社会開発調査部報告書

Japan International Cooperation Agency (JICA)

Ministry of Construction and Public Works
Male' Municipality

THE STUDY ON SOLID WASTE MANAGEMENT FOR MALE' CITY IN THE REPUBLIC OF MALDIVES

FINAL REPORT

DATA

May 1999

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Environmental Technology Consultants Co., Ltd

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(1) Thulusdhoo

Name of Island : Thlusdhoo
Name of Attol : Male
Survey Date : 20 June, 1998

(Sheet No. Thu 1/2)

a. General Information		
	Present population	746
	Nos. of house	120
	Nos. of households	180
	Major industries	beverage bottling, garment, chemical goods, ship yard, fishery
	Average annual income of a household	3,000 Rfs/month
	Future reasional development plan	Construction of a kinder garden/non-formal education school and seawall, Replacement of the [illegible]
	When is the development plan implemented ?	School and seawall are under construction. Budgetting for the jetty.
	Which organization implement the development	Island Office, Island People's Account
	How much is the investment cost?	1.8 + 0.6 + 0.3 M. Rfs
	Nos. of primary schools & pupils	1 - 230
	Nos. of secondary schools & students	1 - 13
	Nos. of other schools & students	none
	Nos. of shops	8 (2-pharmacies, 6-general store)
	Nos. of factories, type & employee	5 - beverage bottling, garment, chemical goods/carton box, shipyard, dry-fish center
b. Infrastructures		
	Water Supply Facilities	No water supply
	Method of Treatment	
	Tratment Capacity	
	Installation Cost	
	Is there any expansion plan?	
	Particula Problems if any	
	Sewage Treatmetn Facilities	Two outfalls to the sea
	Method of Treatment	
	Tratment Capacity	
	Installation Cost	
	Is there any expansion plan?	
	Particula Problems if any	
	Power Plant	240 kVA (80 kVA x 3 units)
	Total Capacity of Generators	
	Installation Cost	
	Is there any expansion plan?	Enough for the time being
	Particula Problems if any	

(Continued) Thulusdhoo

(Sheet No. Thu - 2/2)

e. Solid Waste Management	
Amount of solid waste generated in a day (ton/day)	No records
Amount of recyclable wastes in a day (ton/day)	No activities
Amount of solid waste disposed in a day (ton/day)	1 ton/day?
Who is responsible for collection of solid wastes?	Island Committee / Island Office
Where is the disposal site?	Seashore
Who is responsible for operation & maintanance of	Island Committee / Island Office
How much is spent for SWM in this island?	23,00 Rfs for the wire net fence construction
Who bear for the expenses?	Island People's Account
What is the major problem for SWM operation?	odour, food waste disposed at the disposal site
Do you carry out waste reduction program?	Not yet
How is the status of the waste reduction program?	-
Do you carry out resource recovery program?	Not yet
How is the status of the resource recovery plan?	-
Can you sell the recovered resources ? How much?	-
Do you think that the polluters-pay-principle is applicable for cleansing services in this island?	Residents have no money to afford for it.
How much do you think is affordable for the	-
Is there any plans to improve the current SWM	New disposal site, foodwaste disposal into the deep
How much is the budget for the improvement plