(c) Construction of facilities: Compost Plan = 200 t/day

Treatment Facility = (for Medical & General Waste)
Collection Center = 25 units

CHAPTER 6 SURVEY OF SOLID WASTE AMOUNT DUMPING IN AND ALONG NALA

6.1 OBJECTIVE OF THE SURVEY

The objective of the survey is to identify the location and the amount of solid waste dumping in and along *Nala* or open drains in four cities, namely Allahabad, Varanasi, Lucknow and Kanpur.

6.2 METHODOLOGY OF THE SURVEY

Nala in four cities were firstly selected for the survey. The *Nala* that have a small discharge of water flow and are covered by concrete slabs or pipes were removed from the subject of the survey. Secondly, a local survey team comprising one engineer and two workers was established in each city. The survey team then walked along the *Nala* and stopped at every garbage dumping site in and along the *Nala* to measure their dimensions, i.e. length, width and height. The measurement was conducted by using a measuring-tape to roughly estimate the volume of the solid waste (see Photo 6.1).

In addition, weight of the garbage for one of typical dry garbage was also measured by a spring to realize the specific gravity of the waste (see Photos 6.2, 6.3 and 6.4).

All the measurement results were put in a format with a sketch of the site as well as description of major components of the waste and other remarks as shown in maps and Appendix following this section.

Photo 6.1 Measurement of Dimensions of the Solid Waste (Main Ghaghar Nala, Allahabad)

Photo 6.2 Measurement of Weight of the Solid Waste (1); shoveling the garbage from a typical dumpsite (Assi Nala, Varanasi)

Photo 6.3 Measurement of Weight of the Solid Waste (2); filling a carton box with the garbage (Assi Nala, Varanasi)

Photo 6.4 Measurement of Weight of the Solid Waste (3); measuring the weight by a spring (Assi Nala, Varanasi)

The survey was carried out under supervision of the JICA Study Team from 10 November to 10 January, 2004 in cooperation with local authorities, such as Nagar Nigam and U.P. Jal Nigam.

6.3 LIMITATIONS OF THE SURVEY

The survey did not require the precise location and amount of solid waste and resulted in rough estimates due to unavailability of location maps and lack of equipment. Also, the survey was limited to estimate the amount of solid waste that could be seen only above the surface water level although a large amount of sludge, soil or waste was deposited on the bed of *Nala*.

6.4 RESULTS OF THE SURVEY

(1) Number of Nala Surveyed

The number of *Nala* surveyed was determined based on their flow discharge and structural conditions

while entry into the locations along some of *Nala* was not allowed because of cantonment areas. Around 13 to 33 *Nala* for each city were surveyed and solid waste for 89 *Nala* were estimated in total as given in Table 6.1 below. A list of *Nala* surveyed in four cities is presented in Appendix B.

Table 6.1 Number of Nala Surveyed

No.	Name of City	Number of Nalas Surveyed
1	Allahabad	33
2	Varanasi	13
3	Lucknow	24
4	Kanpur	19
Total		89

(2) Number of Garbage Points Surveyed

The total number of garbage points surveyed was 1301 in four cities. Results of each survey point are summarized in Appendix C,D,E and F. The number of garbage points in and along *Nala* was ranging from 272 to 396 in the four cities as shown in Table 6.2.

Table 6.2 Number of Garbage Points to be Surveyed

No.	Name of City	Number of Garbage Points Surveyed
1	Allahabad	301
2	Varanasi	272
3	Lucknow	396
4	Kanpur	332
Total		1301

(3) Estimated Amount of Solid Waste in and along *Nala*

The total amount of solid waste in and along *Nala* was estimated as 202,145 cubic meters (m^3) in four cities. As summarized in Table 6.3, the largest amount of solid waste in and along nala was for Allahabad as 153,051 m^3 and the smallest was for Varanasi being 10,488 m^3. The maximum amount of garbage in and along *Nala* was recorded for Drains of Daraganj area in Allahabad while the minimum was for Jiamau Nala in Lucknow. The location of solid waste for each city is illustrated in Figures 6.1 to 6.4, respectively.

Table 6.3 Estimated Amount of Solid Waste in and along Nala

No.	Name of City	Estimated Amount of Solid Waste in Total (m^3)	Maximum Amount of Solid Waste Recorded		Minimum Amount of Solid Waste Recorded	
			Name of Nala	(m^3)	Name of Nala	(m^3)
1	Allahabad	153,051	Drains of Daraganj area	44,260	Unchwaghari Drain	3
2	Varanasi	10,488	Banaras Nala No.5	4,050	Drains of Hotels	26
3	Lucknow	14,612	Wazirganj Nala	5,542	Jiamau Nala	1
4	Kanpur	23,994	Panki Industrial Estate Nala	7,375	Tafco Nala	2
		202,145	-	-	-	-

(4) Specific Gravity of Solid Waste

The specific gravity of solid waste especially along *Nala* was measured at the site. The specific gravity depended on the composition of the garbage; that is, it was recorded at around 0.1 to 0.2 t/m^3 if plastic bags are the major component, while it was 0.6 to 0.7 t/m^3 if it constitutes mainly of sand or soil. The weight and specific gravity of the solid waste measured in four cities has been given in Table 6.4.

Table 6.4 Measured Weight and Specific Gravity of Solid Waste*

No.	Name of City	Measured Weight (kg)	Specific Gravity (t/m^3)
1	Allahabad	6	0.16
		5	0.13
2	Varanasi	3.5	0.09
		27	0.71
3	Lucknow	24	0.63
4	Kanpur	14	0.37
Ave.			0.35

Note: * This weight and specific gravity indicates only values of the waste that was lying along Nala.

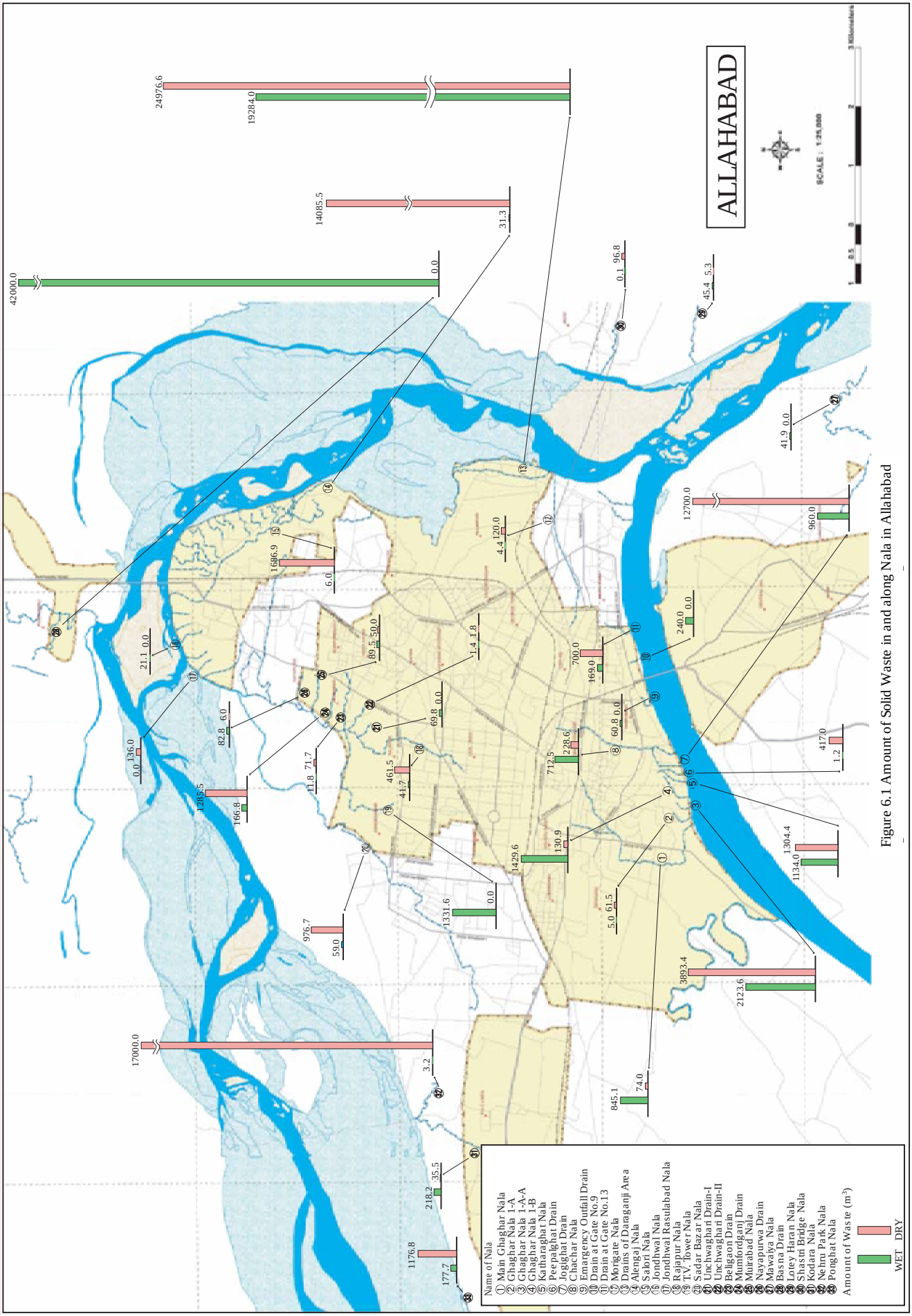

Figure 6.1 Amount of Solid Waste in and along Nala in Allahabad

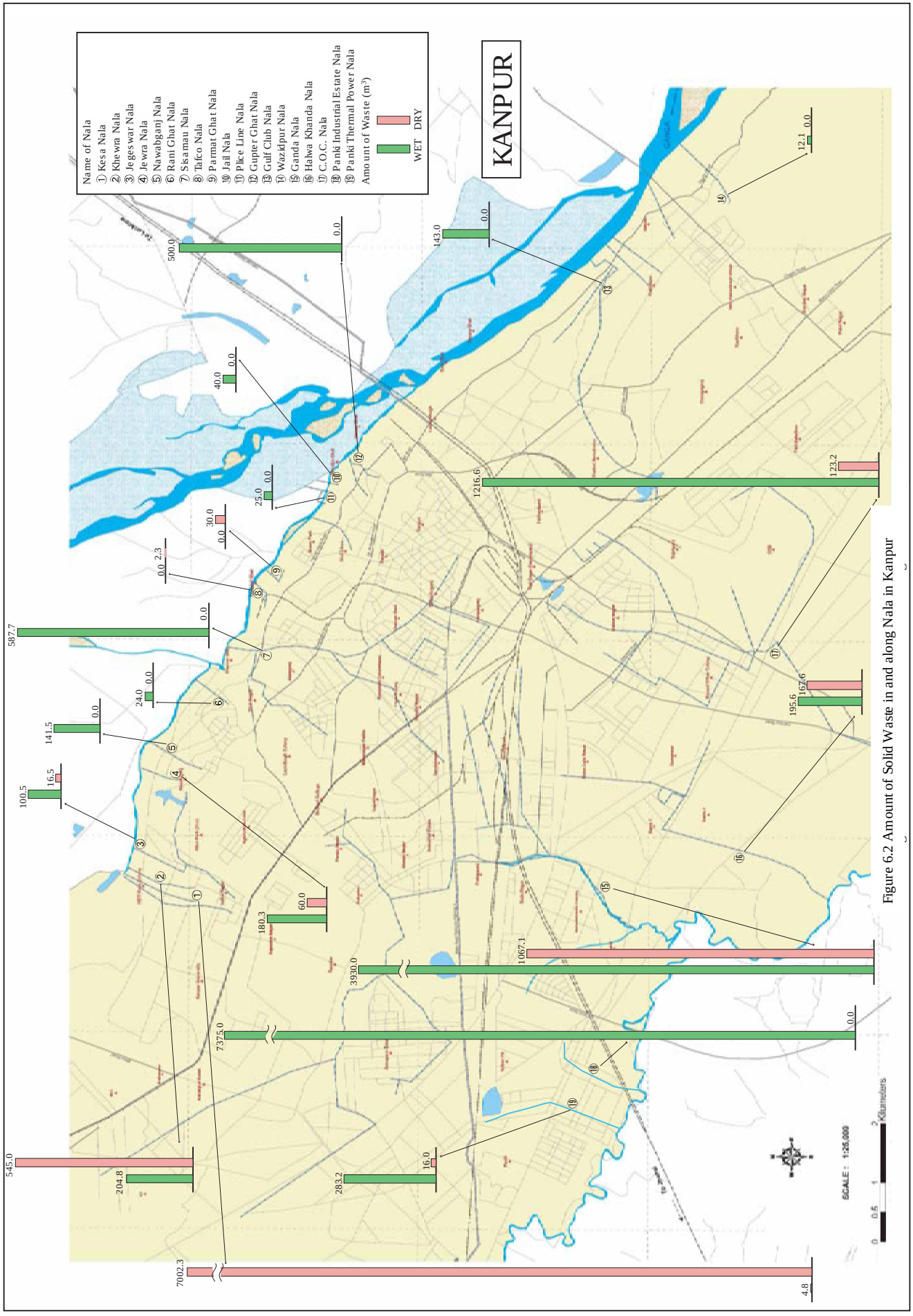

Figure 6.2 Amount of Solid Waste in and along Nala in Kanpur

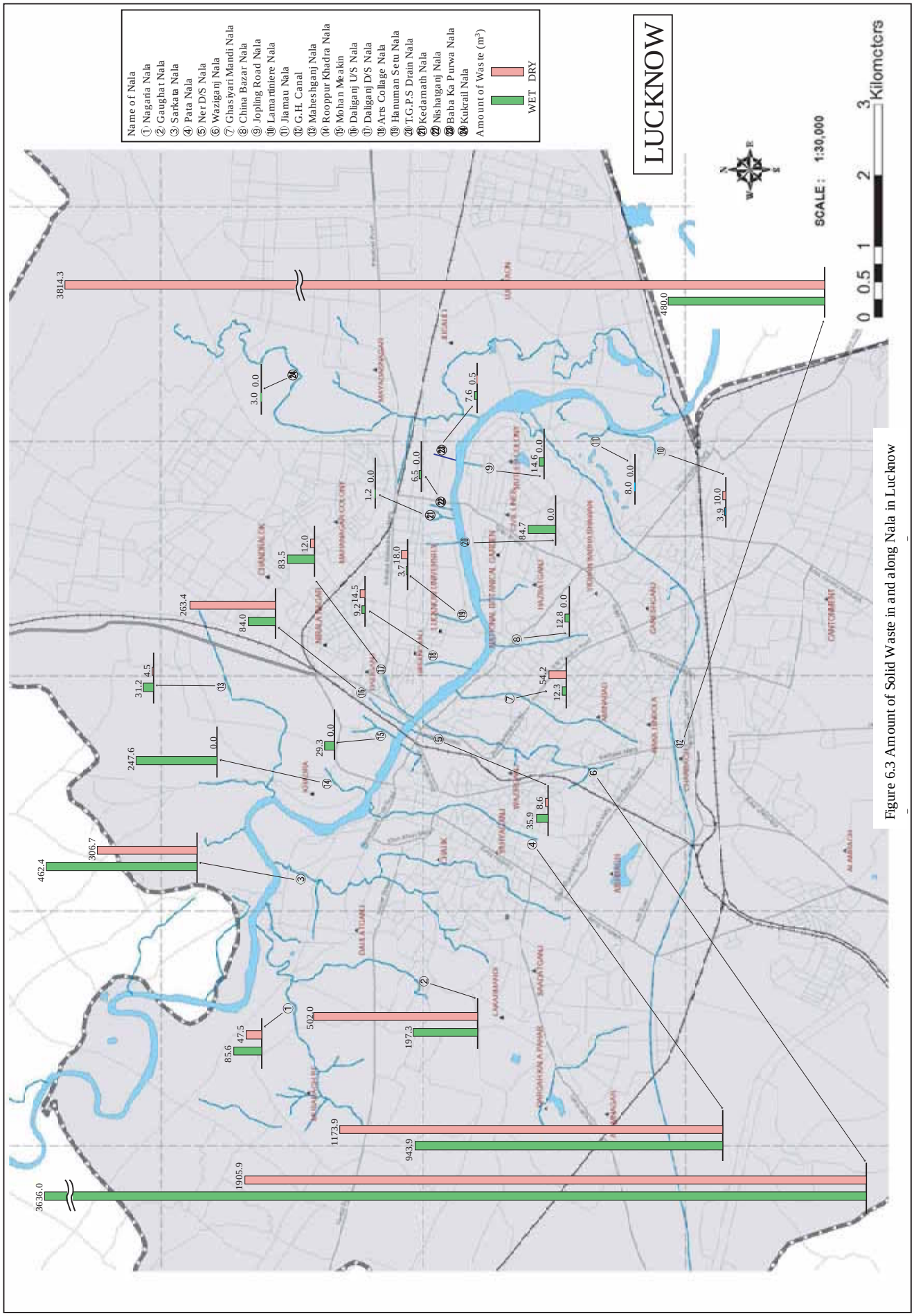

Figure 6.3 Amount of Solid Waste in and along Nala in Lucknow

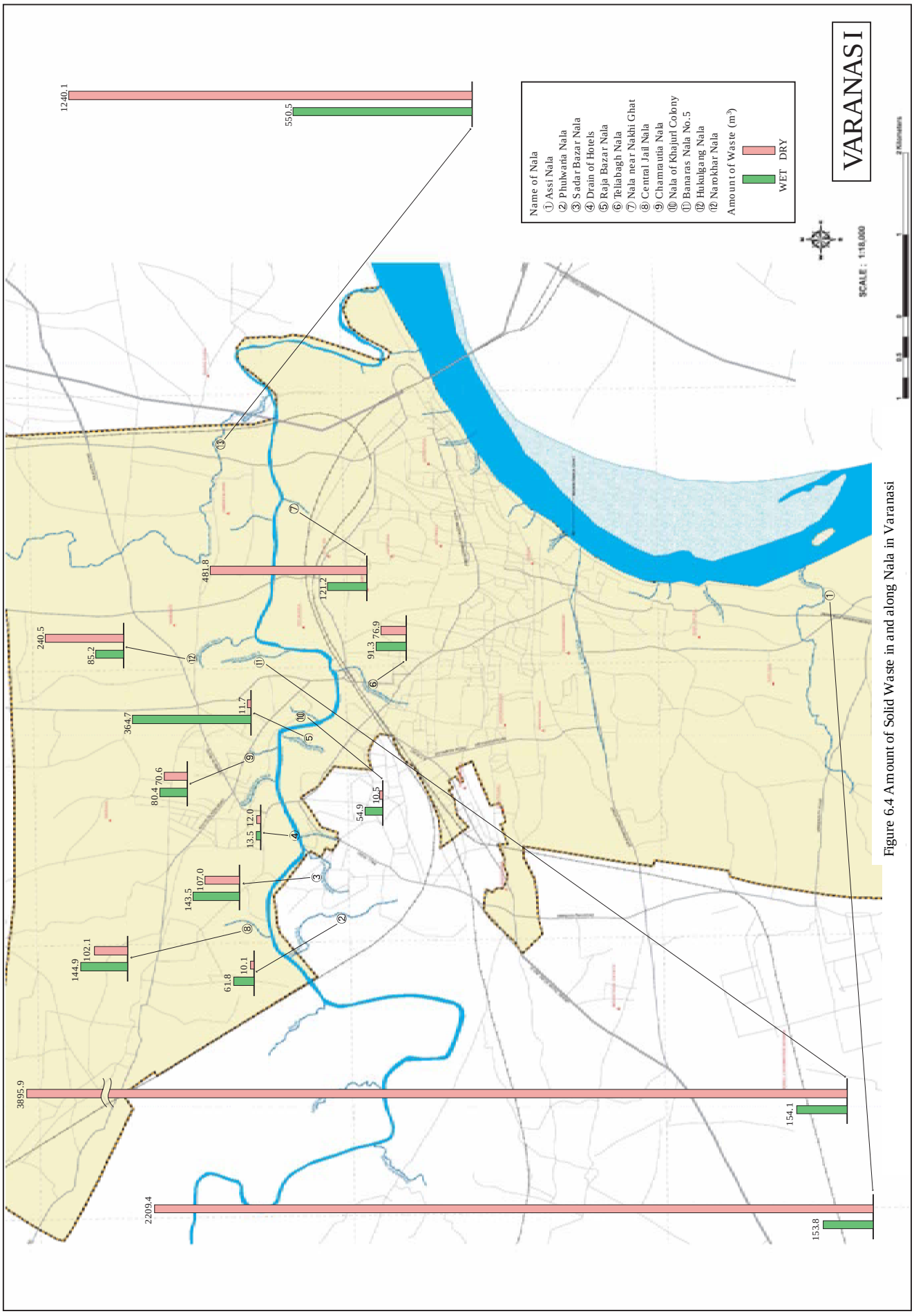

Figure 6.4 Amount of Solid Waste in and along Nala in Varanasi

(5) Major Composition of Solid Waste in and along Nala

It was observed that most solid waste in and along *Nala* came from residential waste that was composed of kitchen waste, wrapping paper, plastic bags, etc (see Photo 6.5). Some of *Nala* store excrements from cattle (see Photo 6.6) and construction waste, such as broken bricks and soil.

Photo 6.5 Residential Waste in Nala (Main Ghaghar Nala, Allahabad)

Photo 6.6 Excrements Flowing into Nala from a Cattle House (Wazirganj Nala, Lucknow)

Photo 6.7 Garbage with Sediment Forming Sandbar in Nala (Wazirganj Nala, Lucknow)

Meanwhile, it could be seen at relatively wider *Nala*, like Main Ghaghar Nala in Allahabad, Assi Nala in Varanasi, Wazirganj nala in Lucknow, and Sisamau Nala in Kanpur, accumulated waste in *Nala* became old and was decomposed with sediment. These locations usually construct sandbar in *Nala*, which seems to be major obstacles to flow in *Nala*. (see Photo 6.7)

(6) Other Remarks

Since residents use *Nala* to throw their rubbish into it or on the bank in their daily life (see Photos 6.8 and 6.9), almost all places where a bridge is built over the *Nala* and *Nala* is flowing in front of or behind houses are utilized as dumping sites. This situation can be seen easily in every four cities.

Photo 6.8 A Pile of Garbage in Nala Flowing behind the House (Right: Wazirganj Nala, Lucknow)

Photo 6.9 A Woman Throwing Garbage into Nala (Left: Ghasiyari Mandi Nala, Lucknow)

Appendix B

Appendix B Data Sheet of Waste Amount Survey

City:		**Name of Nala:**	
Date:	**Name of Surveyor:**		
Conditions of Solid Waste			
Location: Approx. _____ m from the confluence of _____ river. **Sketch of the location** (please show the surrounding landmarks, i.e. roads, bridges, houses, trees and so forth)			
Dimensions:	**Length:** m	**Width:** m	**Height:** m
Weight:	kg (per one carton box: 45 cm × 28 cm × 30 cm)		
Major Composition:			
Other Remarks:			

Appendix C

Appendix C List of Nala to be Surveyed in Subjective Four Cities

LIST OF NALAS TO BE SURVEYED IN ALLAHABAD

No.	Name of Nala	Survey Status (Date)	Ser. No.
1	Main Ghaghar Nala	Done (11 Nov.)	1
1A	Ghaghar Nala 1-A	Done (23 Nov.)	2
1B	Ghaghar Nala 1-A-1	Done (21 Nov.)	3
1C	Ghaghar Nala 1-B	Done (21 Nov.)	4
1D	Dariabad – Katharaghat Drain	Done (18 Nov.)	5
1E	Dariabad – Peepalghat Drain	Done (18 Nov.)	6
1F	Dariabad – Jogighat Drain	Done (18 Nov.)	7
2	Chachar Nala	Done (12 Nov.)	8
3	Emergency Outfall Drain	Done (17 Nov.)	9
4	Drain at Gate No.9	Done (17 Nov.)	10
5	Drain at Gate No.13	Done (15 Nov.)	11
7	Morigate Nala	Done (13 Nov.)	12
8	Drains of Daraganj Area	Done (20 Nov.)	13
9	Allenganj Nala	Done (20 Nov.)	14
10	Salori Nala	Done (10 Nov.)	15
11	Jondhwal Nala	Done (10 Nov.)	16
11D	Jondhwal Rasulabad Nala	Done (10 Nov.)	17
12	Rajapur Nala	Done (13 Nov.)	18
12A	T.V. Tower Nala	Done (14 Nov.)	19
12B	Sadar Bazar Nala	Done (14 Nov.)	20
12C	Unchwaghari Drain - I	Done (21 Nov.)	21
12D	Unchwaghari Drain - II	Done (21 Nov.)	22
12E	Beligaon Drain	Done (10 Nov.)	23
12F	Mumfordganj Drain	Done (15 Nov.)	24
12G	Muirabad (Ganesh Nagar) Nala	Done (22 Nov.)	25
12H	Nayapurwa Drain	Done (22 Nov.)	26
13	Mawaiya Nala	Done (13 Nov.)	27
17	Basna Drain	Done (10 Nov.)	28
20	Lotey Haran Nala	Done (19 Nov.)	29
21	Shastri Bridge Nala	Done (19 Nov.)	30
22	Kodara Nala	Done (16 Nov.)	31
23	Nehru Park Nala	Done (22 Nov.)	32
24	Ponghat Nala	Done (16 Nov.)	33

LIST OF NALAS TO BE SURVEYED IN VARANASI

No.	Name of Nala	Survey Status (Date)	Ser. No.
3	Assi Nala	Done (17 Nov.)	1
16	Phulwaria Nala	Done (20 Nov.)	2
17	Sadar Bazar Nala	Done (19 Nov.)	3
18	Drain of Hotels	Done (19 Nov.)	4
19	Raja Bazar Nala	Done (19 Nov.)	5
20	Teliabagh Nala	Done (21 Nov.)	6
21	Nala Near Nakhi Ghat	Done (25 Nov.)	7
22	Central Jail Nala	Done (18 Nov.)	8
24	Chamrautia Nala	Done (18 Nov.)	9
25	Nala of Khajurl Colony	Done (18 Nov.)	10
26	Banaras Nala No.5	Done (25 Nov.)	11
27	Hukulganj Nala	Done (24 Nov.)	12
29	Narokhar Nala	Done (22 Nov.)	13

LIST OF NALAS TO BE SURVEYED IN LUKNOW

No.	Name of Nala	Survey Status (Date)	Ser. No.
1	Nagaria Nala	Done (1 Dec.)	1
2	Gaughat Nala	Done (1 Dec.)	2
3	Sarkata Nala	Done (2 Dec.)	3
4	Pata Nala	Done (1 Dec.)	4
7	NER D/S Nala	Done (26 Nov.)	5
8	Wazirganj Nala	Done (25 Nov.)	6
9	Ghasiyari Mandi Nala	Done (24 Nov.)	7
10	China Bazar Nala	Done (22 Nov.)	8
12	Joplimg Road Nala	Done (22 Nov.)	9
13	Lamartiniere Nala	Done (22 Nov.)	10
14	Jiamau Nala	Done (22 Nov.)	11
15	G. H. Canal	Done (5 Dec.)	12
16	Mahesh Ganj Nala	Done (30 Nov.)	13
17	Rooppur Khadra Nala	Done (29 Nov.)	14
18	Mohan Meakin (T. G. Hostel & Dyer Meakin)	Done (26 Nov.)	15
19	Daliganj U/S Nala	Done (26 Nov.)	16
20	Daliganj D/S Nala	Done (26 Nov.)	17
21	Arts College Nala	Done (29 Nov.)	18
22	Hanuman Setu Nala	Done (29 Nov.)	19
23	T. G. P. S. Drain Nala	Done (27 Nov.)	20
24	Kedarnath Nala	Done (27 Nov.)	21
25	Nishatganj Nala	Done (27 Nov.)	22
26	Baba Ka Purwa Nala	Done (27 Nov.)	23
27	Kukrail Nala	Done (29 Nov.)	24

LIST OF NALAS TO BE SURVEYED IN KANPUR

No.	Name of Nala	Survey Status (Date)	Ser. No.
1	Kesa Colony Nala	Done (29 Nov.)	1
2	Roadways Colony Nala	Done (29 Nov.)	2
3	Khewra Nala	Done (29 Nov.)	3
4	Jageswar Nala	Done (29 Nov.)	4
5	Jewra Nala	Done (29 Nov.)	5
6	Nawabganj Nala		6
7	Rani Ghat Nala		7
8	Sisamau Nala		8
9	Tafco Nala (Parmat)		9
10	Parmat Ghat Nala		10
12	Police Line Nala		11
13	Jail Nala		12
14	Guptar Ghat Nala		13
15	Golf Club – 1 Nala		14
16	Golf Club – 2 Nala		15
20	Wazidpur Nala		16
21	Ganda Nala		17
22	Halwa Khanda Nala		18
23	C. O. D. Nala		19

Appendix D

Appendix D Result of Amount of Solid Waste Surveyed for Each Nala

Name of Nala: Main Ghaghar Nala [44] Date of Survey: 11 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
1	150m from Karela bagh Road (L)	2.6	1.5	0.5	1.9		pl	
2	150m from Karela bagh Road (R)	2.6	1.5	0.5	1.9		pl	
3	450m from Karela bagh Road (R)	11.2	1.0	0.3	3.4		gr, pb	
4	6m from Haddi Sadam Road (L)	6.2	2.5	0.2	3.1		pb, gr, pl	
5	Under Haddi Sadam Road	3.8	3.0	0.2	2.3		pb, cl, so	
6	30m from Haddi Sadam Road	6.0	2.2	0.5	6.6		pb, cl, so	
7	80m from Haddi Sadam Road (R)	6.2	2.6	2.0		32.2	so, sl	
8	2m Ustr. from No.7 (R)	5.8	3.6	2.0		41.8	so, sl	
9	85m from Haddi Sadam Road (L)	13.0	4.0	0.7	36.4		so, sl	
10	10m Ustr. from No.9 (L)	17.0	4.0	1.5	102.0		so, sl	
11	8.5m Ustr. from No.10 (L)	8.5	3.5	0.7	20.8		so, sl	
12	Near Solah Market Road (R)	4.7	3.0	0.5	7.1		pb, bo, so	
13	Near Solah Market Road (L)	4.5	3.0	0.5	6.8		pb, bo, so	
14	Ustr. from No.12 (R)	6.3	4.3	4.3	116.5		pb, bo, so	
15	35m from Solah Market Road (L)	10.0	3.0	0.6	18.0		so, pg, sl	
16	20m from Solah Market Road (R)	12.0	2.0	0.5	12.0		so, pg, sl	
17	20m Ustr. from No.16 (R)	12.0	3.0	0.8	28.8		so, pg, sl	
18	10m Ustr. from No.17 (R)	6.0	5.0	1.0	30.0		so, pg, sl	
19	140m from Solah Market Road (R)	9.0	4.0	0.5	18.0		pa, pg, so	
20	40m Ustr. from Solah Market Road (R)	7.5	4.0	0.3	9.0		pa, pg, so	
21	Opposite Bank of No.20 (L)	3.0	4.0	1.0	12.0		pa, pg, so	
22	220m from Solah Market Road (R)	10.7	8.0	0.5	42.8		pg, bo	
23	Ustr. from No.22 (R)	20.0	2.0	0.2	8.0		pg, bo, sl	
24	Ustr. from No.23 (R)	5.7	7.0	3.0	119.7		pg, bo, sl	
25	Ustr. from No.24 (R)	7.0	4.5	0.2	6.3		pg, bo, sl	
26	Ustr. from No.25 (R)	7.6	4.0	0.2	6.1		pg, bo, sl	
27	280m from Solah Market Road (R)	9.0	5.0	0.5	22.5		pg, cl	
28	20m Ustr. from No.27 (L)	4.6	4.0	0.2	3.7		pg, cl	
29	Near Asgari Market Road/Ustr. from No.28	4.0	3.8	0.3	4.6		pg, cl	
30	Opposite Bank of No.29 (R)	4.0	2.1	0.3	2.5		pg, cl	
31	Between Asgari Market Road A & B	6.0	6.0	0.6	21.6		pl, sl	
32	Ustr. from No.31	5.0	2.0	0.2	2.0		pl, sl	
33	Ustr. from No.32	6.5	2.7	2.0	35.1		pl, sl	
34	Near Kalimander Road	100.0	1.5	0.4	60.0		cl, pg	
35	30m Ustr. from Kareli Road (L)	10.0	2.0	0.2	4.0		sl, kt	
36	30m Ustr. from Kareli Road (R)	10.0	6.0	0.5	30.0		pg, lv	
37	15m Ustr. from Kareli Road (L)	20.5	3.5	0.2	14.4		sl	
38	12m Dstr. from Kareli Road (R)	5.0	2.0	0.3	3.0		kt, pg	
39	60m Ustr. from Kareli Road (R)	4.5	3.5	0.2	3.2		pa, pg	
40	10m Ustr. from Soket Alli Road (L)	4.6	1.5	0.3	2.1		br, sl	
41	5m Ustr. from No.40 (L)	6.5	1.0	0.3	2.0		sl, gr, pa	
42	3m Ustr. from No.41 (L)	9.0	1.0	0.2	1.8		sl, cl	
43	120m Ustr. from Soket Alli Road (R)	10.0	2.5	0.3	7.5		sl, pg, tr, br	
44	300m from Yamuna River	3.0	4.0	0.5	6.0		pb	
	Total				**845.1**	**74.0**		

Name of Nala: Ghaghar Nala 1-A [4] Date of Survey: 23 November 2003 Name of Surveyor: Shishir

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
45	35m from Daraiabad to Shastri Nagar Road	60.0	3.0	0.2		36.0	pl, pb, cl	
46	Dstr. from No.45	40.0	3.0	0.1		12.0	pl, pb, cl	
47	350m from Yamuna River	10.0	2.5	0.2	5.0		pl, pb, cl	
48	Dstr. from No.47	45.0	3.0	0.1		13.5	pl, pb, cl	
	Total				**5.0**	**61.5**		

Name of Nala: Ghaghar Nala 1-A-A [5] Date of Survey: 21 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
49	along Katharagate to Meera Pur Road	3.0	4.0	0.1	1.2		pl	
50	46m Dstr. from No.49	10.0	1.0	0.5	5.0		pl	
51	134m from Yamuna River	60.0	2.5	0.3	45.0	45.0	pl, cl, so	
52	Dstr. from No.51 (R)	74.0	8.0	3.0		1776.0	pl, cl, so	
53	Dstr. from No.51 (L)	33.0	15.7	4.0	2072.4	2072.4	pl, cl, so	
	Total				**2123.6**	**3893.4**		

Name of Nala: Ghaghar Nala 1-B [11] Date of Survey: 21 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
54	300m from Yamuna River (R)	11.0	3.0	0.2		6.6	pl, pb, cl	
55	Dstr. from No.54 (R)	25.0	2.0	0.1		5.0	pl, pb, cl	
56	Dstr. form No.55	6.0	1.1	0.3	2.0		pl, pb, cl	
57	300m from Yamuna River	120.0	1.5	3.0	540.0		pl, pb, cl	
58	along No.57 (L)	20.0	2.5	0.2		10.0	pl, pb, cl	
59	Dstr. from No.58	7.5	1.7	0.1		1.3	pl, pb, cl	
60	200m from Yamuna River (R)	30.0	18.0	0.2		108.0	pb, pl, cl	
61	200m from Yamuna River (in the River)	20.0	2.8	3.0	168.0		pb, pl, cl	Dump Site, garbage is in dry state
62	Dstr. from No.61(L)	31.0	2.8	3.0	260.4		pb, pl, cl	almost soil.
63	Dstr. from No.62	40.0	5.7	2.0	456.0		pb, pl, cl	
64	100m from Yamuna River	8.0	4.0	0.1	3.2		pl, cl	
	Total				**1429.6**	**130.9**		

Name of Nala: Dariabad - Katharaghat Nala [23] Date of Survey: 18 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
65	Near D.A.V Collage Road	15.0	2.4	0.2	7.2		cl, pl, pb	garbage is present inside the drain
66	Dstr. from No.65	25.0	2.4	2.0	120.0		cl, pl, pb	garbage is present inside the drain
67	500m from Yamuna River	7.0	2.0	0.3	4.2		pb, pl cl	
68	Dstr. from No.67	9.0	1.5	2.0	27.0		pb, cl	
69	400m from Yamuna River	7.4	1.5	0.3	2.8		pb	
70	350m from Yamuna River	12.0	5.0	0.2		12.0	pb, pl ,cl	Dump Site
71	350m from Yamuna River	35.0	2.8	0.2	19.6		pb, pl, cl	Dump Site
72	300m from Ymauna River	5.0	3.4	0.1	1.7		pb, pl, cl	Dump Site
73	Dstr. from No.72 (L)	40.0	25.0	0.2		200.0	pb, pl, cl	Dump Site
74	Dstr. form No.72 (R)	9.0	5.0	3.0		135.0	pb, pl, cl	Dump Site
75	200m from Yamuna River (R)	30.0	8.0	0.2		48.0	pl, pb, cl	Dump Site
76	Dstr. from No.75 (R)	2.5	1.5	0.2		0.8	pl, pb, cl	Dump Site
77	Dstr. from No.75, in the river	90.0	2.6	0.1	23.4		pl, pb, cl	Dump Site
78	180m from Yamuna River (R)	13.0	4.0	0.2		10.4	pl, pb, cl, ty	Dump Site
79	181m from Yamuna River (L)	6.0	3.0	2.5		45.0	pl, pb, cl, ty	Dump Site
80	100m from Yanuma River	10.6	2.0	0.1	2.1		pb, pl, cl, tr, ty	
81	Near No.80	6.0	2.5	0.2	3.0		pb, pl, cl, tr, ty	
82	Dstr. from No.80 & 81 (L)	25.0	5.0	2.5		312.5	pb, pl, cl, tr, ty	
83	Dstr. from No.80 & 81, in the river	6.0	4.0	2.0	48.0		pb, pl, cl, tr, ty	
84	Dstr. from No.80 & 81 (R)	5.0	1.5	0.1		0.8	pb, pl, cl, tr, ty	
85	30m from Yamuna River (L)	20.0	8.0	3.0		480.0	pb, cl	
86	35m from Yamuna River (R)	10.0	3.0	2.0		60.0	pb, cl	
87	Near Yamuna River	35.0	10.0	2.5	875.0		pb, cl	
	Total				**1134.0**	**1304.4**		

Name of Nala: Dariabad - Peepalghat Drain [3] Date of Survey: 18 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
88	56m from Daraiabad to Mansur Road	3.0	2.0	0.2	1.2		pb, bo	
89	200m from Yamuna River	27.0	10.0	0.2		54.0	pl, pb, cl	
90	Near No.89	30.0	121.0	0.1		363.0	pl, pb, cl	
	Total				**1.2**	**417.0**		

Name of Nala: Daraiabad - Jogighat Drain [3] Date of Survey: 18 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
91	350m from Yamuna River	60.0	80.0	0.2	960.0		pl, so, bo	
92	70m from Yamuna River (L)	42.0	15.0	10.0		6300.0	pb, pl, cl, wo	
93	70m from Yamuna River (R)	40.0	16.0	10.0		6400.0	pb, pl, cl, wo	
	Total				**960.0**	**12700.0**		

Name of Nala: Chachar Nala [26] Date of Survey: 12 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
94	Near Blua Gaght Road	10.0	1.8	2.0	36.0		gr, pb	
95	Near No.94	6.0	4.0	1.0	24.0		gr	
96	Near No.95	10.0	4.0	0.6	24.0		kt	
97	Near No.96	6.0	4.0	0.5	12.0		kt	
98	Along Tilak Road	1.5	2.0	0.2	0.6		kt, br, lv	
99	Ustr. from No.98	8.5	2.0	0.3	5.1		kt, br, lv	
100	Ustr. from No.99	13.5	3.7	0.5	25.0		kt, br, lv	
101	Near Tilak Road (L)	16.0	7.0	0.5		56.0	pl, cl, so	
102	Ustr from No.101	7.0	1.7	0.4	4.8		pl, cl, so	
103	Near Balua Ghat Road (L)	4.0	2.0	0.1	0.8		pb	
104	Ustr from No.103	2.0	1.0	0.1	0.2		pb	
105	Ustr from No.104 (L)	2.0	1.0	0.1	0.2		pb	
106	Ustr from No.105 (L)	1.0	6.0	0.1	0.6		pb	
107	Ustr from No.106 (L)	4.5	1.8	0.8	6.5		pb	
108	525m from Balua Ghat Road	7.0	1.7	0.4	4.8		pl, cl, ty	
109	Near No.108	5.5	1.0	0.3	1.7		pl, cl, ty	
110	Ustr from No.109 (L)	5.3	4.0	0.3	6.4		pl, cl, ty	
111	Ustr from No.110 (L)	4.0	1.0	0.2	0.8		pl, cl, ty	
112	625m from Balua Ghat Road (L)	13.3	2.4	6.3	201.1		pb, cl, bo	
113	Ustr from No.112 (L)	25.0	7.0	1.0	175.0		pb, cl, bo	
114	Ustr from No.113 (L)	4.0	2.5	0.4		4.0	pb, cl, bo	
115	Ustr from No.114 (L)	1.0	1.0	0.2	0.2		pb, cl, bo	
116	760m from Balua Ghat Road (R)	5.4	1.5	0.2		1.6	pl, so	
117	10m Ustr from No.116 (R)	10.0	1.5	0.1	1.5		pl, so	
118	Ustr from No.117	24.0	6.0	0.1	14.4		pl, so, tr	
119	Along Tilak Road	167.0	1.0	1.0	167.0	167.0	so, pl, br	
	Total				**712.5**	**228.6**		

Name of Nala: Emargency Outfall Drain [1] Date of Survey: 17 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
120	150m from Naini Bridge	8.0	7.6	1.0	60.8		pb, so	
	Total				**60.8**	**0.0**		

Name of Nala: Drain at Gate No.9 [1] Date of Survey: 17 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
121	140m from Yamuna Bank Road	8	6	5	240.0		pl, cl	
	Total				**240.0**	**0.0**		

Name of Nala: Drain at Gate No.13 [3] Date of Survey: 15 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
122	83m from Shankar Lal Bharava Road	149	1	1	149.0		pl, cl	
123	Near No.122	35	40	0.5		700.0	pl, ex	Dump Site
124	25.7m from Yamuna Bank Road	4	5	1	20.0		pl	
	Total				**169.0**	**700.0**		

Name of Nala: Morigate Nala [9] Date of Survey: 13 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
125	20m from Kali Road (L)	19.5	3.4	0.3		16.6	cl, pg	Heavy Load of Garbage is Present
126	Dstr. from No.125 (L)	6.0	3.0	0.1		1.8	pb	at the bank of drain
127	17m from Kali Road	4.0	3.0	3.0		36.0	pb, cl, so	
128	between Kali Road and Ganga River	7.0	4.0	0.7		19.6	pb	
129	150m from Bakshi Bandh to Dara Gans Ro	10.0	4.0	0.4		16.0	pb, cl, so	
130	20m from No.129 (R)	4.0	7.0	0.1	2.8		pb, cl, so	
131	at the Mori gate	4.0	2.0	0.2	1.6		pb	
132	Left Side of Mori gate	7.0	8.0	0.3		16.8	pb	
133	60m from Mori gate	11.0	6.0	0.2		13.2	pb	
	Total				**4.4**	**120.0**		

Name of Nala: Drains of Daraganji area [15] Date of Survey: 20 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
134	24m from Ganga River	31.0	16.6	8.0		4116.8	pl, pb, cl, ty	Dump Site
135	Dstr. from No.134	29.0	10.0	3.0		870.0	pl, pb, cl, ty	Dump Site
136	Dstr. from No.135	120.0	20.0	0.8		1920.0	pl, pb, cl, ty	
137	Near Daragana Baksi Baneth Road (L)	30.0	14.0	0.2	84.0		pl, pb, cl	
138	Along Daragana Baksi Baneth Road	140.0	20.0	0.8		2240.0	pl, pb, cl	
139	Dstr. from No.137	60.0	20.0	16.0	19200.0			
140	Dstr. from No.139	23.0	2.0	0.1		4.6		
141	Near Nag Bos Uki Road	77.0	20.0	10.0		15400.0	pl, pb,cl	
142	Along Nag Bos Uki Road	30.0	4.0	0.1		12.0	pl, pb, cl	
143	Near Nagu Bosu Road (L)	10.0	1.8	0.2		3.6	pl, cl, pb	
144	Near Nagu Bosu Road (R)	6.0	2.0	0.1		1.2	pl, cl, pb	
145	Dstr. from No.144 (R)	27.0	9.0	0.2		48.6	pl, cl, pb	
146	Along Nag Bos Uki Road	120.0	13.0	0.2		312.0	pl, pb, cl	Dump Site
147	Near Nag Bos Uki Road	13.0	6.0	0.1		7.8	pl, pg, cl	Dump Site
148	Near Dara Gannh Road	20.0	10.0	0.2		40.0	pl, pg, cl	Dump Site
	Total				**19284.0**	**24976.6**		

Name of Nala: Alengaj Nala [20] Date of Survey: 20 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
149	1km from Ganga River	6.0	0.1	0.1		0.1	pl, pa	Dump Site
150	Near Alen Ganj Raleny Road (L)	20.0	1.5	0.2		6.0	pl, pa	Dump Site
151	1km from Ganga River	1.0	0.5	0.1	0.1		pb, kt	
152	Dstr. from No.151	1.0	0.5	0.1	0.1		pb, kt	
153	Left Side of No.152	2.5	1.5	0.1		0.4	pb, kt	
154	1km from Ganga River	4.0	3.0	0.1		1.2	pl, pb, cl	Dump Site
155	Near Alan Gang Road	45.0	35.0	6.0		9450.0	pl, pb, cl	Dump Site
156	Dstr. from No.155	60.0	8.0	9.0		4320.0	pl, pb, cl	Dump Site
157	Near Rom Priya Road	8.0	1.0	0.1		0.8	pa, pl, pb	Dump Site
158	800m from Ganga River	14.0	2.1	0.2	5.9		pa, pl, pb	Dump Site
159	Dstr. from No.157	15.3	2.1	0.2		6.4	pa, pl, pb	Dump Site
160	Dstr. from No.158	10.0	1.0	0.1	1.0		pa, pl, pb	Dump Site
161	Dstr. from No.159	8.0	7.5	0.1		6.0	pa, pl, pb	Dump Site
162	Dstr. from No.160	15.0	1.3	0.2	3.9		pa, pl, pb	Dump Site
163	800m from Ganga River	26.0	1.5	0.1	3.9		pl, pb, cl	Dump Site
164	Dstr. from No.163	70.0	3.0	0.2		42.0	pl, pb, cl	Dump Site
165	Dstr. from No.164	8.0	3.5	0.2		5.6	pl, pb, cl	Dump Site
166	Opposite Side of No.165	16.3	4.0	2.5		163.0	pl, pb, cl	Dump Site
167	Dstr. from No.166	7.0	6.0	2.0		84.0	pl, pb, cl	Dump Site
168	500m from Ganga River	5.0	11.0	0.3	16.5		pb, cl	
	Total				**31.3**	**14085.5**		

Name of Nala: Salori Nala [7] Date of Survey: 10 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
169	860m from Ganga River (L)	31.0	19.0	2.5		1472.5	pb, cl	
170	Ustr. from No.169 (L)	31.0	19.0	0.3		176.7	pb, cl	
171	1km from Ganga River	6.0	7.1	0.2		8.5	pl, cl	
172	Opposite Side of No.171	5.0	5.0	0.2		5.0	pl, cl	
173	Ustr. from No.171	8.0	6.0	0.4		19.2	pl, cl	
174	Ustr. from No.173	5.0	12.0	0.1	6.0		pl, cl	
175	1200m from Ganga River	4.5	5.5	0.2		5.0	pl, gr	
	Total				**6.0**	**1686.9**		

Name of Nala: Jondhwal Nala [1] Date of Survey: 10 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
176	1km from Ganag River	2.7	1.2	6.5	21.1		pl, lv, cl	
	Total				**21.1**	**0.0**		

Name of Nala: Jondhwal Rasulabad Nala [1] Date of Survey: 10 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
177	30m from Ganga River	17.0	16.0	0.5		136.0	pl, cl	
	Total				**0.0**	**136.0**		

Name of Nala: Rajapur Nala [17] Date of Survey: 13 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
178	2.8km from ganga River (R)	8.0	7.0	2.5		140.0	cl, pb	Dump Site
179	Opposite Side of No.178 (L)	4.0	6.0	2.5		60.0	cl, pb	Dump Site
180	Dstr. from No.178 & No.179 in the River	2.0	2.0	0.1	0.4		cl, pb	Dump Site
181	Ustr. from No.180	18.0	4.0	0.1	3.6		cl, pb	Dump Site
182	Near No.179 & Bridge	8.0	3.0	2.0		48.0	cl, pb	Dump Site
183	2.4km from Ganga River	7.0	6.0	1.0		42.0	pb, lv	Dump Site, Pigs
184	2.2km from Ganga River	21.0	18.0	0.2		75.6	pb, br	
185	1000m from Ganga River	10.0	4.0	0.2		8.0	pb, so	
186	Near No.185, in the River	2.5	2.0	1.5	7.5		pb, so	
187	Dstr. from No.186 (R)	12.0	9.0	0.3		32.4	pb, so	
188	opposite side of No.187 (L)	10.0	6.0	0.4		24.0	pb, so	
189	300m from Muir Road (R)	10.9	6.7	0.3		21.9	pb, lv	
190	320m from Muir Road	8.0	6.6	0.1	5.3		pb, bo, cl	A buildings foundation is
191	Dstr. from No.190	11.0	3.0	0.5	16.5		pb, bo, cl	Constructed over Drain
192	Left Side of No.191 (L)	8.0	6.0	0.2		9.6	pb, bo, cl	
193	400m from Muir River (R)	4.0	2.0	0.3	2.4		pb	Long Drain
194	Dstr. from No.193 (R)	3.0	4.0	0.5	6.0		pb	Long Drain
	Total				**41.7**	**461.5**		

Name of Nala: T.V. Tower Nala [11] Date of Survey: 14 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
195	130m from Muir Road	4.0	3.0	3.0	36.0		pl, ex	
196	250m from Muir Road	29.0	11.0	0.7	223.3		pb, tr, lv	
197	2.6km from Ganga River, Near Dumand Ro	122.0	1.2	0.7	102.5		pb, kt	
198	Near Thorn Hill Road	200.0	2.0	0.3	120.0		br, kt, pl	Dry Drain
199	100m from Muir Road	40.0	24.0	0.6	576.0		pb	
200	Dstr. from No.199	10.0	5.0	0.3	15.0		pb	
201	200m from Muir Road, 1.7km from Ganga	6.0	3.0	0.1	1.8		pb	
202	300m from Muir Road, 1.5km from Ganga	90.0	5.0	0.2	90.0		pb, ty, cl	
203	500m from Muir Road, 1km from Ganga	60.0	9.0	0.3	162.0		pb, cl	
204	Dstr. from No.203	8.0	2.0	0.2	3.2		pb, cl	
205	Dstr. from No.204	6.0	3.0	0.1	1.8		pb, cl	
	Total				**1331.6**	**0.0**		

Name of Nala: Sadar Bazar Nala [21] Date of Survey: 14 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
206	1km from Ganga River (R)	11.0	7.0	2.0		154.0	pb	Dump Site
207	Ustr. from No.206 (R)	6.0	3.0	0.2		3.6	pb	Dump Site
208	90m from No.206 (R)	50.0	10.0	0.3		150.0	pb	Dump Site
209	170m from Muir Road, 1km from Ganga	13.8	2.1	0.2	5.8		bo, pb, lv	
210	Ustr. from No.209 (L)	7.0	2.5	1.0		17.5	bo, pb, lv	
211	220m from Muir Road, 900m from Ganga	25.0	2.3	0.2	11.5		bo, pb	
212	10m from Ponopa Road (L)	50.0	10.0	0.3		150.0	pb, pl, cl	
213	10m from Ponopa Road, in the river	10.0	5.0	0.2	10.0		pb, pl, cl	
214	10m from Ponopa Road (R)	6.0	2.5	0.3		4.5	pb, pl, cl	
215	260m from Muir Road, Near Ponopa Road	3.0	2.1	0.2	1.3		bo, pb, cl	
216	12m Dstr. from No.215	2.0	2.0	0.1	0.4		bo, pb, cl	
217	6.7m Dstr. from No.216 (R)	15.0	2.0	0.6		18.0	bo, pb, cl	
218	270m from Ponopa Road, 700m from Gang	30.0	5.0	0.2	30.0		cl, pb, pl, ty	
219	270m from Ponopa Road (R)	10.0	7.0	1.0		70.0	cl, pb, pl, ty	
220	290m from Ponopa Road (R)	75.0	10.0	0.3		225.0	pb, pl, ty lv, cl	
221	opposite side of No.220 (L)	8.0	4.0	0.4		12.8	pb, pl, ty lv, cl	
222	Ustr. from No.221	19.0	8.0	0.5		76.0	pb, pl, ty lv, cl	
223	300m from Ponopa Road (R)	15.0	6.0	0.5		45.0	pb, pl, cl	
224	400m from Ponopa Road	25.0	15.0	0.1		37.5	pb, pl, cl, ty	
225	900m from Ganga River (R)	10.0	4.0	0.2		8.0	pb, pl, cl, ty	
226	opposite site of No.225	8.0	3.0	0.2		4.8	pb, pl, cl, ty	
	Total				**59.0**	**976.7**		

Name of Nala: Unchwaghari Drain - I [2] Date of Survey: 21 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
227	600m from Stanely Road	200.0	1.0	0.3	60.0		pl, br	
228	600m from Stanely Road	35.0	2.8	0.1	9.8		pl, br, so	
	Total				**69.8**	**0.0**		

Name of Nala: Unchwaghari Drain - II [2] Date of Survey: 21 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
229	2.6km from Ganga River, Near Stanely Roa	7.0	2.0	0.1	1.4			
230	2.7km from Ganga River, Near Stanely Roa	6.0	1.5	0.2		1.8		
	Total				**1.4**	**1.8**		

Name of Nala: Beligaon Drain [3] Date of Survey: 10 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
231	300m from alld - paiga bud road	10.0	2.0	0.5	10.0		pl, kt	
232	Dstr. from No.231	4.5	2.0	0.2	1.8		kt	
233	2.7km from Ganga River	6.4	8.0	1.4		71.7	pg	dry garbage
	Total				**11.8**	**71.7**		

Name of Nala: Mumfordganj Drain [21] Date of Survey: 15 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
234	Near Katara Sabji Mandi Rod	30.0	6.0	0.1		18.0	pl, lv	Dump Site
235	3.3km from Ganga River	7.4	1.5	0.3	3.3		pb, br	old garbage
236	100m from No.235	4.5	8.6	0.4		15.5	pb, br	
237	opposite side of No.236	30.0	0.8	0.1		2.4	pb, br	
238	100m from No.237	8.6	7.0	0.4	24.1		pb, br	old garbage
239	200m from Stanely Road (L)	120.0	9.0	0.2		216.0	pl, br	
240	5.8m from Laj Pat Rai Road	7.5	6.5	1.4		68.3	pl, br	
241	2.8km from Ganga River	3.0	2.5	0.1	0.8		pl	
242	40m from No.241 (R)	17.7	12.0	3.0		637.2	pl	
243	opposite side of No.242 (L)	24.5	11.0	0.5		134.8	pl	
244	40m Dstr. from No.241	60.0	2.0	1.0	120.0		pl	
245	580m from Allahabad Faizabad Road (R)	3.0	3.0	0.5		4.5	pl, so, br	
246	35m from No.245 (R)	2.0	2.0	0.5		2.0	pl, so, br	
247	Opposite Side of No.246 (L)	4.0	2.0	0.6	4.8		pl, so, br	
248	1km from Allahabad Faizabad Road (R)	16.0	4.0	0.8		51.2	pb, lv, ex	
249	Dstr. from No.248 (R)	6.4	4.0	0.1		2.6	pb, lv, ex	
250	Dstr. from No.248, in the river	7.0	5.7	0.1	4.0		pb, lv, ex	
251	1km from Allahabad Faizabad Road (R)	12.0	11.7	0.5		70.2	pl, br	
252	30m Dstr. from No.251 (R)	10.0	7.0	0.9		63.0	pl, br	
253	30m Dstr. from No.252	2.5	1.5	0.3	1.1		pl, br	
254	1.1km from Allahabad Faizabad Road (R)	12.4	7.0	0.1	8.7		pl	
	Total				**166.8**	**1285.5**		

Name of Nala: Muirabad (Ganesh Nagar) Nala [6 Date of Survey: 22 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
255	Near Stanely Road	9.8	3.7	0.3	10.9		pb, tr, br	
256	Left Side of No.255	5.0	5.3	0.2		5.3	pb, tr, br	
257	Dstr from No.256	9.2	8.0	0.1		7.4	pl, bo	
258	Dstr from No.256	35.0	3.0	0.2	21.0			Badly Packed with Garbage
259	300m from Stanely Road	10.9	11.7	0.3		38.3	pb, pl, cl	
260	Near No.259	80.0	3.6	0.2	57.6		br, so, bo	
	Total				**89.5**	**50.9**		

Name of Nala: Nayapurwa Drain [3] Date of Survey: 22 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
261	Near Nayapurwa Mahala Road	3.0	1.0	0.1	0.3		pl, pa	
262	Dstr from No.261	11.0	75.0	0.1	82.5		pl, pa	
263	Near Raja pur Nala	10.0	6.0	0.1		6.0	pl, gr, cl, pb	
	Total				**82.8**	**6.0**		

Name of Nala: Mawaiya Nala [4] Date of Survey: 13 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
264	200m Dstr. from Triveni Naq Road	7.0	7.0	0.2	9.8		fp, pl	
265	Dstr. from No.264	6.0	11.0	0.3	19.8		fp	
266	60m from P.A.C. Comp	9.0	7.0	0.1	6.3		pl, cl	
267	1km from P.A.C. Comp	5.0	6.0	0.2	6.0		pl	
	Total				**41.9**	**0.0**		

Name of Nala: Basna Drain [2] Date of Survey: 10 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
268	Near Alld Faizabad Road	105.0	30.0	8.0	25200.0		pl	hospital waste
269	Near Alld Faizabad Road	100.0	21.0	8.0	16800.0		pl	hospital waste
	Total				**42000.0**	**0.0**		

Name of Nala: Lotey Haran Nala [7] Date of Survey: 19 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
270	Near Avas Vikesh Colleny Yogena-3 Road	19.6	1.3	0.1	2.5		cl, pl	Dump Site
271	Near Avas Vikesh Colleny Yogena-4 Road	2.5	1.0	0.1		0.3	cl, pl	Dump Site
272	165m from Awavs Vikesh Mars	5.0	2.0	0.5		5.0	pb	
273	800m from Ganga River	4.0	5.0	0.3	6.0			garbage brough by drain water itself
274	800m from Ganga River	3.0	1.0	0.1	0.3		pl, cl	
275	800m from Ganga River	7.0	3.4	0.4	9.5		cl, pl	brought by drain water
276	Near Ganga River	9.0	3.0	1.0	27.0		pl, bo	
	Total				**45.4**	**5.3**		

Name of Nala: Shastri Bridge Nala [4] Date of Survey: 19 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
277	Near A.V.C Colony Road	12.7	8.0	0.1		10.2	pl, cl, pb	
278	300m from Ganga River (L)	1.5	0.5	0.1	0.1		Pb, so	
279	Near Shastri Bridge (L)	25.0	8.9	0.2		44.5	pl, pb, cl	Dump Site
280	Near No.279	9.0	3.6	1.3		42.1	pl, pb, cl	Dump Site
	Total				**0.1**	**96.8**		

Name of Nala: Kodara Nala [10] Date of Survey: 16 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
281	11m from Kunpur Road (L)	12.0	7.0	0.1		8.4	cl, pl, pb	Dump Site
282	400m from No.281(L)	12.0	1.0	0.3	3.6		cl, pl, pb	Dump Site
283	100m from No.281(R)	16.0	8.0	0.2		25.6	cl, pl, pb	Dump Site
284	100m from No.283	49.0	1.1	0.3	16.2		pl, pb	
285	Dstr. from No.284 (R)	7.6	1.0	0.2		1.5	pl, pb	
286	3.2km from Ganga River (R)	120.0	2.0	0.3	72.0		pl	
287	3km from Ganga River	8.0	5.0	0.2	8.0		pl	
288	40m Dstr. from No.287	2.0	2.5	2.0	10.0		pl	
289	100m Dstr. from No.288	6.0	2.8	6.0	100.8		pl	
290	435 Dstr. from No.289	19.0	2.0	0.2	7.6		pl, tr, cl	
	Total				**218.2**	**35.5**		

Name of Nala: Nehru Park Nala [3] Date of Survey: 22 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
291	Near Nefru Park Road (L)	200.0	35.0	2.0		14000.0	pl	Dump Site, Forest Area
292	Near Nefru Park Road, in the river	3.0	1.5	0.7	3.2		so	Dump Site, Forest Area
293	Near Nefru Park Road (R)	100.0	30.0	1.0		3000.0	pl	Dump Site, Forest Area
	Total				**3.2**	**17000.0**		

Name of Nala: Ponghat Nala [8] Date of Survey: 16 November 2003 Name of Surveyor: Shishir City: Allahabad

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
294	3.5km from Ganga River	90.0	6.0	0.3	162.0		gr, pl	
295	3.5km from Ganga River (L)	4.0	2.0	0.1		0.8	pl, cl	
296	Near G.T. Road Bridge (R)	12.6	11.5	5.0		724.5	pl, cl	Dump Site
297	110m from G.T. Road Bridge (L)	8.0	2.0	0.1		1.6	pl, cl	Dump Site
298	80m from G.T. Road Bridge (R)	21.4	7.0	3.0		449.4	pl, cl	Dump Site
299	300m from G.T. Road Bridge	3.0	1.5	0.1	0.5		pl, cl	
300	50m Dstr. from No.299	38.0	2.0	0.2	15.2		pl, cl, so	
301	570m from G.T. Road Bridge (R)	3.0	1.5	0.1		0.5	pl, tr, lv	
	Total				**177.7**	**1176.8**		

Appendix E

Appendix E Result of Amount of Solid Waste Surveyed for Each Nala

City: Varanasi

Name of Nala: Assi [51] Date of Survey: 17 November 2003 Name of Surveyor: Mukesh Singh

No.	Location	Dimensions of Solid Waste *1			Volume of Waste *2		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
1	150m from Ganga (R)	4.0	3.0	1.0		12.0	pb, cl	
2	ditto, 200m from Nagwa Rd. (R)	20.0	6.0	1.5		180.0	pb, cl, kt	
3	120m from Nagwa Rd. (R)	19.0	1.0	0.5		9.5	pb, cl, tr, kt	Side of Raviday Park
4	ditto	15.5	6.0	1.2		111.6	pb, cl, tr, kt	Weight: 3.5 kg
5	ditto (L)	30.0	4.0	0.5		60.0	pb, cl, tr, kt	
6	Downstream of Nagwa Rd. (R)	6.0	9.0	1.5		81.0	pb, cl, pa, gr	old garbage
7	ditto (L)	4.0	2.0	0.8		6.4	kt, pb, cl, pa	new garbage
8	Upstream of Nagwa Rd. (L)	15.0	9.0	2.0		270.0	pg, cl, lv, bo	Dumsite
9	Upstr. of Nagwa Rd. (R)	10.0	5.0	0.8		40.0	pg, cl, lv, cl	
10	Downstr. of Assi Lanka Rd. (R)	12.0	3.0	1.0		36.0	pg, pl, cl, pa	
11	Downstr. of Assi Lanka Rd. (L)	4.0	2.0	0.5	4.0		kt, ty, br, sa	
12	ditto	3.0	2.0	0.5	3.0		sl, br, cl, pb	
13	30m Dstr. of Rauindrapuri-Lanka Rd.	6.0	2.0	0.4	4.8		pb, cl, sl, pa	
14	Dstr. of Durgakund-Lanka Rd. (R)	18.0	13.5	4.0		972.0	pb, pa, kt, cl	Dumsite
15	Ustr. of Durgakund-Lanka Rd.	9.5	5.0	0.5	23.8		bo, pb, cl	
16	ditto (R)	3.0	1.5	0.4	1.8		bo, pb, sl	
17	ditto (R)	6.0	2.5	0.2		3.0	pa, as, so	
18	ditto	1.5	0.6	0.3	0.3		bo, cl	
19	300m from Sankatmochan Rd.	2.5	1.0	0.3	0.8		tr, bo, sl	
20	ditto (L)	3.0	2.0	0.5		3.0	pb, cl	
21	ditto (L)	6.0	2.0	0.8		9.6	ex	
22	Saket Nagar Colony Culvert (R)	3.6	2.0	0.5	3.6		pb	
23	ditto (L), 400m from Sanetmochan Rd.	8.8	2.5	0.3	6.6		bo, pb, pa	
24	Near Sayar Mata Temple	16.0	1.5	0.5	12.0		so, pg, cl, gr, sl	3 drain pipes
25	New Saket Nagar Colony (L)	13.0	6.0	0.6		46.8	pg, bo, lv	
26	ditto	10.0	2.0	0.2	4.0		wo, bo, sl, tr	
27	ditto (L)	2.0	1.0	0.3	0.6		pb, bo, cl, sl	
28	ditto (L)	3.0	2.0	0.3	1.8		pb, bo, cl, sl	Near District Dev. Auth. Office
29	100m from District Dev. Auth. Office	1.5	1.0	0.5	0.8		bo, pg, gl, gr	
30	Sukulpura Dashmi (L)	0.9	1.0	0.2	0.2		pb, bo	
31	ditto, 20m Dstr. from No. 30 (L)	2.0	0.8	0.2	0.3		pb, sl, ex	
32	ditto (R)	3.0	0.9	0.3	0.8		pb, sl	
33	ditto, 5m Dstr. from No. 32 (R)	6.0	2.5	0.5	7.5		pg, pb, cl, sl, gr	behind a cattle house
34	20m Dstr. from No. 33 (R)	2.0	1.0	0.4	0.8		pb, gr, sl	
35	30m Dstr. from No. 34 (L)	5.0	2.0	0.5	5.0		pb, sl	
36	50m Dstr. from BHU DLW Rd. (R)	10.0	1.5	0.3		4.5	sl, pb, gr	Near Community Center
37	10m Dstr. from No. 36 (R)	14.0	2.0	0.3		8.4	pb, tr, lv, pa	
38	Just Dstr. of Khojwan Rd. (L)	14.5	2.8	0.4	16.2		pb, pa, so	
39	30m Dstr. from No. 38 (L)	4.0	1.0	0.5	2.0		sl, cl, pb, tr	
40	Just Ustr. of Kaushlesh Nagar Rd.	1.0	0.5	0.2		0.1	cl, pb, tr	Near Kaushlesh Nagar Park
41	Just Dstr. of DLW BHU Rd.	2.0	3.0	0.5	3.0		tr, pg, pa, kt	
42	ditto (L)	27.0	7.0	1.5		283.5	pb, so, gr, lv	Dumsite
43	20m Dstr. from No. 41 (R)	4.0	2.5	0.6	6.0		bo, cl, sl	
44	Dstr. of Mahila Polytechnic Rd. (L)	12.0	6.0	1.0		72.0	pb, cl, pg, gr	Dumsite
45	ditto (L)	23.0	2.0	0.6	27.6		pb, pg, sa, lv, so, kt	
46	ditto (R)	2.0	1.0	0.5	1.0		sl, pb, pg	
47	Ustr. of Mahila Polytechnic Rd. (L)	1.5	1.0	0.2	0.3		tr, lv, pb, sl	
48	ditto (L)	4.0	3.0	0.4	4.8		pb, pg, cl, ex, so, sl	
49	Saundarpur (L)	1.5	1.5	0.3	0.7		pb, lv, sl	
50	ditto	3.0	2.0	0.6	3.6		br, sl, pg	
51	ditto (R)	5.0	2.5	0.5	6.3		sl, gr, pg, pb	
	Total				**153.8**	**2209.4**		

City: Varanasi

Name of Nala: Phulwaria [15] Date of Survey: 20 November 2003 Name of Surveyor: Mukesh Singh

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
52	75m from Varuna (R)	3.0	1.5	0.2	0.9		so, sl	
53	100m from Imilia Ghat Road (R)	4.0	3.0	0.4	4.8		sl, pb, dp	
54	75m from Imilia Ghat Road (R)	17.0	5.0	0.3	25.5		pl, gl, lv, gr, sl, kt	
55	150m from Imilia Ghat Road	2.0	1.0	0.3	0.6		sl, dp, pl	
56	15m Dpst. from Road, Near Soakha Trainn	5.0	2.0	0.3	3.0		sl, lv	39 Soakha Trainning Centre
57	15m Ustr. From Road	3.0	2.5	0.3	2.3		sl, pl, lv	
58	12m from Railway Line (L)	3.5	2.0	0.4	2.8		sl, fp, cl, pl	
59	5m Ustr. from No.59 (R)	7.5	0.8	0.2	1.2		sl, pl, gr	
60	2m Ustr. from No.60 (L)	4.0	2.5	0.8		8.0	so, lv, kt	
61	8m Dstr. from Lahatar Baulia Road	40.0	0.6	0.2	4.8		pl, sl	
62	8m Ustr. from Lahatar Baulia Road	5.0	0.6	0.2		0.6	pl, br, cl, lv	
63	Upst. of Katwa Road	3.0	1.5	0.2	0.9		bo, pl, sl	
64	3m Upst. form No.64	17.0	2.5	0.3	12.8		gr, pa, kt, pl,	
65	50m Upst. from No.65	10.0	0.5	0.3		1.5	so, pl, gr	
66	-	7.5	1.5	0.2	2.3		pl, pa, cl	
	Total				**61.8**	**10.1**		

Name of Nala: Sadar Bazar Nala [16] Date of Survey: 19 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
67	Near Rifle Club	16.0	2.0	0.3	9.6		pl, sl, bo	
68	120m from Varuna River, Near Rifle Club	90.0	3.5	0.4	126.0		sl, bo, pl	
69	Dstr. of I.S. Residence	3.0	1.0	0.3	0.9		sl, lv, pl	Residence I.S. Police
70	200m from Varuna River (R)	20.0	8.0	0.6		96.0	so, sl, dp, pl	
71	200m from Varuna River (L)	12.0	2.0	0.2		4.8	lv, so, pb, cl, kt	
72	Ustr. from No.72 (R)	2.0	0.8	0.3	0.5		gr, cl, bo, pl	
73	200m from Varuna River	1.0	1.0	0.3	0.3		br, cl, pl	
74	8m Ustr. from No.74 (R)	4.0	1.5	0.3	1.8		gr, br, pl	
75	6m from No.74	6.0	1.0	0.2		1.2	pl	
76	250m from Varuna River (L)	5.0	1.5	0.3		2.3	so, pl, lv, bo	
77	12m Dstr. from No.77	4.0	1.0	0.3	1.2		pl, kt	
78	270m from Varuna River (R)	6.0	1.5	0.3		2.7	pl, ty , cl, gr, kt	
79	1.5m Dstr. from No.79 (L)	2.0	1.0	0.2	0.4		bo, pl, rs, br	
80	Along collectgorare Road bridge	12.0	1.0	0.2	2.4		br, pl, gl, bo, gr	In fron of Hotel de Paris
81	Near India Air Lines Office	0.8	0.6	0.2	0.1		pl, pg, kt	
82	Near India Air Lines Office	3.5	0.4	0.2	0.3		lv, pl, bo, gr	
	Total				**143.5**	**107.0**		

Name of Nala: Drain of Hotels [2] Date of Survey: 19 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
83	50m from Varuna River (L)	18.0	2.5	0.3	13.5		dp, so, lv	
84	6m from No.83	6.0	5.0	0.4		12.0	sl, pl	
	Total				**13.5**	**12.0**		

Name of Nala: Raja Bazar Nala [12] Date of Survey: 19 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
85	50m from Varuna River (R)	14.0	2.5	0.3	10.5		bo, sl, pl	
86	Dstr. from No.85	30.0	3.0	0.2	18.0		sl, pl, bo	
87	60m from Varuna River	3.0	1.5	0.2	0.9		bo, pl, wo, gr, cl	
88	5m Upst. from No.87	10.0	5.0	6.4	320.0		bo, dp, sl	
89	75m from Varuna River (L)	8.0	1.0	0.5	4.0		so, gr, br	
90	4m Ustr. from No.89	5.0	1.0	0.4	2.0		br, so, pl, pa	
91	8 m from Varuna River	15.0	1.5	0.4	9.0		cl, sl, pa, br	
92	8m Dstr. form No.91	4.0	2.5	0.3		3.0	pl, pg, cl, kt, gr	
93	2.5m from No.2.5	9.0	1.0	0.3		2.7	cl, pl, pa, ty, sl	
94	25m from No.25	25.0	0.8	0.3		6.0	pl, pa, bo	
95	100m from Varuna River	1.0	0.8	0.2	0.2		br, pl,	
96	4m Dstr. from No.95	0.8	0.5	0.3	0.1		pl, gr, so, br	
	Total				**364.7**	**11.7**		

Name of Nala: Teliabagh Nala [28] Date of Survey: 21 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
97	100m from Varuna River	11.0	8.2	0.3		27.1	so, pl, sl	
98	6m Dstr. from No.97	4.5	1.0	0.3	1.4		gr, bo, pl, so	
99	Near Mugalsarai Varanasi Road Bridge	2.5	1.0	0.3	0.8		dp, cl, pl, gr	Chaukaghat Road Culvert
100	Near Mugalsarai Varanasi Road Bridge (R	7.0	2.0	0.3	4.2		sl, cl, dp	
101	Near Mugalsarai Varanasi Road Bridge (L	4.0	1.5	0.4	2.4		dp, ty, cl	
102	Ustr. from No.100 and No.101	1.5	1.0	0.2	0.3		gr, cl, pl	
103	40m from Varanasi Road Bridge (R)	7.8	5.0	0.3	11.7		so, br, cl, rs, pl	
104	10m Ustr. from No.103 (R)	22.0	5.0	0.3	33.0		so, sl, rs, cl, gr	
105	between No.103 and No.104	2.5	0.8	0.2	0.4		pl, rs, gr, dp, fp	
106	20m from Varanasi Mugalsarai Road (L)	6.7	1.0	0.3		2.0	rs, pl, gr, sl	
107	25m from Varanasi Mugalsarai Road (R)	5.5	1.5	0.4	3.3		so, gr, pl, cl	
108	3m Upst. from No.107	1.5	1.0	0.2	0.3		pg, gr, sl	
109	20m from Varanasi Mugalsarai Road	5.0	2.0	0.3	3.0		pl, rs, kt, gr	
110	3m Ustr. from No.109	6.5	1.5	0.5	4.9		so, dp	
111	Right of No.110	2.5	1.5	0.3	1.1		gr, rs, pl, sl	Sanskait University Campus
112	25m from Varanasi Mugalsarai Road (R)	6.0	2.5	0.3	4.5		rs, sl, br, pl	Sanskait University Campus
113	25m from Varanasi Mugalsarai Road (L)	5.5	1.5	0.3	2.5		pl, rs	Sanskait University Campus
114	5m Ustr. from No.113	4.0	3.0	0.4		4.8	so, cl, rs	Sanskait University Campus
115	Near Teliabagh Road (R)	20.0	3.0	0.5		30.0	dp, sl, so	
116	Near No.115, in the river	2.0	1.0	0.2	0.4		gr, pl, so	
117	Ustr. from No.116	2.0	2.0	0.2	0.8		wo, gr, pl	
118	Near Teliabagh Road (L)	2.5	3.0	1.5		11.3	pl, cl, kt,	
119	Near Teliabagh Road Bridge (R)	7.0	2.5	0.4	7.0		so, bo, pl	
120	Near Teliabagh Road Bridge (L)	6.0	1.5	0.2		1.8	pl, kt, gr, cl	
121	2m Ustr. from No.119	3.0	0.8	2.0	4.8		cl, pl, ty	
122	25m from Teliabagh - Lahurabir Road	4.0	1.5	0.3	1.8		rs, kt, pl	
123	50m from Teliabagh - Lahurabir Road	2.0	1.5	0.3	0.9		rs, kt, pl, bo	
124	25m Dstr. from No.123	8.0	1.2	0.2	1.9		rs, as, kt, pl	
	Total				**91.3**	**76.9**		

Name of Nala: Nala near Nakhi Ghat [17] Date of Survey: 25 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
125	Near Varuna River (Bridge under Construc	6.0	2.5	0.4		6.0	so, sl, pl, pa	
126	75m from Varuna River (L)	4.0	1.0	0.3	1.2		sl, pl, rs	
127	75m from Varuna River (R)	35.0	4.0	0.4	56.0		sl, co, pl, bo	
128	100m from Varuna River (R)	26.0	3.5	0.4	36.4		sl, pl, so, bo	
129	100m from Varuna River (L)	10.0	4.5	0.4	18.0		sl, so, cl	
130	150m from Varuna River (R)	40.0	15.0	0.6		360.0	sl, br, so, dp	
131	150m from Varuna River (L)	30.0	7.0	0.5		105.0	so, dp, sl, bo, pl	
132	150m from Varuna River (L)	4.5	4.0	0.4		7.2	so, sl, pl	
133	150m from Varuna River (R)	6.0	2.0	0.3		3.6	sl	
134	Ustr. from No.132 & No.133 (L)	8.5	1.5	0.3	3.8		sl, ty, pl	
135	20m Ustr. from No.133	3.0	1.0	0.4	1.2		cl, pl	
136	150m from Rilway Line	2.0	1.5	0.4	1.2		pl, cl, sl, br	
137	6m Dstr. from No.136	2.5	0.8	0.3	0.6		cl, pl, br	
138	8m Dstr. from No.137	2.5	1.0	0.4	1.0		cl, pl, sl	
139	500m from Varuna River	1.5	0.6	0.3	0.3		pl, pa, cl	
140	15m Ustr. from No.139	2.0	1.0	0.4	0.8		tr, cl, pl, gr	
141	20m Ustr. from No.140	2.5	1.0	0.3	0.8		pa, pl, sl	
	Total				**121.2**	**481.8**		

Name of Nala: Central Jail Nala [30] Date of Survey: 18 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
142	30m from Varuna River	41.0	4.0	0.2	32.8		bo, pg, fp, rs	Garbage floating Plants Mixed
143	100m from Varuna River	1.5	0.4	0.3	0.2		pg, pl, gr	
144	120m from Varuna River	0.6	1.0	0.2	0.1		rs, gr, fp	
145	150m from Varuna River (L)	2.0	0.6	0.2		0.2	pl	
146	2.8m Ustr. from No.145 (L)	1.2	0.4	0.2		0.1	pl	
147	11.8m Ustr. from No.146 (L)	1.5	1.0	0.2		0.3	pl	
148	200m from Varuna River (R)	2.4	1.0	0.3		0.7	gr, pl, wo	
149	200m from Varuna River (L)	14.7	0.4	0.3		1.8	pl, so	One Site is Swamp
150	250m from Varuna River (L)	8.3	0.6	0.3		1.5	gr, pl	
151	6.4m Ustr. from No.149	10.2	0.6	0.3		1.8	pl, so, gr	
152	Near Central Jail Road	14.1	9.6	0.3		40.6	pl, kt	
153	Near Central Jail Road	13.0	10.0	0.3		39.0	pg, pl, so	
154	Near Central Jail Road Bridge	24.0	2.5	0.2	12.0		fp	
155	5m Ustr. from No.155	8.0	2.5	0.2	4.0		fp, bo, pl	
156	2m Ustr. from No.156	30.0	2.5	0.3	22.5		cl, pl	
157	100m from Central Jail Road	30.0	2.5	0.2	15.0		bo, pl	
158	150m from Central Jail Road	25.4	2.5	0.4	25.4		fp, pl, cl	
159	175m from Central Jail Road	4.5	2.5	0.2	2.3		pl, fp, cl	
160	230m from Central Jail Road	2.8	2.5	0.2	1.4		dp, pl	
161	1.9m Dstr. from No.161	14.6	2.5	0.3	11.0		bo, gr, fp	
162	Dstr. from No.162 (R)	7.5	3.0	0.5		11.3	bo, pl, so	
163	Dstr. from No.163 (R)	4.0	2.0	0.3		2.4	pl, pg	
164	300m from Central Jail Road	6.1	2.0	0.2		2.4	pl, fp	
165	300m from Central Jail Road	2.0	0.3	0.2	0.1		pl, sl	
166	5m Ustr. from No.166	6.5	2.5	0.4	6.5		pl, cl, tr, br	
167	350m from Central Jail Road	13.0	2.0	0.2	5.2		lv, br, sl	
168	450m from Central Jail Road	12.0	1.0	0.2	2.4		pl, cl, sl	
169	Near Village Road (Sikraul) Bridge (R)	2.0	1.0	0.3	0.6		pl, pa, rs, kt	
170	Near Village Road (Sikraul) Bridge (R)	7.5	1.0	0.4	3.0		pl, lv	
171	40m from Sikraul Village Road	1.5	1.0	0.3	0.5		pl, cl, gr, sl	
	Total				**144.9**	**102.1**		

Name of Nala: Chamrautia Nala [5] Date of Survey: 18 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
172	20m from Varuna River	50.0	2.5	0.3	37.5		so, bo	
173	Ustr. from No.173	21.8	2.0	0.4	17.4		sl, bo, pl	
174	Ustr. from No.174	20.0	2.0	0.3	12.0			
175	60m from Varuna River	30.0	1.5	0.3	13.5		wo, pl, gr, cl, sl	
176	60m from Varuna River (R)	14.0	4.2	1.2		70.6	so, pl	
	Total				**80.4**	**70.6**		

Name of Nala: Nala of Khajurl Colony [6] Date of Survey: 18 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
177	Near Varuna River	13.0	2.5	0.2	6.5		bo, pl, rs	
178	30m from Varuna River	3.5	2.5	0.3	2.6		bo, cl, pl	
179	8m Ustr. from No.179	4.0	2.5	0.4	4.0		cl, pl, sl	
180	75m from Varuna River	10.0	1.0	0.4	4.0		pl, fp, cl, gr, pg, pa	
181	Near Maqbul Alam Road Bridge	3.5	3.0	1.0		10.5	pa, pl, cl, kt	
182	Near Maqbul Alam Road	18.0	3.5	0.6	37.8		sl, br, pg, pa, ty, tr	
	Total				**54.9**	**10.5**		

Name of Nala: Banaras Nala No.5 [14] Date of Survey: 25 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
183	20m from Varuna River (R)	25.0	7.0	0.4		70.0	so, sl, pl	
184	20m from Varuna River (L)	20.0	3.0	0.3		18.0	so, sl	
185	8m Dstr. from No.184 (R)	8.0	3.0	1.0		24.0	sl, pl, cl	
186	8m Dstr. from No.184 (L)	26.0	2.0	0.8		41.6	sl, dp	
187	50m from Varuna River (L)	15.0	1.5	4.5		101.3	sl, so	
188	50m from Varuna River (R)	28.0	4.0	1.5		168.0	so, sl	
189	70m from Varuna River	13.5	6.0	0.8	64.8		sl, pl	
190	10m Ustr. from No.190 (R)	20.0	4.0	0.6		48.0	sl, br	
191	10m Ustr. from No.190 (L)	80.0	20.0	2.0		3200.0	so, pl cl, gr, kt	
192	80m from Varuna River	7.0	1.5	0.5	5.3		br, cl, sl, pl	
193	Near No.193	50.0	9.0	0.5		225.0	gr, cl, pl, so, br	
194	100m from Varuna River	30.0	1.5	0.4	18.0		sl, pl, gr, pa	
195	10m Ustr. from No.195	30.0	3.0	0.4	36.0		cl, pl, so, sl	
196	150m from Varuna River	75.0	1.0	0.4	30.0		sl, pl, br, pa	
	Total				**154.1**	**3895.9**		

Name of Nala: Hukulgang Nala [24] Date of Survey: 24 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
197	15m from Varuna River	4.0	1.5	0.3	1.8		br, bo, pl, sl	
198	Near Baghwa Nala - Hulcalganj Road	15.0	1.5	0.4	9.0		pl, gr, br, ty sl, so, pa	
199	50m from Varuna River (L)	20.0	15.0	0.4		120.0	so, pl, sl	
200	100m from Varuna River	2.5	0.6	0.2	0.3		br, gr, pl	
201	150m from Varuna River (R)	25.0	15.0	0.3		112.5	sl, bo, pl	
202	200m from Varuna River (R)	15.0	1.5	0.3	6.8		sl, so, pl	
203	200m from Varuna River (L)	6.0	1.5	0.4	3.6		cl, pl, so, sl	
204	25m from Ustr. from No.204 (L)	20.0	1.5	0.5	15.0		sl, gr	
205	25m from Ustr. from No.204 (R)	6.0	1.0	0.2	1.2		sl	
206	220m from Varuna River (L)	4.0	3.0	0.2	2.4		sl, pl	
207	500m from Varuna River	2.0	0.6	0.3	0.4		gr, pl	
208	15m Ustr. from No.208	4.0	1.0	0.2	0.8		cl, pl, sl	
209	5m Ustr. from No.209	15.0	1.5	0.2	4.5		pl, pa, sl, cl	
210	Near No.210	3.0	1.5	1.0	4.5		pl, cl, pa, ty	
211	610m from Varuna River	20.0	1.5	0.3	9.0		pl, br, cl, lv, sl	
212	Near No.212 (L)	1.5	1.0	0.8	1.2		cl, pl, so	
213	Near No.212 (R)	2.0	2.0	0.2	0.8		pa, pl	
214	Near Pandy Pur - Panckoshi Road (L)	3.0	1.0	1.2	3.6		lv, so, pl	
215	20m Dstr. from No.215 (R)	2.5	1.0	0.4	1.0		br, sl, pl, cl	
216	20m Dstr. from No.216 (L)	10.0	1.0	0.6	6.0		so, cl, pa, pl	
217	15m Dstr. from No.217 (L)	1.5	1.5	0.6	1.4		pl, cl, so	
218	10m from Pandy Pur - Panckoshi Road (R	5.0	1.0	1.0		5.0	so, pa, cl, as, pl, gr	
219	Ustr. from No.219	5.0	4.0	0.6	12.0		kt, pa, cl, so, pl	
220	Ustr. from No.220	3.0	2.5	0.4		3.0	sl, pl, ty, gr	
	Total				**85.2**	**240.5**		

Name of Nala: Narokhar Nala [52] Date of Survey: 22 November 2003 Name of Surveyor: Mukesh Singh City: Varanasi

No.	Location	Dimensions of Solid Waste *1			Volume of Waste *2		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
221	250m from Railway Line (R)	8.0	2.5	0.6		12.0	pl, bo, so, cl, wo	
222	Ustr. from No.222 (R)	7.0	2.0	0.4		5.6	so, pl, dp, cl	
223	60m from Varuna River	2.0	0.6	0.3	0.4		sl, wo, gr	
224	30m Ustr. from No.224 (R)	14.0	1.0	0.4		5.6	so, sl, pl	
225	Ustr. from No.225	1.5	0.6	0.3	0.3		gr, pl	
226	120m from Varuna Rive	4.0	1.0	0.3	1.2		sl, cl, rs, bo	
227	6m Ustr. fron No.227	1.0	0.6	0.3	0.2		sl, cl	
228	150m from Varuna River	2.0	1.0	0.4	0.8		pl, gr, sl, so, dp	
229	5m Dstr. from No.229 (R)	6.0	1.5	0.5	4.5		so, cl, fp	
230	Ustr. from No.229 (R)	24.0	1.0	0.5		12.0	so, br, fp, pl,	Garbage near Hanuman Temple
231	300m from Varuna River (R)	10.0	3.0	0.3		9.0	so, dp	
232	300m from Varuna River (L)	12.0	4.0	0.5		24.0	so, dp	
233	4m Ustr. from No.232	10.0	2.5	0.4		10.0	so, pl	
234	500m from Varuna River (R)	10.0	2.0	0.6		12.0	so	
235	25m Ustr. from No.235 (R)	6.0	2.0	0.5	6.0		so, pl, gr	
236	30m Ustr. from No.236	3.0	2.0	0.4	2.4		so, pl, gr	
237	10m Ustr. from No.237	3.0	2.0	0.2	1.2		rs, gr	
238	600m from Varuna River (R)	20.0	2.5	0.6	30.0		so, dp	
239	Ustr. from No.239 (R)	18.0	3.0	0.4	21.6		br	
240	50m from Railway Line	7.0	3.5	0.4	9.8		so, fp	
241	20m Ustr. from No.241 (R)	1.5	1.0	0.6	0.9		pl, pg, kt, cl	
242	40m from Saraiya - Ashapur Road	15.0	2.0	0.3	9.0		sl, dp	
243	40m Ustr. from No.243 (R)	10.0	3.0	5.0		150.0	cl, pl, pg, gr	
244	Near No.244 (R)+(L)	15.0	12.0	5.0		900.0	cl, pl, pg, gr	
245	100m from Saraiya - Ahapur Road	6.0	1.0	0.3	1.8		pl, br, dp	
246	Dstr. from No.246	2.5	0.3	0.2			tr	
247	50m from Pandey Pur Panchkoshi Road (F	8.0	3.0	0.5	12.0	12.0	lv, so, pl	
248	Near Pandy Pur - Panckoshi Road (R)	3.0	1.0	0.3		0.9	lv, gr, pl, kt	
249	50m from Pandey Pur Panchkoshi Road (L	9.0	2.5	0.5	11.3		so, pl, dp, br	
250	Near Janala Nasar Road	2.0	2.5	0.3	1.5		cl, pa, dp	
251	Near Janala Nasar Road Ustr. from No.251	-	-	-			cl, pa, pl, br, ty	
252	Near Janak Negar Road	14.0	1.5	0.5	10.5		pl, cl, bo	
253	Dstr. from No.253	7.0	1.0	1.0	7.0		br, so, pl, cl	
254	Dstr. from No.254	11.0	1.0	0.5	5.5		pl, cl, br, sl	
255	100m from Pandey Pur - Panchkoshi Road	3.0	1.0	0.3	0.9		rs, lv	
256	Dstr. from No.256	2.0	1.5	0.3	0.9		tr, pl, bo	
257	Near Chakbihi-baluwa Road	4.0	1.0	0.3	1.2		pl, cl, br, dp, ty	
258	Near Pandey Pur - Shagipur Road (R)	15.0	3.0	1.0		45.0	so, br	
259	Ustr. from No.259 (R)	3.0	2.0	1.0		6.0	lv, pl, dp, so	
260	Ustr. from No.259 (L)	10.0	3.0	1.0		30.0	br, ov, pl, so	
261	Near Akatha - Harizan Bosti	3.0	1.0	0.4	1.2		br, pa, pl	
262	Ustr. from No.262	0.8	1.5	0.3	0.4		lv, pl, br, sl	
263	20m Ustr. from No.263	2.5	2.5	0.2	1.3		so, lv, sl, bo	
264	5m Ustr. from No.264	10.0	2.5	0.2	5.0		fp	
265	50m from Tarkeshwar Temple	3.0	2.5	0.3	2.3		so, sl, pl	Near Seinagar Colony
266	15m from No.266	20.0	2.5	0.3	15.0		fp	Near Seinagar Colony
267	600m from Sarnath Movaiyan Road	4.0	2.0	0.3	2.4		so, lv	
268	Near Parshuram Pur Tisharia	2.5	2.5	0.2	1.4		br, lv	
269	6.5m Ustr. from No.269	2.0	2.0	0.2	0.8		br, gr	
270	15m Dstr. from No.270	80.0	2.5	0.3	60.0		fp	
271	Near Sarnath Munari Road	4.0	1.0	1.5		6.0	pl, cl, dp, tr, pa, br, bo	
272	5m Dstr. from No.272	200.0	4.0	0.4	320.0		fp	
	Total				**550.5**	**1240.1**		

Appendix F

Appendix F Result of Amount of Solid Waste Surveyed for Each Nala

Name of Nala: Nagaria Nala [12] Date of Survey: 1 December 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
1	100m from Gomti River (R)	7.0	2.0	1.0		14.0	pb, cl, pa	Dump Site
2	100m Ustr. from No.1	25.0	1.0	0.5	12.5		pb, cl	
3	100m Ustr. from No.2	15.0	1.0	0.5	7.5		pb	
4	500m from Gomti River	15.0	3.5	0.7	36.8		pb, cl	
5	Near Gaughat Nala	10.0	2.5	1.0		25.0	so, pb, cl	Dump Site
6	520m from Gomti River	3.0	1.5	0.7	3.2		pb, bo	
7	100m from No.6	4.0	1.0	0.6	2.4		pb, wo, fo	
8	100m from No.7	100.0	0.5	0.3	15.0		pb, wo	
9	345m from Gaughat Nala	15.0	0.5	0.3	2.3		pb, pa, cl	
10	Left Side of No.9	5.0	1.0	0.3		1.5	pb, pa, cl, fo	Dump Site
11	30m Ustr. from No.10 (L)	7.0	5.0	0.2		7.0	pb, cl, pa	Dump Site
12	80m Ustr. from No.11	40.0	0.5	0.3	6.0		pb, cl, br	
	Total				**85.6**	**47.5**		

Name of Nala: Gaughat Nala [16] Date of Survey: 1December 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
13	Near Nagaria Nala & Bank Road	15.0	4.0	0.5	30.0		pb, cl, pa, sl	
14	20m Ustr. from No.13 (R)	4.0	2.0	1.0		8.0	pb, pa, cl	Dump Site
15	10m Ustr. from No.14	3.0	1.0	0.5	1.5		cl, pb, sl	
16	150m from Nagaria Nala (R)	2.0	10.0	0.1		2.0	pb, pa, lv	Dump Site
17	100m from No.16 (L)	10.0	6.0	0.3		18.0	pb, cl, as	Dump Site
18	600m from Baraf Khana Road (R)	20.0	1.5	0.3		9.0	pb, lv, pa, as	
19	300m from No.18	10.0	1.0	0.6	6.0		pb, cl, pa, cl	
20	Near Hardoi Road, Ustr. from No19	6.0	1.5	0.7	6.3		pb, cl, pa, cl	
21	Near Hardoi Road (R)	15.0	10.0	3.0		450.0	pb, br, cl, pa	Dump Site
22	70m Ustr. from No.21	10.0	2.0	0.5	10.0		pb, bo, fo, pa	
23	Left Side of No.22	10.0	3.0	0.5		15.0	pb, pa, cl	Dump Site
24	200m from Hardoi Road	5.0	1.0	0.6	3.0		pb, cl, fo	
25	200m Ustr. from No.24	200.0	1.0	0.6	120.0		pb, cl, fo	
26	400m from Hardoi Road	20.0	1.0	0.6	12.0		pb, cl, pa	
27	100m Ustr. from No.26	8.0	1.0	0.5	4.0		pb, bo, fo	
28	150m Ustr. from No.27	15.0	1.0	0.3	4.5		pb, cl, pa	
	Total				**197.3**	**502.0**		

City: Lucknow

Name of Nala: Sarkata Nala [34] Date of Survey: 2 December 2003 Name of Surveyor: Kipathi

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
29	10m from Bank Road (L)	3.0	4.0	0.3		3.6	pb, pa, cl	
30	Ustr. from No.9, Near Sweage Pipe (L)	20.0	2.0	0.2		8.0	pb, cl, pa	
31	30m from Bank Road (R), Near Pump Sta.	20.0	2.0	0.2		8.0	pb, cl, pa	
32	40m from Bank Road	4.0	1.5	0.7	4.2		pb, cl	
33	10 Ustr. from No.32 (R)	20.0	1.5	0.3		9.0	pb, cl, pa	S.P.S Sewage Pump Sta., Dump Site
34	110m from Bank Road (L)	15.0	1.5	0.2		4.5	pb, cl, pa	Dump Site
35	80m Ustr. from No.34	3.0	0.4	0.6	0.7		pb, cl	
36	30m Ustr. from No.35 (R)	25.0	2.0	0.3		15.0	pb, pa, cl	Dump Site
37	250m from Bank Road	5.0	1.5	0.7	5.3		pb, pa, cl	
38	10m Ustr. from No.37 (R)	10.0	5.0	0.3		15.0	pb, cl, pa	Dump Site
39	opposite side of No.38 (L)	4.0	5.0	0.3		6.0	pb	Old Dump Site
40	Near Daulatganj Road	50.0	3.0	0.6	90.0		pb, pa, cl	
41	10m Ustr. from No.40 (R)	4.0	2.5	0.4		4.0	cl, pb	
42	40m from No.41 (R)	5.0	1.0	0.6	3.0		pb, pa	
43	100 from Daulatganj Road (L)	6.0	2.0	0.3		3.6	pb	Dump Site
44	Opposite side of No.43 (R)	4.0	2.0	0.4		3.2	pb, pa, br	Dump Site
45	50m Ustr. from No.44 (R)	30.0	15.0	0.5		225.0	pb, cl, pa	Dump Site
46	20m Ustr. from Muftiganj Road (L)	5.0	1.5	0.6	4.5		pb, pa, cl	Sarkata Nala was cleaned before
47	100m from No.46 (R)	4.0	1.0	0.6	2.4		pb, pa, cl	15 days surveying
48	50m Ustr. from No.47 (L)	6.0	1.5	0.6	5.4		pb, sl, cl	
49	Near Hurainabad Road	100.0	1.0	0.6	60.0		so, pb, cl, sl	
50	150m Ustr. from No.49	5.0	0.4	0.5	1.0		pb, cl, sl, bo	
51	Dstr. from Abdool Aziz Road (L)	10.0	2.5	0.6	15.0		pb, bo, fo	
52	10m Ustr. from No.51 (R)	10.0	2.5	0.6	15.0		pb, bo, cl	
53	50m Ustr. from Abdool Aziz Road	20.0	6.0	0.7	84.0		pb, bo, pa, cl, fo	
54	50m Ustr. from Abdool Aziz Road (R)	1.5	2.0	0.4		1.2	pb, pa	
55	Opposite Side of No.54 (L)	1.5	1.0	0.4		0.6	pb, pa	
56	100m Ustr. from Abdool Aziz Road (L)	10.0	2.0	0.6	12.0		pb, lv, sl, pa, fo	
57	100m Ustr. from No.56 (L)	30.0	2.0	0.6	36.0		pb, pa, cl, sl	
58	200m Ustr. from Abdool Aziz Road (R)	20.0	1.5	0.6	18.0		so, , pb, cl, pa	
59	Ustr. from No.58 (R)	10.0	1.5	0.5	7.5		so, br, sl, pb, cl	
60	20m Ustr. from No.59 (R)	6.0	1.5	0.6	5.4		pb, cl, lv	
61	220m Ustr. from Abdool Aziz Road	70.0	2.0	0.6	84.0		pb, lv, cl, pa	
62	10m Ustr. from No.61	5.0	3.0	0.6	9.0		pb, pa, cl	
	Total				**462.4**	**306.7**		

Name of Nala: Pata Nala [20] Date of Survey: 1December 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
63	50m from Gomti River	3.0	1.7	0.6	3.1		pb, wo, cl	
64	Near Bank Road & Pump Station	15.0	7.0	0.7	73.5		pb, pa, bo, cl	
65	Near Roj Narayan Road & Sewage Drain (	20.0	2.0	0.5		20.0	pb, lv, cl, pa	
66	Near Bank Road & Pump Station	4.0	2.0	0.7	5.6		so, br	
67	Near No.66 (R)	6.0	2.0	0.7	8.4		so, gr, br	
68	15m Ustr. from Hurainabad Road	15.0	5.0	0.7	52.5		pb, pa, sl, fo	
69	20m Ustr. from Hurainabad Road	20.0	3.0	0.5	30.0		so, pb, br	
70	30m Ustr. from No.69	30.0	3.0	0.5	45.0		pb, cl, br	
71	100m Ustr. from No.70	100.0	2.0	0.5	100.0		pb, cl, gr, pa, cl	
72	Ustr. from Hurainabed Road (L)	3.0	2.0	0.5		3.0	pa, pb, lv	
73	25m Ustr. from No.72 (L)	70.0	15.0	1.0		1050.0	br, so, pb	Dump Site
74	Ustr. from Hurainabad Road	100.0	9.0	0.5	450.0		pb, br, pa, cl, bo	
75	Near Shamina Road (L)	10.0	5.0	2.0		100.0	pb, pa, cl	Dump Site
76	Near Shamina Road, in the river	150.0	2.0	0.5	150.0		pb, so, cl, bo, br	
77	175m Ustr. from Shamina Road	20.0	1.5	0.7	21.0		br, pb, pa, cl	
78	25m Ustr. from No.77	4.0	1.0	0.7	2.8		pb, lv, sl	
79	Near Nada Mahal Road	2.0	2.0	0.4	1.6		pb, cl, pa	
80	5m Ustr. from No.79	0.5	0.5	0.4	0.1		pb, cl, sl	
81	50m Ustr. from No.80	2.0	0.5	0.3	0.3		cl, pb, pa	
82	30m Ustr. from No.81(L)	6.0	0.5	0.3		0.9	pb, pa,rs	Dump Site
	Total				**943.9**	**1173.9**		

Name of Nala: Ner D/S Nala [9] Date of Survey: 26 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
83	15m from Gomti River	1.0	0.5	0.2	0.1		pb, cl	
84	40m from Gomti River	4.0	1.0	0.5	2.0		pb, wo, sl	
85	Ustr. form No.84, Near Sita pur Road	3.0	1.5	0.6	2.7		pb, bo	
86	Right Side of No.85	2.5	1.0	0.5		1.3	lv, pb	Dump Site
87	80m Ustr. from Sita pur Road (L)	4.5	3.5	0.3		4.7	cl, pb, br, pa	Dump Site
88	Ustr. from No.87	20.0	1.5	1.0	30.0		bo, pb, cl, wo	
89	70m Ustr. from Sita pur Road	3.5	0.6	0.5	1.1		pb, bo	
90	10 Ustr. from No.89 (L)	2.0	0.5	0.2		0.2	cl, pb, as	Dumping from Srrounding Residence
91	20m Ustr. from No.90 (R)	4.0	2.0	0.3		2.4	pb, cl	Dump Site
	Total				**35.9**	**8.6**		

Name of Nala: Waziganj Nala [104] Date of Survey: 25 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
92	500m from Gomti River (R)	8.0	2.5	0.5	10.0		pb, bo, br	Milk Dairy is Located on the
93	Ustr. from No.92 (L)	10.0	4.0	0.3	12.0		so, br, pb	Sewer Pipe
94	550m from Gomti River (L)	7.0	2.5	0.5	8.8		pb, pa, fo	
95	10 Ustr. from No.94 (L)	4.0	2.0	0.5	4.0		pb, pa	Dump Site
96	600m from Gomti River (L)	4.0	2.0	0.5	4.0		pb, br, rs	
97	Opposite side of No.96 (R)	3.0	1.5	0.5	2.3		pb, cl	
98	20m Ustr. from No.97 (L)	4.0	2.0	0.5	4.0		pa, pb, wo	Dump Site
99	Ustr. from No.98 (R)	50.0	4.0	0.5	100.0		so, br, pb, cl	
100	650m from Gomti River	5.0	9.0	0.5	22.5		kt, pb, fo	Dump Site
101	Near Sewage Pipe	7.0	9.0	0.8	50.4		as, pa, pg	
102	20m Ustr. from No.101 (L)	50.0	5.0	0.6	150.0		so, br, pb	
103	Left Side of No.102 (L)	30.0	20.0	1.0		600.0	br, so	Old Dump Site
104	Dstr. from Kazar Bag Road (L)	50.0	5.0	0.6	150.0		so, br, pb, cl, rs	
105	Near L.P. Road, Wazia Ganj (Dstr.)	10.0	2.0	0.4	8.0		pb, pa, sl	
106	20m Dstr. from L.P. Rod (L)	10.0	5.0	0.5		25.0	pb, fo, bo	Dump Site
107	20m Dstr. from L.P. Rod	10.0	5.0	1.0	50.0		pb, pa, wo	Totally Choked by Garbage
108	Near L.P. Road, Wazia Ganj (Ustr.)	1.5	1.5	0.3	0.7		pb, cl	
109	100m Ustr. from L.P. Road, Wazia Ganj	2.0	0.5	0.5	0.5		so, pb, sl	
110	10m Ustr. from No.109	4.0	0.1	0.5	0.2		sl, pb, pa	
111	130m Ustr. from L.P. Road, Wazia Ganj	1.5	1.0	0.6	0.9		pb, rs, cl	
112	10m Ustr. from No.111	2.0	3.5	0.6	4.2		pb, so, rs, pa, lv	
113	Left Side of No.111 & 112 (L)	10.0	4.0	0.7	28.0		lv, pb, so	
114	160m Ustr. from L.P. Road, Wazia Ganj (F	5.0	2.0	0.8	8.0		pb, so, gr, pa	
115	160m Ustr. from L.P. Road, Wazia Ganj (I	3.0	1.0	0.5	1.5		so	
116	170m Ustr. from L.P. Road, Wazia Ganj (I	15.0	3.0	1.0	45.0		so, br, gr	Old Dump Site
117	Ustr. from No.116 (L)	3.0	1.5	0.5	2.3		so, br	
118	170m Ustr. from L.P. Road, Wazia Ganj	10.0	4.0	2.0	80.0		so, br, pb	Totally Old Dump Site
119	250m Ustr. from L.P. Road	100.0	5.0	2.0	1000.0		pb, so, kt	Dump Site
120	Ustr. from No.119	30.0	5.0	2.0	300.0		so, pb, br, pa	Old Dump Site
121	350m Ustr. from L.P. Road	15.0	5.0	1.5	112.5		pb, rs, so, cl	Dump Site
122	Dstr. from No.121	15.0	2.5	1.0	37.5		pb, so, pa, rs	Dump Site
123	Dstr. from No.122	60.0	4.0	0.5	120.0		pb, bo, sl	Fully Choked by Garbage
124	405m Ustr. from L.P.Road (R)	10.5	2.0	0.6	12.6		so, pb, br	
125	Ustr. from No.124 (R)	4.0	2.0	0.2	1.6		pb, rs, fo	
126	Opposite Side of No.124 & 125 (L)	2.0	0.5	0.4	0.4		pa, pb, br, sl	
127	425m Ustr. from L.P.Road	4.0	1.5	0.3	1.8		cl, pb, pa	
128	5m Ustr. from No.127 (R)	7.0	1.5	0.5	5.3		pa, pb, br, so	
129	5m Ustr. from No.127 (R)	7.0	2.0	1.0		14.0	pb, so, br	Dump Site
130	430m Ustr. from L.P. Road (R)	10.5	10.0	4.0	420.0		rs, so , pa, pb	Dump Site
131	Ditto (L), (Sewage Drain)	16.5	4.0	1.5		99.0	pa, pb, cl, fo	Dump Site
132	450m Ustr. from L.P. Road (R)	12.0	1.0	0.5	6.0		pb, br, so	Dump Site
133	10 Ustr. from No.132 (R)	7.5	4.0	2.5		75.0	pb, cl, br, so, fo	Dump Site
134	Opposite Side of No.132 (L)	50.0	2.0	0.5		50.0	pb, br, pa	Dump Site
135	Ustr. from No.134 (L)	10.0	5.0	0.5		25.0	pb, br	Dump Site
136	470m Ustr. from No.135 (R)	40.0	4.0	0.8	128.0		so, cl, bo, br, pb	
137	550m Ustr. from L.P. Road, (Near Br.) (L)	9.5	0.4	0.4		1.5	br, pb, so	Dump Site
138	Opposite Side of No.137 (R)	11.5	2.5	0.2		5.8	br, pa, pb	Dump Site
139	Ustr. from No.137, (Sewage Drain) (L)	6.5	4.0	1.5		39.0	pb, br, so	Dump Site
140	Ustr. from No.139, (Sewage Drain)	1.5	4.0	0.7	4.2		pb, pa	
141	530m Ustr. from L.P. Road (L)	17.0	1.5	0.3	7.7		pb, br, sl	
142	Opposite Side of No.141 (R)	15.0	3.0	1.0		45.0	cl, pb, so, br	
143	540m Ustr. from L.P. Road (L)	6.0	0.5	0.5	1.5		pb, lv, sl	
144	5m Ustr. from No.143	0.7	0.3	0.5	0.1		pb	
145	Ustr. from No.144 (R)	2.0	1.0	0.5	1.0		pb, br, pa	

146	560m Ustr. from L.P. Road (R)	15.0	1.2	0.3	5.4		br, pb, pa	
147	10m Ustr. from No.146 (R)	2.5	0.5	0.4	0.5		pb, sl	
148	Ustr. from No.147	15.0	1.5	0.5	11.3		pb, cl, pa, sl	
149	Ustr. from Aminabad Road	10.0	3.0	0.5	15.0		pb, pa, cl	
150	Ustr. from No.149 (L)	6.0	0.5	0.5	1.5		pb, sl	
151	Opposite Side of No.150 (R)	4.0	1.5	0.4		2.4	so, pa, pb	
152	Ustr. from No.150	10.0	1.5	0.5	7.5		sl, pb, pa, cl	
153	Ustr. from Aminabad Road (R)	10.0	2.5	0.1		2.5	so, br, pb	Dump Site
154	Ustr. from No.153 (R)	10.0	2.5	0.7		17.5	pb, so	Dump Site
155	150m from Aminabad Road	150.0	3.0	1.0	450.0		pb, so	
156	Ustr. from Aminabad Road (R)	10.0	3.0	2.0		60.0	lv, cl, pb	Dump Site
157	Ustr. from No.156 (R)	10.0	4.0	1.2		48.0	pb, cl, br, gr, so	Dump Site
158	Ustr. from Aminabad Road (L)	4.7	0.3	0.3	0.4		cl, pb	
159	20m Ustr. from No.158 (L)	3.0	0.3	0.3	0.3		cl, pb	
160	Ustr. from Aminabad Road (R)	2.5	5.0	1.0		12.5	br, pa, pb	Dump Site
161	Ustr. from No.160 (R)	1.5	0.3	0.3	0.1		pb, cl	
162	Ustr. from No.161 (L)	2.0	0.3	0.3	0.2		pb, cl	
163	Ustr. from Aminabad Road (L)	3.0	0.5	0.4	0.6		pb, so	Dumpin from Sorrounding Residence
164	Opposite Side of No.163 (R)	5.5	0.5	0.4	1.1		pb, as, rs, pa	
165	20m Ustr. from No.163 (L)	1.0	1.0	0.5	0.5		pb, so	
166	300m Ustr. from Aminabad Road (R)	1.0	1.5	0.5	0.8		pb, cl	Dumpin from Sorrounding Residence
167	320m Ustr. from Aminabad Road (L)	4.5	0.4	0.5	0.9		pb, pa, so	
168	325m Ustr. from Aminabad Road (R)	2.5	0.5	0.5	0.6		pb, cl	
169	5m Ustr. from Aminabad Road (R)	3.0	0.5	0.2	0.3		pb, cl	
170	370m Ustr. from Aminabad Road (R)	2.0	0.6	0.5	0.6		pa, lv, pb	
171	Opposite Side of No.170 (L)	1.0	0.5	0.5	0.3		cl	
172	10m Ustr. from No.170 & 171 (R)	1.0	0.4	0.3	0.1		pb, br	
173	5m from Subhash Road (R)	2.3	0.7	0.5	0.8		pb, sl	
174	10m Ustr. from No.173 (L)	1.0	0.5	0.4	0.2		pa, pb	
175	Ustr. from No.174 (L)	2.0	1.0	0.3		0.6	cl, br, pa	Dump Site
176	5m from Subhash Road (R)	7.0	1.5	1.0	10.5		Pb, cl, pa, so	
177	Near Subhash Road (R)	25.0	3.0	8.0		600.0	pb, pa, so, br, cl, fo	Dump Site
178	10m Ustr. from Subhash Road (L)	3.0	1.0	0.5		1.5	pb, pa	Dump Site
179	10m from Subhash Road	4.0	14.0	0.5	28.0		pb, pa, sl	
180	Ustr. from No.179 (R)	12.0	1.5	0.5	9.0		lv, pb	Dump Site
181	10m from Subhash Road	3.0	2.5	0.2	1.5		bo, pb, pa	
182	10m Ustr. from No.181 (R)	4.0	1.0	0.4		1.6	pb, pa, cl	
183	Near No.182, in the river	17.5	1.0	2.0	35.0		br, pa, pb, so	Old Dump Site
184	30m Ustr. from School (R)	4.0	2.0	1.0	8.0		br, cl, pa	
185	Ustr. from No.184 (R)	3.5	1.0	0.5	1.8		br, wo, cl, pb	
186	5m from No.185, in the river	1.0	0.5	0.4	0.2		pb, cl, pa	
187	100m Ustr. from School	3.0	1.0	0.3	0.9		cl, pb, rs, pa	
188	Near Subhash Road	30.0	2.0	0.5	30.0		pb, pa, cl, wo	
189	Left Side of No.188 (L)	30.0	1.0	1.0		30.0	pb, pa, cl	Old Dump Site
190	Ustr. from No.189 (L)	20.0	5.0	1.5		150.0	br, pb, so, cl	Dump Site
191	Near Subhasn Road	10.0	2.0	0.2	4.0		pb, cl, lv, br	
192	Near Subhash Road	15.0	2.0	0.3	9.0		br, pb, cl	
193	9m Ustr. from Rejendra Nagar Road	30.0	2.0	0.7	42.0		pb, bo, pa, br	Dump Site
194	Near Rejendra Nagar Road	50.0	2.0	0.3	30.0		pb, br, pa, so	
195	50m Ustr. from Rejendra Nagar Road	40.0	1.0	0.5	20.0		pb, sl, gr, br, pa	
	Total				**3636.0**	**1905.9**		

Name of Nala: Ghasiyari Mandi Nala [37] Date of Survey: 24 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
196	Near Kachehari Road (R)	4.3	4.0	0.1		1.7	lv, pa, wo	Dump Site
197	Near Kachehari Road (L)	4.0	3.0	0.1		1.2	pa, br, pb	Dump Site
198	50m Ustr. from No.196 & 197 (L)	4.0	3.0	0.2		2.4	pb, lv, so, br	Dump Site
199	Ustr. from No.198 (L)	3.5	2.0	0.3		2.1	lv, pa, pb	Dump Site
200	20m Ustr. from No.199 (L)	3.0	2.0	0.3		1.8	lv, pa, wo	
201	Ustr. from No.200 (L)	45.0	1.5	0.2		13.5	pa, gr, br	
202	10m Ustr. from No.201(L)	4.5	3.0	0.3		4.1	lv, pa, pb	
203	Ustr. from No.202 (L)	4.0	2.0	0.1		0.8	lv, gr	
204	Ustr. from No.203 (L)	2.0	2.0	0.1		0.4	lv, pa	
205	20m Ustr. from No.202 (L)	4.8	2.0	0.3		2.9	pb, lv	Dump Site
206	10m Ustr. from No.205 (L)	2.5	0.5	0.4		0.5	pb, pa	
207	10m from Public Toilet (R)	4.0	3.0	0.4		4.8	pb, pa, lv	Dump Site
208	Near No.207, in the river	2.5	1.2	0.5	1.5		pb, cl	
209	5m Ustr. from No.208	2.7	1.5	0.4	1.6		pb, cl	
210	5m Ustr. from No.209	2.5	1.2	0.4	1.2		pa, pb	
211	Right Side of No.210 (R)	4.0	3.0	0.5		6.0	pb, wo, pa	
212	Opposite Side of No.211 (L)	4.7	4.5	0.3		6.3	pb, pa, br, lv	Dump Site
213	Near Peer Jalil North Road (R)	3.5	1.5	0.5		2.6	pb, pa, lv	Dump Site
214	Ustr. from No.213 (R)	2.0	0.5	0.5	0.5		pb, pa	
215	Near No.214	1.0	0.5	0.5	0.3		lv, cl	
216	10m Ustr. from No.215	2.0	1.0	0.5	1.0		fo, lv, pb	
217	50m from Karimeela House	2.0	0.5	0.2	0.2		pa, pb	
218	10m Dstr. from No.217	1.0	0.2	0.2	0.04		pb, so	
219	20m Ustr. from B.N.Varma Road (L)	2.0	0.5	0.5	0.5		pb, so, cl	
220	5m Ustr. from B.N.Varma Road (R)	3.0	0.5	0.1		0.2	pb, lv, br	
221	30m Ustr. from No.219 (L)	1.0	0.8	0.5	0.4		pb, so, cl	
222	Ustr. from No.220 (R)	3.0	0.4	0.3		0.4	pa, cl, pb	Dump Site
223	Dstr. from Naaz Picture Hall Road (L)	3.0	1.2	0.5	1.8		pb, pa, so, fo	
224	Right Side of No.223 (R)	0.5	0.5	0.5	0.1		pb, pa, lv	
225	Right Side of No.224 (R)	1.0	1.0	0.3		0.3	pb, pa	Dump Site
226	Ustr. from Khagali Gans Road	2.0	0.5	0.3	0.3		pb, br	
227	20m Ustr. from No.226 (L)	1.5	0.5	0.1		0.1	pb, pa	Dump Site
228	20m Ustr. from No.226 (R)	7.0	3.0	0.1		2.1	pb, lv, wo	Dump Site
229	5m Ustr. from Small Bridge	1.5	0.5	0.2	0.2		so, pb	
230	35m Ustr. from No.229	4.0	1.5	0.3	1.9		wo, pb, cl, fo	
231	50m Ustr. from No.229 (R)	1.5	0.5	0.1		0.1	pb, so, br	Dump Site
232	Dstr. from Moti Lal Bash Road	5.0	0.5	0.3	0.8		cl, pb, pa	
	Total				**12.3**	**54.2**		

Name of Nala: China Bazar Nala [9] Date of Survey: 22 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
233	Dstr. from Rana Pratap Road	5.0	3.0	0.3	4.5		lv, pa, pb	Dump Site
234	Dstr. from No.233	3.4	1.5	0.2	1.0		pa, pb	
235	Dstr. from No.234	10.0	1.5	0.2	3.0		pb, br, pa	
236	Dstr. from Rana Pratap Road	3.0	1.5	0.1	0.5		pb, pa	
237	Dstr. from No.236 (L)	2.7	1.0	0.1	0.3		pb, bo	
238	Dstr. from No.237	2.0	3.0	0.3	1.8		pb, bo, fo, pa	
239	Ustr. from Rana Pratap Road (R)	3.0	1.5	0.2	0.9		bo, pb, lv	
240	Ustr. from Rana Pratap Road (R)	2.0	1.0	0.2	0.4		so, br, pb	
241	Ustr. from No.240, Near Pump Station	4.4	1.0	0.1	0.4		pb	
	Total				**12.8**	**0.0**		

Name of Nala: Jopling Road Nala [4] Date of Survey: 22 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
242	Between Gomti River & Bhaiza Kund Roa	2.2	6.5	0.3	4.3		pb, bo, cl, fo	
243	Ustr. from Bhaiza Kund Road	7.0	4.5	0.2	6.3		pb, bo, pa, cl, br, fo	
244	30m Ustr. from No.243	5.0	1.0	0.2	1.0		pb, bo, pa, fo	
245	80m from Gomti River	6.0	2.5	0.2	3.0		lv, gr, sl	
	Total				**14.6**	**0.0**		

Name of Nala: Lamartiniere Nala [3] Date of Survey: 22 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
246	150m from Gomti River	4.2	1.6	0.1	0.7		pb, bo, wo	
247	Dstr. from No.246	5.4	3.0	0.2	3.2		pb, bo, wo, br, fo	
248	Left Side of No.247 (L)	5.0	5.0	0.4		10.0	pb, as, br, pa, wo	Dump Site
	Total				**3.9**	**10.0**		

Name of Nala: Jiamau Nala [1] Date of Survey: 22 November 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
249	25m from Bank Road	3.0	1.3	0.2	0.8		bo, pb, fo	
	Total				**0.8**	**0.0**		

Name of Nala: G.H. Canal [72] Date of Survey: 3 December 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
250	500m from Gomti River (R)	12.0	1.0	0.5	6.0		cl, pb, pa	
251	50m Ustr. from No.250 (L)	7.0	3.0	0.6	12.6		pb, cl, wo	
252	50m Ustr. from No.251 (R)	15.0	6.0	2.0		180.0	so, br, so, pb, cl	Dump Site
253	Opposite Side of No.251 (L)	6.0	5.0	1.5		45.0	pb, so, lv	Dump Site
254	15m from 6-Park Road (L)	1.5	0.5	0.7	0.5		cl, pb	
255	Opposite Side of No.254 (R)	10.0	1.5	0.3		4.5	lv, pb, cl	Dump Site
256	50m Ustr. from No.254 (L)	4.0	0.5	0.7	1.4		pb, cl	
257	40m Ustr. from No.256 (R)	3.0	1.0	0.7	2.1		cl, pb	
258	10.5m Ustr. from 6-Pack Road (R)	2.0	0.5	0.7	0.7		pb, cl	
259	10m Ustr. from No.258 (R)	2.5	2.0	0.4		2.0	pb, pa, cl	Dump Site
260	15m Ustr. from No.259 (R)	3.0	2.5	0.4		3.0	pb, pa, cl	Dump Site
261	20m Ustr. from Mahatma Gandhi Road (R	1.0	2.5	0.4	1.0		pb, cl, pa, wo	
262	30m Ustr. from Lal Bahadur Shartri Road	50.0	8.5	0.5		212.5	pb, cl, pa	
263	220m Ustr. from L.B.S. Road (R)	50.0	2.0	0.5		50.0	pb, cl, pa	Dump Site
264	10m Ustr. from No.263 (L)	50.0	10.0	3.0		1500.0	pb, cl, pa, so	Dump Site
265	10m Ustr. from No.263, in the river	3.0	1.0	0.5	1.5		pb, cl, pa	
266	Ustr. from Cant Road (R)	6.0	2.5	1.0		15.0	br, pb, so	Dump Site
267	Opposite Side of No.266 (L)	4.0	2.0	0.3		2.4	pb, br	Dump Site
268	10m Ustr. from No.266 & 267 (R)	5.0	3.0	0.3	4.5		sl, pb, pa	
269	20m Ustr. from No.268 (R)	2.0	10.0	0.2	4.0		sl, pb, rs	
270	100m Ustr. from Cant Road (R)	50.0	2.0	1.0		100.0	pb, br, bo	
271	100m Ustr. from Cant Road	2.0	1.0	0.8	1.6		pb, cl, bo	
272	20m Ustr. from No.271 (R)	2.0	1.0	0.8	1.6		pb, cl, fo	
273	200m Ustr. from Cant Road (L)	10.0	10.0	3.0		300.0	br, so, pb, pa	
274	100m Ustr. from Charbagh Road (L)	3.0	1.0	0.5	1.5		pb, cl, bo	
275	10m Ustr. from No.274	4.0	1.5	0.6	3.6		pb, br, pa	
276	10m Ustr. from No.275	3.0	3.0	0.6	5.4		cl, pb, wo	
277	130m Ustr. from Charbagh Road (R)	20.0	3.0	0.6	36.0		br, sl	
278	Opposite Side of No.277 (L)	4.0	2.0	0.5		4.0	pb, br, cl	Dump Site
279	200m Ustr. from No.277	20.0	10.0	3.0		600.0	br, pb, pa, cl	Dump Site
280	400m Ustr. from Charbagh Road (R)	3.0	1.0	0.3	0.9		pb, cl, br	

281	150m Ustr. from No.280 (L)	3.0	1.0	0.2	0.6		pb, cl, pa	
282	700m Ustr. from Charbagh Road (L)	10.0	2.0	0.5	10.0		pb, cl	
283	50m Ustr. from No.282 (L)	5.0	3.0	0.7	10.5		pb, cl, pa, fo	
284	Ustr. from No.283 (R)	1.0	6.0	0.5		3.0	pb, cl, pa	Dump Site
285	Opposite Side of No.284 (L)	3.0	4.0	0.5		6.0	pb, bo	Dump Site
286	Near Mavaiyan Road	2.0	1.5	0.7	2.1		pb, cl, sl	
287	15m Ustr. from No.286 (R)	5.0	4.0	5.0	100.0		sl, br, pb	
288	15m Ustr. from No.287 (R)	3.0	4.0	0.5	6.0		sl, pb, cl	
289	30m Ustr. from Mavaiyan Road (L)	5.0	3.0	0.5		7.5	br, fo	Dump Site
290	10m Ustr. from No.289 (L)	7.0	3.0	0.5		10.5	br, rs	Dump Site
291	5m Ustr. from No.290 (R)	5.0	2.0	0.5	5.0		sl, br, cl	
292	50m Ustr. from Mavaiyan Road (R)	15.0	10.0	1.0		150.0	pb, pa, cl	
293	20m Ustr. No.292 (R)	40.0	4.0	0.4		64.0	pb, pa, cl	
294	200m Ustr. from Tal Katora Road (R)	10.0	4.0	0.4	16.0		so, pb, cl	
295	200m Ustr. from Tal Katora Road (R)	4.0	2.0	0.3		2.4	lv, cl, pb	Dump Site
296	Ustr. from No.294 & 295	10.0	1.5	0.2	3.0		pb, br, rs	
297	Near Rail Road Bridge (R)	20.0	4.0	2.0		160.0	pb, cl, pa	Dump Site
298	Opposite side of No.297 (L)	15.0	5.0	3.0		225.0	lv, as, pb	Dump Site
299	Ustr. from No.297 & 298	40.0	5.0	0.7	140.0		wo, pb, so	
300	200m Ustr. from Rail Road Bridge	5.0	1.0	0.6	3.0		pb, rs, cl, fo	
301	100m Ustr. from Rail Road Bridge	5.0	1.0	0.6	3.0		so, lv ,pb	
302	500m Ustr. from Rail Road Bridge	10.0	2.0	0.6	12.0		pb, pa, fo	
303	Opposite Side of No.302 (L)	20.0	2.0	1.0		40.0	br, pb, pa	
304	50m Ustr. from Alambagh Road	10.0	2.0	0.6	12.0		pb, pa, sl	
305	100m Ustr. from No.304 (L)	7.0	3.0	1.0		21.0	pb, br, pa	Dump Site
306	Right Side of No.305, in the river	4.0	1.5	0.5	3.0		sl, pb	
307	300m Ustr. from Alambagh Road	3.0	1.0	0.5	1.5		pb, cl	
308	25m Ustr. from No.307 (R)	5.0	1.5	0.8		6.0	pb, pa, cl	Dump Site
309	40m Ustr. from No.308 (L)	8.0	3.0	1.0	24.0		cl, pa, br	Dump Site
310	450m Ustr. from Alambagh Road	10.0	1.5	0.6	9.0		pb, cl, fo	
311	120m Ustr. from No.310	3.0	2.0	0.5	3.0		pb, pa, cl	
312	Near No.311	1.5	2.0	0.5	1.5		cl, pa, rs, fo	
313	Near Rujaji Puram Road	10.0	2.0	0.7	14.0		pb, pa, cl	
314	150m Ustr. from No.313 (L)	7.0	1.5	1.0		10.5	pb, pa, cl	
315	80m Ustr. from No.314 (R)	3.0	0.5	0.5	0.8		pg, cl, fo	
316	350m Ustr. from Rujaji Puram Road (L)	3.0	0.4	0.5	0.6		pb, cl, pa	
317	120m Ustr. from No.316 (L)	4.0	1.5	0.5	3.0		pb, cl, pa	
318	Right Side of No.317 (R)	15.0	4.0	1.5		90.0	br, pa, cl	
319	450m Ustr. from Rajaji Puram Road	4.0	1.5	0.5	3.0		pb, cl, pa	
320	70m Ustr. from No.319	2.5	1.0	0.6	1.5		cl, pa, fo	
321	100m Ustr. from No.320	7.0	2.0	0.5	7.0		rs, fo, cl	
	Total				**480.0**	**3814.3**		

Name of Nala: Maheshganj Nala [5] Date of Survey: 30 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
322	100m from Gomti River	30.0	1.5	0.5	22.5		pb, sl, pa, fo	
323	500m from Gomti River	1.0	0.5	0.3	0.2		pb, cl, wo	
324	100m Ustr. from Dry Sewage Drain	10.0	1.0	0.5	5.0		pb, pa, cl	
325	50m Ustr. from No.324	7.0	1.0	0.5	3.5		pb, pa, cl, fo	
326	800m from Gomti River (R)	15.0	1.0	0.3		4.5	so, br, pb, cl, pa	Dump Site
	Total				**31.2**	**4.5**		

Name of Nala: Rooppur Khadra Nala [9] Date of Survey: 29 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
327	30m from Gomti River	30.0	1.0	0.5	15.0		pb, cl, sl	
328	Ustr. from No.327 (L)	30.0	1.0	0.5	15.0		pb, pa, cl	Dump Site
329	Opposite Side of No.328 (R)	50.0	2.0	0.5	50.0		pb, pa, cl	Dump Site
330	Ustr. from No.329	50.0	1.0	0.6	30.0		pb, cl, pa, sl, wo, fo	
331	60m from Gomti River	3.0	0.5	0.4	0.6		pb, cl, pa	
332	10m Ustr. from No.331	10.0	0.5	0.4	2.0		pb, wo, cl	
333	50m Ustr. from No.332	50.0	1.0	0.6	30.0		pb, cl, pa	
334	220m from Gomti River	100.0	1.0	0.7	70.0		pb, cl, pa, br	
335	50m Ustr. from No.334	50.0	1.0	0.7	35.0		pb, cl, pa, br	
	Total				**247.6**	**0.0**		

Name of Nala: Mohan Meakin [10] Date of Survey: 26 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
336	Near Gomti River, Near Screening	2.0	0.5	0.3	0.3		pb, fo, bo	
337	Ustr. from No.336	1.0	2.0	0.4	0.8		pb, cl, pa	
338	Ustr. from No.337	3.0	2.0	0.4	2.4		pb, br, cl	
339	Left Side of No.338 (L)	7.0	3.0	0.3	6.3		pb, as, cl	
340	Near T.G. Hostel	1.0	0.7	0.4	0.3		pb, br, cl	
341	20m Ustr. from No.340	3.0	0.5	0.2	0.3		cl, pb, sl	
342	50m Ustr. from No.340	2.0	0.5	0.3	0.3		pb, cl, rs	
343	180m from Mohan Meakin Nala (L)	10.0	0.7	0.3	2.1		pb, sl, cl	
344	30m Ustr. from No.343 (L)	10.0	0.5	0.3	1.5		pa, pb, cl, sl, br	
345	30m Ustr. from No.344 (R)	10.0	3.0	0.5	15.0		br, pb, cl	
	Total				**29.3**	**0.0**		

Name of Nala: Daliganj U/S Nala [10] Date of Survey: 26 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
346	10m from Gomti River (R)	3.0	3.0	0.4		3.6	pb	
347	30m Ustr. from No.346 (L)	3.0	4.0	0.4		4.8	pb, lv, cl, pa	Dump Site
348	Rigth Side of No.347, in the river	10.0	2.0	0.6	12.0		pb, lv, cl	
349	50m from Gomti River	30.0	1.5	0.6	27.0		pb, pa, cl	
350	Left Side of No.349 (L)	10.0	5.0	0.1		5.0	pb, pa, fo, cl	Dump Site
351	Near No.350 (L)	20.0	5.0	2.0		200.0	so, pb, br, pa, cl	Dump Site
352	Near Gomti River (L)	15.0	2.0	0.7	21.0		pb, lv, cl, pa	
353	Ustr. from No.352 (R)	10.0	3.0	0.7	21.0		pb, sl, cl	
354	Ustr. from No.353 (L)	10.0	5.0	1.0		50.0	so, br, pb	Dump Site
355	Ustr. from No.354	3.0	1.0	1.0	3.0		pb, pa	
	Total				**84.0**	**263.4**		

Name of Nala: Daliganj D/S Nala [13] Date of Survey: 26 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
356	30m from Gomti River	7.0	1.5	0.4	4.2		pb, sl, cl	
357	Rigth Side of No.356 (R)	20.0	1.0	0.5		10.0	pb, so, pa, bo	
358	Ustr. from No.356	3.0	1.0	0.3	0.9		pb, pa	
359	Left Side of No.358 (L)	4.0	2.0	0.7	5.6		pb, cl	
360	50m from Gomti River (R)	4.0	2.5	0.2		2.0	pa, pb, wo	Dump Site
361	Ustr. from No.360 (R)	7.0	1.5	0.6	6.3		pb, pa, sl, cl	
362	5m Ustr. from No.361(L)	2.0	0.5	0.5	0.5		pa, cl, pb	
363	70m from Gomti River (R)	7.0	0.5	0.5	1.8		cl, bo, br	
364	10m Ustr. from No.363 (R)	30.0	2.0	0.8	48.0		pb, cl, sl, pa	
365	Near Gomti River	2.0	0.5	0.4	0.4		cl, pb, br	
366	10m Ustr. from No.365	1.5	0.5	0.4	0.3		pa, cl, pb	
367	Ustr. from No.366	10.0	0.7	0.5	3.5		pa, pb, br, cl	
368	Near Gomti River, Near Sewage Drain	20.0	1.0	0.6	12.0		cl, pb, pa, sl	
	Total				**83.5**	**12.0**		

Name of Nala: Arts Collage Nala [5] Date of Survey: 29 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
369	Near Togore Road (L)	5.0	4.0	0.5		10.0	as, pb, cl, br	Dump Site
370	Right Side of No.369, in the river	30.0	0.8	0.3	7.2		pb, cl, sl, br	
371	100m from Togore Road (R)	6.0	1.5	0.5		4.5	ex, br, pb	Dump Site
372	15m Ustr. from No.371	15.0	0.4	0.3	1.8		pb, sl, cl	
373	40m Ustr. from No.372	3.0	0.3	0.2	0.2		pb, cl, pa	
	Total				**9.2**	**14.5**		

Name of Nala: Hanuman Setu Nala [4] Date of Survey: 29 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
374	Near Gomti River (L)	12.0	0.5	0.4	2.4		so, br, pb, sl	
375	Right Side of No.374	2.0	0.5	0.4	0.4		pb, cl, bo	
376	Ustr. from No.375 (R)	3.5	0.5	0.5	0.9		so, lv, pb	
377	Left Side of No.376 (L)	12.0	3.0	0.5		18.0	pb, pa, br, sa	Dump Site
	Total				**3.7**	**18.0**		

Name of T.G.P.S Drain Nala [7] Date of Survey: 29 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
378	Near Gomti River	5.0	1.0	0.4	2.0		pb, cl, br	
379	Ustr. from No.378 (R)	10.0	1.5	0.5	7.5		sl, pb, cl	
380	Ustr. from No.379	9.0	2.0	0.2	3.6		pb, cl, sl, lv	
381	Near Gomti River	25.0	1.5	0.3	11.3		cl, pb, sl, br	
382	Ustr. from No.381	3.0	0.5	0.2	0.3		sl, pb, cl	
383	Near Gomti River	40.0	1.5	0.5	30.0		pb, sl, pa	
384	10m Ustr. from No.383	40.0	1.5	0.5	30.0		pb, sl, cl, br	
	Total				**84.7**	**0.0**		

Name of Kedarnath Nala [2] Date of Survey: 27 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
385	25m from Gomti River	4.0	0.5	0.4	0.8		cl, pb, br, sl	
386	Ustr. from No.385	2.0	0.5	0.4	0.4		gr, pb, br	
	Total				**1.2**	**0.0**		

Name of Nishatganj Nala [3] Date of Survey: 27 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
387	Near Gomti River	4.0	1.0	0.5	2.0		bo, pb, sl	
388	20m from Gomti River	2.5	2.0	0.5	2.5		pb, bo, cl	
389	Ustr. from No.388	10.0	0.5	0.4	2.0		pb, pa, sl, bo	
	Total				**6.5**	**0.0**		

Name of Baba Ka Purwa Nala [4] Date of Survey: 27 Nobember 2003 Name of Surveyor: Kipathi City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
390	Near Gomti River	2.0	1.0	0.2	0.4		pb, sl, so	
391	Ustr. from No.390	2.0	4.0	0.4	3.2		pb, bo, lv, pa	
392	Right Side of No.391 (R)	1.0	1.5	0.3		0.5	pb, pa, lv	Dump Site
393	150m from Gomti River	20.0	0.5	0.4	4.0		pb, cl, pa, br	
	Total				**7.6**	**0.5**		

Name of Kukrail Nala [3] Date of Survey: 29 Nobember 2003 Name of Surveyor: Kipathi City: Lucknow

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
394	10m from Kukrail Via Tatbandh	5.0	1.0	0.3	1.5		pb, br, bo, cl	
395	Ustr. from No.394	5.0	1.0	0.2	1.0		pb, fo, so, sl	
396	Ustr. from No.394 (L)	1.5	1.0	0.3	0.5		pb, br, cl	Old Dump Site
	Total				**3.0**	**0.0**		

Appendix G

Appendix G Result of Amount of Solid Waste Surveyed for Each Nala

City: Kanpur

Name of Nala: Kasa Nala [8] Date of Survey: 29 November 2003 Name of Surveyor: Jeevan Ram Pamdey

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
1	Near Ganga River, Near Mainavari Road	300.0	8.0	2.0		4800.0	cl, pb, br, pb	Old Dump Site
2	11m from No.1	100.0	8.0	2.0		1600.0	wt, kt, pb, so	Old Dump Site
3	Ustr. from No.2 (R)	30.0	10.0	2.0		600.0	pb, cl, wt	Old Dump Site
4	70m from Ganga River	5.5	1.5	0.3	2.5		sl, pb, kt	
5	2m Ustr. from No.4	3.0	1.5	0.5		2.3	sl, pb, kt	
6	150m from Ganga River	2.0	0.5	0.2	0.2		fp, sl	
7	10m Ustr. from No.6	4.0	1.0	0.2	0.8		fp, sl	
8	160m from Ganga River	4.5	1.0	0.3	1.4		sl, cl, br, pb	
	Total				**4.8**	**7002.3**		

City: Kanpur

Name of Nala: Khewra Nala [14] Date of Survey: 29 November 2003 Name of Surveyor: Jeevan Ram Pamdey

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
9	30m from Mainawari Road	30.0	1.0	0.2	6.0		sl, pb, br	
10	50m from Mainawari Road	50.0	1.0	0.2	10.0		gr, br, pb, sl	
11	Ustr. from No.10	8.0	0.8	0.2	1.2		pb, bo, gr	
12	25m Ustr. from No.11	50.0	2.0	0.5	50.0		pb, bo, gr	
13	Right Side of No.12	0.8	0.8	0.2	0.1		gr, pb, cl, br	
14	150m from Mainawari Road (L)	30.0	2.0	0.5		30.0	pb, so	
15	150m from Mainawari Road	2.0	0.5	0.2	0.2		pb, cl, sl	
16	Near Mainawari Road	30.0	1.0	0.2	6.0		sl, pb, cl, br	
17	Near Mainawari Road	15.0	10.0	0.1		15.0	so, pb	
18	160m from Mainawari Road	20.0	1.3	0.3	7.8		sl, pb, pa	
19	150m from Mainawari Road	10.0	1.3	0.5	6.5		br, pa, pb	
20	8.3m from No.19	150.0	1.3	0.5	97.5		sl, cl	
21	Near No.20	100.0	50.0	0.1		500.0	pb, gr, so	
22	Near Surya vihor Colony Road	30.0	1.3	0.5	19.5		so, pb	
	Total				**204.8**	**545.0**		

City: Kanpur

Name of Nala: Jegeswar Nala [14] Date of Survey: 29 November 2003 Name of Surveyor: Jeevan Ram Pamdey

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
23	Near Mainawari Road (L)	4.0	3.0	0.2		2.4	pb, cl, gr, so	
24	Near No.23	10.0	5.0	0.5	25.0		sl, pb	
25	Near No.24 (R)	15.0	6.0	0.1		9.0	so, pl	
26	Near No.23 (L)	5.0	3.0	0.1		1.5	pb, pa, so	
27	2m from Mainawari Road (R)	2.0	0.5	0.3	0.3		so	
28	6m Ustr. from No.27 (L), Near Temple	8.0	0.9	0.2	1.4		pb, sl, so	
29	50m from Mainawari Road	25.0	0.9	0.3	6.8		pb, sl, pa	
30	150m from Ganga River	10.0	0.9	0.3	2.7		sl, pb, br	
31	Ustr. from No.30	15.0	0.9	0.3	4.1		sl, pb, br	
32	Near Mainawari Road	8.0	1.5	0.3		3.6	pb, so, pa	
33	Near Mainawari Road	100.0	0.9	0.3	27.0		br, bo, cl, wo	
34	200m from Ganga River	50.0	0.9	0.3	13.5		so, pb	
35	Ustr. from No.34	30.0	0.6	0.3	5.4		sl	
36	500m from Ganga River	80.0	0.6	0.3	14.4		sl, pb	
	Total				**100.5**	**16.5**		

City: Kanpur

Name of Nala: Jewra Nala [5] Date of Survey: 29 November 2003 Name of Surveyor: Jeevan Ram Pamdey

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
37	Between Ganga River & Mainawari Road	150.0	2.0	0.4	120.0		sl, pb, gr	
38	Between Ganga River & Mainawari Road	20.0	5.0	0.6		60.0	so, pb, gr	
39	100m from Ganga River	50.0	3.0	0.3	45.0		sl, pb	
40	Right Side of No.39 (R)	3.0	2.0	0.3	1.8		pb, so	
41	159m from Ganga River	30.0	1.5	0.3	13.5		pb, so	
	Total				**180.3**	**60.0**		

City: Lucknow

Name of Nala: Nawabganj Nala [5] Date of Survey: 1 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
42	200m from Ganga River	150.0	1.8	0.3	81.0		pb, cl, sl, pa, so	
43	Ustr. from No.42	100.0	1.8	0.3	54.0		pb, cl, sl, pa, so	
44	Near Ganga Road	9.0	1.5	0.2	2.7		so, pb, pa, gr	
45	Near Ganga Road	9.0	1.5	0.2	2.7		so, pb, pa, gr	
46	Ustr. of Ganga Road	2.5	1.5	0.3	1.1		pb, cl, br	
	Total				**141.5**	**0.0**		

Name of Nala: Rani Ghat Nala [1] Date of Survey: 1 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
47	150m from Ganga River Bank	50.0	1.2	0.4	24.0		pb, br, pa, fp, sl, so	
	Total				**24.0**	**0.0**		

Name of Nala: Sisamau Nala [26] Date of Survey: 1 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
48	Near Porvari Bangla Road	7.0	3.0	0.5	10.5		pb, cl, sl, so	
49	Right Side of No.48	10.0	1.0	0.5	5.0		pb, cl, sl	
50	Rihgt Side of No.49	10.0	0.5	0.5	2.5		br, pb, cl	
51	Ustr. from No.48 & 49 & 50	11.0	1.5	0.3	5.0		so, pb, gr	
52	Dstr. from Civil Lines Road	8.0	1.0	0.5	4.0		so, pb, bo, pa, fp	
53	Near the Temple	10.0	3.0	0.5	15.0		pb, cl, sl, so	
54	Between Khalasi Line & gwaltoli Localty	10.0	2.0	0.5	10.0		sl, so, pb, dp	
55	Left Side of No.54	8.0	1.0	0.5	4.0		sl, so, cl, pb	
56	Ustr. from No.55	2.5	3.0	0.8	6.0		so, cl, pb	
57	20m Ustr. from No.56	3.0	3.0	0.4	3.6		pb, cl, kt, so, sl	
58	Near Mekrabartgari Road	30.0	3.0	0.8	72.0		so, pb, cl, br	
59	Left Side of No.58	40.0	2.0	0.6	48.0		sl, br, dp, pb	
60	70m from No.59	20.0	6.0	0.5	60.0		br, so	
61	Near No.60	100.0	10.0	0.2	200.0		sl, pb, br	
62	Near No.60	5.0	3.0	0.8	12.0		br	
63	Near No.60	2.0	3.0	0.5	3.0		sl, pb	
64	Dstr. from Kabristan Road (R)	25.0	2.0	0.5	25.0		sl, pb, br, so	
65	Ustr. from No.64 (L)	15.0	3.0	0.5	22.5		pb, so	
66	Near Sisamau Road (R)	8.0	5.0	1.0	40.0		so, pb, cl, pa	
67	Left Side of No.66 (L)	6.0	2.0	0.5	6.0		so, pb, cl, pa, kt	
68	Near Civil Lines Road, Near Public Toilet	1.5	1.0	0.3	0.5		pb, lv, cl, br	
69	Near No.68	2.5	1.5	0.2	0.8		br	
70	Near Old Benaghabor Labour Colony	14.0	3.0	0.5	21.0		sl, br, pb, so	
71	Dstr. from No.70 (L)	2.0	1.5	0.8	2.4		pb, pa	
72	Ustr. from No.70	6.0	1.5	0.3	2.7		so, pb, pa	
73	Dstr. from No.71	7.0	3.0	0.3	6.3		so, br, pb, cl	
	Total				**587.7**	**0.0**		

Name of Nala: Tafco Nala [1] Date of Survey: 12 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
74	50m from Ganga Riverbed	5.0	1.5	0.3		2.3	pb, br, kt, pg, sl, pa, fp	
	Total				**0.0**	**2.3**		

Name of Nala: Parmat Ghat Nala [2] Date of Survey: 23 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
75	20m from Ganga River	6.0	5.0	0.6		18.0	pb, cl, sl	
76	Opposite Side of No.75	4.0	5.0	0.6		12.0	pb, cl, sl	
	Total				**0.0**	**30.0**		

Name of Nala: Jail Nala [1] Date of Survey: 23 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
77	25m from Ganga River	25.0	2.0	0.8	40.0		sl, cl, kt, pb	
	Total				**40.0**	**0.0**		

Name of Nala: Police Line Nala [1] Date of Survey: 23 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
78	25m from Ganga River	25.0	2.0	0.5	25.0		sl, pl, pa	
	Total				**25.0**	**0.0**		

Name of Nala: Gupter Ghat Nala [2] Date of Survey: 23 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
79	20m from Ganga River	350.0	2.0	0.5	350.0		bo, pb, pa	
80	50m from No.79	150.0	2.0	0.5	150.0		sl, pb, pa, cl	
	Total				**500.0**	**0.0**		

Name of Nala: Golf Club Nala [7] Date of Survey: 12 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
81	50m from Ganga River	3.0	1.0	0.3	0.9		sl, pb, cl, pa	
82	75m from Ganga River (R)	4.0	1.0	0.3	1.2		pb, kt, sl	
83	15m Ustr. from No.82 (L)	3.0	1.0	0.3	0.9		so, pl, sl	
84	500m from Ganga River (R)	5.0	2.0	0.3	3.0		sl, cl, pl	
85	500m from Ganga River (L)	10.0	1.5	0.3	4.5		cl, pl, sl, so	
86	Ustr. from No.85	25.0	2.5	0.2	12.5		sl	
87	15m from George Mau UIP Road	300.0	2.0	0.2	120.0		sl, pl	
	Total				**143.0**	**0.0**		

Name of Nala: Wazidpur Nala [5] Date of Survey: 12 December 2003 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
88	Near Ganga River	25.0	1.0	0.2	5.0		sl, so	
89	300m from Ganga River	15.0	1.5	0.2	4.5		sl, pl	
90	30m from No.89 (L)	3.0	0.5	0.3	0.5		so, dp, kt	
91	30m from No.90 (R)	2.0	1.0	0.3	0.6		sl	
92	600m from Ganga River	4.0	1.3	0.3	1.6		pb, cl, kt, pa	
	Total				**12.1**	**0.0**		

Name of Nala: Garda Nala [111] Date of Survey: 8 January 2004 Name of Surveyor: Kripathi City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
93	20m from Lcuknow Road	10.0	6.0	0.7	42.0		pb, wo, pa, fo	
94	Right Side of No.93 (R)	30.0	4.0	0.3		36.0	pb, cl, pa	
95	150m from Lucknow Road (L)	20.0	4.0	0.3		24.0	pb, cl, pa	Dump Site
96	30m Ustr. from No.95	3.0	1.0	0.6	1.8		pb, cl	
97	30m Ustr. from No.96 (L)	10.0	6.0	0.2		12.0	pb, fo	Dump Site
98	Opposite Side of No.97 (R)	10.0	4.0	0.1		4.0	pb, fo, br	Dump Site
99	250m from Lucknow Road (L)	6.0	8.0	0.2		9.6	pb, cl	Dump Site
100	30m Ustr. from No.99 (L)	10.0	15.0	1.0		150.0	pb, pa, cl	Dump Site
101	Right Side of No.100, in the river	6.0	2.0	0.5	6.0			
102	330m from Lucknow Road	10.0	6.0	0.5		30.0	pb, pa	Dump Site
103	20m Ustr. from No.102 (L)	15.0	4.0	0.3	18.0		pb	Dump Site
104	Opposite Side of No.102 (R)	15.0	2.0	0.7		21.0	pb, pa, fo sl	
105	400m from Lucknow Road (R)	20.0	5.0	0.3		30.0	pb, pa, br	Dump Site
106	Near Bridge A (50m Ustr. from No.105)	3.0	6.0	0.7	12.6		lv, pb, cl, pa	
107	Near Bridge A (50m Ustr. from No.106) (F	10.0	9.0	1.0		90.0	pb, cl, pa	Dump Site
108	20m Ustr. from Bridge A (R)	15.0	10.0	0.7		105.0	pb, pa, br	Dump Site
109	Opposite Side of No.108 (L)	20.0	2.5	0.5	25.0		so, fo, pb	
110	30m Ustr. from No.108 (R)	16.0	7.0	0.5	56.0		pb, br	Dump Site

111	50m Ustr. from Bridge A (L)	20.0	2.5	0.7	35.0		pb, so, fo, br	
112	30m Ustr. from No.111 (L)	18.0	3.0	0.7	37.8		pb, so, pa	
113	120m Ustr. from Bridge A	10.0	4.0	0.6	24.0		br, fo , pb, cl	
114	30m Ustr. from No.113 (R)	15.0	7.0	1.0		105.0	pb, pa, br	
115	50m Ustr. from No.114 (L)	5.0	10.0	0.3		15.0	br, pb, pa	
116	250m Ustr. from Bridge A	5.0	1.0	0.7	3.5		wo, cl, pb	
117	10m Ustr. from No.116 (L)	10.0	7.0	0.1		7.0	pa, pb	
118	10m Ustr. from No.116, in the river	3.0	1.0	0.7	2.1		wo, cl	
119	Near Ratan Lal Nagar Road	15.0	8.0	0.6	72.0		br, cl, pb	
120	200m Ustr. from No.119 (L)	4.0	1.5	0.7	4.2		sl, br, pb	
121	220m Ustr. from Ratan Lal Nagar Road (R	20.0	5.0	0.7	70.0		pb, so, cl, pa	
122	200m from Garda Nala (Section B)	3.0	1.5	0.5	2.3		lv, pb	Nala is divided in sections A,B, C
123	50m from Meeting Point Section A & B	7.0	2.0	0.5	7.0		br, pb, sl	Dump Site
124	10m Ustr. from No.123 (R)	10.0	2.0	0.2		4.0	pb, br	
125	100m Ustr. from No.124	3.0	1.0	0.7	2.1		cl, pb	
126	170m from Meeting Point Section A & B	2.0	0.5	0.5	0.5		pb, cl	Section B
127	Opposite Side of No.126 (L)	10.0	12.0	0.2		24.0	pb, pa	Dump Site, Section B
128	20m Ustr. from No.126 (R)	10.0	2.0	0.5	10.0		pb, cl, pa	Section B
129	230m from Meeting Point Section A & B	12.0	1.5	0.6	10.8		pb, cl	Section B
130	20m Ustr. from No.129	4.0	1.5	0.6	3.6		pb, cl, pa	Section B
131	350m from Meeting Point Section A & B	20.0	2.0	0.7	28.0		pb, cl	Section B
132	500m Ustr. from Rail Track (Near No.131	4.0	1.0	0.5	2.0		pb, cl	Section B
133	700m Ustr. from Rail Track (Near No.131	5.0	1.0	0.5	2.5		pb, cl	Section B
134	200m Ustr. from No.133	2.0	1.5	0.6	1.8		pb, pa, cl	End of Section B
135	10m from Meeting Point Section B & C	30.0	1.5	0.6	27.0		pb, fo, cl	Section C
136	20m Ustr. from No.135	50.0	1.5	0.6	45.0		pb, cl	Section C
137	100m from Meeting Point Section B & C	15.0	5.0	1.0		75.0	pb, cl, as, br	Section C
138	Opposite Side of No.137 (L)	2.0	1.5	0.7	2.1		pb, pa, cl	Section C
139	50m Ustr. from No.138 (L)	50.0	1.5	0.5	37.5		pb, cl, pa	Section C
140	150m from Meeting Point Section B & C	100.0	0.5	0.6	30.0		pb, cl, pa	Section C
141	250m from Meeting Point Section B & C	100.0	0.5	0.7	35.0		pb, cl	Section C
142	350m from Meeting Point Section B & C	300.0	0.5	0.7	105.0		pb, cl, pa	End of Section C
143	400m from Ratan Lal Nagar Road (R)	7.0	2.0	0.6	8.4		pb, so, br	
144	120m Ustr. from No.143 (L)	3.0	1.0	0.6	1.8		pb, pa	
145	Left Side of No.144 (L)	8.0	24.0	0.2		38.4	pb, pa, lv	Dump Site
146	Near Industrial Area Kanpur Road	5.0	2.0	0.6	6.0		pb, so, pa	
147	100m Ustr. from No.146 (R)	20.0	3.0	0.6	36.0		so, lv, pa	
148	50m Ustr. from No.147 (L)	5.0	3.0	0.1	1.5		pb, pa, br	
149	150m from Industrial Area Kanpur Rd. (L)	100.0	2.5	0.6	150.0		so, lv, br, pb	
150	100m Ustr. from No.149 (R)	20.0	1.0	0.5	10.0		so, lv, br	
151	Near Kalpi Road (R), (Dstr.)	1.5	3.0	0.1		0.5	lv, pb, pa	
152	Near Kalpi Road (R), (Ustr.)	25.0	3.5	0.7	61.3		so, lv, pb	
153	30m Ustr. from No.152	5.0	1.0	0.6	3.0		br, pb, pa	
154	100m Ustr. from Kalpi Road (R)	10.0	3.0	0.6	18.0		pb, pa, cl	
155	50m Ustr. from No.154 (L)	3.0	2.0	0.6	3.6		pb, pa	
156	40m Ustr. from No.155 (R)	5.0	3.0	0.2		3.0	pb, cl, pa	Dump Site
157	250m Ustr. from Kalpi Road (R)	6.0	2.5	0.6	9.0		pb, cl, pa	
158	100m Ustr. from No.157 (R)	3.0	2.0	0.6	3.6		pb, sl, cl	
159	70m Ustr. from No.158 (R)	10.0	2.0	0.1	2.0		pb, br, cl, pa	
160	450m Ustr. from Kalpi Road (R)	300.0	1.5	0.7	315.0		sl, gr	
161	Opposite Side of No.160 (L)	300.0	1.5	0.7	315.0		sl, gr	
162	750m Ustr. from Kalpi Road (R)	200.0	1.5	0.7	210.0		sl, gr	
163	Opposite Side of No.162 (L)	200.0	1.5	0.7	210.0		sl, gr	
164	50m Ustr. from No.162 (R)	50.0	20.0	0.2	200.0		pb, pa, cl	Old Dump Site
165	Ustr. from Bridge A (50m Ustr. from Kalp	250.0	2.5	0.7	437.5		sl, pb	

166	250m Ustr. from No.165 (Near Bridge B) (	7.0	3.0	0.1		2.1	pb, pa	Dump Site
167	150m Ustr. from No.166 (L)	5.0	2.5	0.7	8.8		sl, pb	
168	100m Ustr. from No.167 (R)	10.0	3.0	0.1		3.0	pb, cl, pa	
169	300m Ustr. from Bridge B (L)	30.0	2.0	0.5	30.0		so, gr	
170	70m Ustr. from No.169 (L)	50.0	2.0	0.5	50.0		so, gr	
171	Opposite Site of No.170 (R)	50.0	2.0	0.5	50.0		so, gr	
172	Ustr. from No.170 & 171 (Near Bridge C)	3.0	1.0	0.5	1.5		pb, pa, cl	
173	100m Ustr. from No.172 (R)	100.0	1.5	0.6	90.0		so, gr	
174	50m Ustr. from No.173 (L)	100.0	1.5	0.5	75.0		so, gr	
175	200m Ustr. from Bridge C (R)	100.0	1.5	0.5	75.0		so, pb, gr	
176	Opposite Side of No.175 (L)	100.0	1.5	0.5	75.0		so, gr	
177	100m Ustr. from No.175 (R)	20.0	1.5	0.5	15.0		so, gr	
178	Near Bridge D (Ustr. from No.177)	3.0	1.5	0.5	2.3		pb, cl	
179	50m Ustr. from No.178 (R)	10.0	2.0	0.5	10.0		pb, pa	
180	100m Ustr. from No.179 (R)	100.0	2.0	0.5	100.0		so, gr	
181	150m Ustr. from Bridge D (L)	100.0	2.0	0.5	100.0		so, gr, sl	
182	50m Ustr. from No.181 (L)	100.0	2.0	0.5	100.0		so, gr, sl	
183	Opposite Side of No.182 (R)	100.0	2.0	0.5	100.0		so, gr	
184	200m Ustr. Kal from Yan Pur Road (R)	15.0	3.0	0.1		4.5	pb, pa	Dump Site
185	400m Ustr. from No.184 (L)	40.0	1.5	0.1		6.0	so, br	Dump Site
186	650m Ustr. from Kal Yan Pur Road (L)	100.0	2.0	0.3		60.0	so, pb, cl, br	Dump Site
187	Opposite Site of No.186 (R)	15.0	2.0	0.3		9.0	pb, so	Dump Site
188	750m Ustr. from Kal Yan Pur Road (L)	100.0	1.5	0.2		30.0	so, pb	Dump Site
189	1000m Ustr. from Kal Yan Pur Road (L)	200.0	1.5	0.2		60.0	so, pb	
190	1300m Ustr. from Kal Yan Pur Road (L)	700.0	1.5	0.1		105.0	so, br, pb	
191	200m Ustr. from No.190	40.0	1.0	0.1		4.0	so, br, pa	
192	50m from Garda Nala (Main Nala) (R)	50.0	1.0	0.4	20.0		so, gr	Arma Pur State Nala
193	Opposite Side of No.192 (L)	50.0	1.0	0.4	20.0		so, gr	(900m from Kalpi Road)
194	150m from Main Nala (L)	100.0	1.0	0.5	50.0		so, gr, sl	Arma Pur State Nala
195	Ustr. from No.194 (R)	50.0	1.0	0.4	20.0		so, gr, sl	ditto
196	500m from Main Nala (R)	150.0	1.5	0.5	112.5		so, gr, sl	ditto
197	800m from Main Nala (L)	50.0	1.5	0.4	30.0		so, gr	ditto
198	150m Ustr. from No.197 (R)	25.0	1.5	0.4	15.0		so, gr	ditto
199	1km from Maina Nala	4.0	2.0	0.6	4.8		pb, pa	ditto
200	30m Ustr. from No.199	5.0	1.5	0.5	3.8		pb, pa	ditto, Here is Residential Area
201	1080m from Main Nala (R)	4.0	1.5	0.5	3.0		pb, pa	ditto
202	70m Ustr. from No.201 (L)	6.0	1.3	0.4	3.1		pb, pa	ditto
203	1200m from Main Nala	3.0	1.0	0.5	1.5		pb, pa	End of Nala
	Total				**3930.0**	**1067.1**		

Name of Nala: Halwa Khanda Nala [39] Date of Survey: 7 January 2004 Name of Surveyor: Kripathi City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
204	200m from Pandu River (L)	3.0	1.0	0.7	2.1		so, pb	
205	200m Ustr. from No.204 (R)	2.0	1.0	0.5	1.0		so, pb, cl	
206	Ustr. from No.205, (Dstr. from Bridge A) (	1.5	2.0	0.2		0.6	pa, pb, cl	Dump Site
207	Ustr. from Bridge A	1.0	0.5	0.4	0.2		pb, cl, br	
208	Left Side of No.207 (L)	1.0	1.0	0.1		0.1	pb	Dump Site
209	Ustr. from No.208, (Dstr. from Bridge B)	5.0	1.5	0.7	5.3		so, br, pb	
210	Ustr. from Bridge B	2.0	1.0	0.5	1.0		so, br, cl	
211	100m Ustr. from No.210	10.0	1.5	0.5	7.5		br, pb, cl	
212	200m Ustr. from Brdige B (R)	10.0	1.0	0.4	4.0		sl, pb, cl	
213	50m Ustr. from No.212 (R)	5.0	1.0	0.4	2.0		sl, pb, pa	
214	Ustr. from No.213, (Dstr. from Bridge C) (	5.0	2.0	0.2		2.0	pb, br, so	Dump Site
215	Ustr. from No.214 (L)	10.0	4.0	0.2		8.0	pb, cl, pa	Dump Site
216	Ustr. from No.215 (L) (Dstr. from Bridge I	3.0	1.5	0.3		1.4	pb, so, cl	Dump Site
217	Ustr. from Bridge D	2.5	3.0	0.5	3.8		pb, fo, pa, cl	
218	10m Ustr. from No.217	2.0	2.5	0.5	2.5		pb, cl, pa	
219	10m Ustr. from No.218	3.0	0.5	0.5	0.8		pb, cl, pa	
220	Ustr. from No.219 (Dstr. from Bridge E)	4.0	1.5	0.5	3.0		pb, cl, pa, br	
221	Ustr. from Bridge E (R)	3.0	7.0	0.2		4.2	pb, pa, lv	Dump Site
222	Opposite Side of No.221 (L)	2.0	1.0	0.1		0.2	pb, cl, pa, br	Dump Site
223	Dstr. from Lucknow Road	6.0	1.0	0.5	3.0		pb, cl, pa	
224	Left Side of No.223 (L)	10.0	4.0	0.2		8.0	lv, pa, pb	Dump Site
225	Right Side of No.223 (R)	10.0	3.0	0.2		6.0	pb, so, cl	Dump Site
226	Ustr. from Lucknow Road	5.0	1.5	0.5	3.8		pb, cl, pa	
227	Left Side of No.226 (L)	15.0	5.0	0.5		37.5	pb, cl, pa, br	Dump Site
228	50m Ustr. from Lucknow Road (R)	10.0	1.0	0.3	3.0		pb, cl, pa, br	
229	50m Ustr. from No.228 (R)	2.5	4.0	0.5	5.0		pb, wo	
230	150m Ustr. from Lucknow Road (L)	35.0	4.0	0.7		98.0	pb, fo, pa, bo	
231	150m Ustr. from Lucknow Road	35.0	6.0	0.1	21.0		pb, pa, cl	
232	235m Ustr. from L.K.O. Road (R)	2.0	0.5	0.5	0.5		pb, cl, pa	
233	25m Ustr. from No.232 (R)	7.0	1.0	0.5	3.5		sl, pb, cl	
234	300m Ustr. from L.K.O. Road (R)	1.0	0.5	0.5	0.3		cl, pb	
235	10m Ustr. from No.234 (R)	3.0	0.5	0.5	0.8		pb, wo	
236	350m Ustr. from L.K.O. Road (L)	10.0	1.0	0.1		1.0	lv, pa, pb	Dump Site
237	50m Ustr. from No.236 (R)	4.0	1.5	0.1		0.6	lv, pa, pb	Dump Site
238	Ustr. from Patan Lal Nagar Road (R)	4.0	1.0	0.5	2.0		pb, pa	
239	Opposite Side of No.238 (L)	1.5	1.0	0.5	0.8		pb, so, br	
240	100m Ustr. from No.238 & 239	30.0	4.0	0.7	84.0		lv, pb, fo, bo	
241	250m Ustr. from Patan Lal Nagar Road	10.0	3.0	0.5	15.0		pb, cl, pa, bo	End Point
242	Ustr. from No.241	10.0	4.0	0.5	20.0		pb, pa, cl, fo	
	Total				**195.6**	**167.6**		

Name of Nala: C.O.D. Nala [64] Date of Survey: 10 January 2004 Name of Surveyor: Kripathi City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
243	20m from Pandu River (R)	16.0	4.0	0.2		12.8	as, pb, pa	Old Dump Site
244	200m from Pandu River	3.0	0.5	0.6	0.9		br, so	
245	300m Ustr. from No.244 (R)	15.0	6.0	0.2		18.0	pb, lv, br, pa	Dump Site
246	250m Ustr. from No.245	3.0	1.0	0.5	1.5		br, pb	
247	1km from Pandu River	4.0	1.0	0.4	1.6		pb, br	
248	Near No.247	6.0	1.0	0.4	2.4		br, so	
249	1km Ustr. from No.248	4.0	1.0	0.5	2.0		wo, pb	
250	Near Naubarta Canal	10.0	4.0	0.5	20.0		pb, fo, br	

251	150m Ustr. from No.250 (R)	15.0	4.0	0.1		6.0	br, pb	Old Dump Site
252	Ustr. from No.251 (R)	4.0	2.0	0.1		0.8	pb, as, pa	Old Dump Site
253	200m Ustr. from Naubarta Canal (R)	10.0	2.5	0.4	10.0		br, pb	
254	20m Ustr. from No.253 (R)	100.0	2.0	0.1		20.0	pb, cl, pa	
255	Ustr. from No.254 (R)	6.0	3.0	0.4	7.2		so, br, pb	
256	320m Ustr. from Naubarta Canal	7.0	4.0	0.4	11.2		pb, fo, br	
257	120m Ustr. from No.256 (R)	4.0	3.0	0.4	4.8		pb, br	
258	50m Ustr. from No.257 (R)	10.0	3.0	0.1		3.0	pb, pa	Dump Site
259	500m Ustr. from Naubarta Canal	50.0	2.0	0.1		10.0	pb, cl, pa	
260	100m Ustr. from No.259 (R)	4.0	2.0	0.4	3.2		pb, pa	
261	100m Ustr. from No.260 (L)	2.0	0.5	0.4	0.4		pb, pa	
262	750m Ustr. from Naubarta Canal	4.0	1.0	0.5	2.0		pb, pa	
263	100m Ustr. from No.262 (R)	20.0	3.5	0.1		7.0	pb, pa, cl	
264	50m Ustr. from No.263 (R)	10.0	2.0	0.1		2.0	pb, pa, cl	
265	1km Ustr. from Naubarta River	8.0	3.0	0.4	9.6		pb, pa, cl	
266	120m Ustr. from No.265 (R)	4.0	1.5	0.4	2.4		pb, gr, lv	
267	40m Ustr. from No.266 (L)	4.0	1.5	0.4		2.4	pb, pa	
268	1.2km Ustr. from Naubarata Canal (R)	4.0	1.0	0.5	2.0		gr, pb, pa	
269	50m Ustr. from No.268 (L)	10.0	2.0	0.1		2.0	pb, pa, cl	
270	Ustr. from No.269 (R)	10.0	4.0	0.2		8.0	so, pb	Ustr. from Lucknow Road
271	200m Ustr. from Lucknow Road	5.0	4.0	0.6	12.0		pb, bo, fo	
272	200m Ustr. from No.271	10.0	3.0	0.5	15.0		wo, pb, bo	
273	Ustr. from No.272 (L)	4.0	1.5	0.6	3.6		gr, wo, pb	
274	500m Ustr. from Lucknow Road (R)	5.0	2.0	0.5	5.0		lv, gr	
275	120m Ustr. from No.274 (R)	3.0	1.0	0.5	1.5		lv, gr	
276	70m Ustr. from No.275 (L)	4.0	1.5	0.4	2.4		lv, gr	
277	1.4km Ustr. from Lucknow Road (L)	100.0	1.0	0.4	40.0		sl, so, br	
278	50m Ustr. from No.277 (R)	50.0	2.5	0.2		25.0	so, pb	
279	1.7km Ustr. from Lucknow Road (R)	2.0	0.5	0.3	0.3		gr, so	
280	Ustr. from Rail Track (R)	4.0	1.0	0.4	1.6		pb, pa	
281	Ustr. from No.280 (L)	4.0	1.0	0.4	1.6		pb, pa	
282	150m Ustr. from Rail Track	2.0	0.5	0.4	0.4		pb, pa, cl	
283	100m Ustr. from No.282 (R)	4.0	1.0	0.4	1.6		pb, cl	
284	100m Ustr. from Lucknow Road (L)	100.0	1.0	0.6	60.0		gr, tr	
285	Opposite Side of No.284 (R)	100.0	1.0	0.6	60.0		gr, tr	
286	500m Ustr. from L.K.O. Road (R)	300.0	1.5	0.6	270.0		gr, so	
287	1200m Ustr. from L.K.O. Road (R)	500.0	1.5	0.6	450.0		so, gr	
288	2200m Ustr. from L.K.O. Road (L)	300.0	1.0	0.6	180.0		gr, so	
289	Dstr. from Kidwai Nagar Road (L)	2.0	0.5	0.5	0.5		pb, cl	Residential Area
290	Dstr. from Kidwai Nagar Road (R)	1.5	0.5	0.5	0.4		pb, pa	Residential Area
291	Ustr. from Kidwai Nagar Road	4.0	2.0	0.5	4.0		pb, pa	
292	30m Ustr. from No.291 (R)	3.0	2.0	0.5	3.0		pb, cl, pa	
293	50m Ustr. from No.292 (L)	6.0	1.5	0.6	5.4		pb, pa	
294	150m Ustr. from Kidwai Nagar Road (L)	4.0	1.5	0.5	3.0		pb, pa	
295	150m Ustr. from Kidwai Nagar Road (L)	7.0	2.0	0.1		1.4	pb, pa, br	
296	100m Ustr. from No.294+295	9.0	1.5	0.1		1.4	pb, pa	
297	350m Ustr. from Kidwai Nagar Road (R)	8.0	2.0	0.1		1.6	pb, pa, so	
298	60m Ustr. from Kidwai Nagar Road (L)	3.0	1.5	0.5	2.3		pb, pa, br	
299	450m Ustr. from Kidwai Nagar Road (R)	4.0	2.0	0.5	4.0		pb, cl, pa	
300	30m Ustr. from Lucknow Road (R)	4.0	2.0	0.4	3.2		lv, gr	
301	50m Ustr. from No.300	2.0	1.0	0.4	0.8		gr, so	
302	100m Ustr. from Lucknow Road (R)	4.0	1.5	0.5	3.0		so, gr	
303	20m Ustr. from No.302 (R)	6.0	1.0	0.1		0.6	so, br, gr	Old Dump Site
304	10m Ustr. from No.303 (R)	2.0	0.5	0.4	0.4		so, br, gr	
305	250m Ustr. from Lucknow Road (R)	2.0	0.5	0.5	0.5		so, gr	
306	50m Ustr. from No.305 (L)	6.0	2.0	0.1		1.2	so, lv	End of Nala
	Total				**1216.6**	**123.2**		

Name of Nala: Panki Industrial Estate Nala [5] Date of Survey: 10 January 2004 Name of Surveyor: Jeevan Ram Pamdey City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
307	Near LML to Dada Nagar Road	1500.0	1.5	0.5	1125.0		as, so, fp	
308	Dstr. from No.307 (Near Bridge Bypass R	100.0	5.0	0.5	250.0		as, so, fp	
309	Near Bank of Baroda	300.0	6.0	0.5	900.0		as, so, pb	
310	Dstr. from No.309	200.0	6.0	0.5	600.0		as, so, pb	
311	End point of Nala	2500.0	6.0	0.3	4500.0			LML Co.'s Waste
	Total				**7375.0**	**0.0**		

Name of Nala: Panki Thermal Power Nala [21] Date of Survey: 9 January 2004 Name of Surveyor: Kripathi City: Kanpur

No.	Location	Dimensions of Solid Waste[*1]			Volume of Waste[*2]		Major Component	Other Remarks
		Length	Width	Height	Wet	Dry		
312	10m Ustr. from Lucknow Road	1.5	0.5	0.6	0.5		so	
313	15m Ustr. from No.312	10.0	1.0	0.6	6.0		so, pb	
314	50m Ustr. from Lucknow Road (R)	100.0	2.5	0.5	125.0		so	
315	Left Side of No.314, in the river	20.0	2.0	0.5	20.0		so	
316	150m Ustr. from Lucknow Road (L)	10.0	2.5	1.5	37.5		so	
317	20m Ustr. from No.316 (L)	20.0	1.0	1.0	20.0		so	
318	10m Ustr. from Rail Track Bridge (R)	15.0	2.0	1.0	30.0		so	210m Ustr. from Lucknow Road
319	70m Ustr. from No.318 (R)	10.0	0.5	0.7	3.5		pb, pa, so	
320	150m Ustr. from Rail Bridge (R)	6.0	1.0	0.6	3.6		so, gr	
321	10m Ustr. from No.320 (L)	3.0	0.5	0.6	0.9		so	
322	10m Ustr. from No.321	1.5	0.5	0.6	0.5		so, pb	
323	270m Ustr. from Rail Bridge (L)	10.0	0.5	0.8	4.0		so	
324	30m Ustr. from No.323 (L)	6.0	0.5	0.6	1.8		so	
325	50m Ustr. from No.324 (L)	15.0	1.5	0.8	18.0		so	
326	400m Ustr. from Rail Bridge (L)	17.0	0.5	0.8	6.8		so	
327	Ustr. from Near Bridge A (L)	100.0	1.5	0.1		15.0	pb, so, pa	500m Ustr. from Rail Bridge, Dump
328	20m Ustr. from Bridge B (L)	4.0	0.5	0.5	1.0		pb, so	100m Ustr. from Bridge A
329	Ustr. from No.328 (L)	4.0	0.5	0.5		1.0	so, br	Dump Site
330	100m Ustr. from Bridge C	2.5	0.5	0.7	0.9		pb, wo, cl	120m Ustr. from Bridge B
331	50m Ustr. from Panki Temple Road	1.5	3.0	0.7	3.2		pb, lv, fo	
332	Ustr. from No.331	1.0	0.5	0.3	0.2		pa, pb	End of Nala
	Total				**283.2**	**16.0**		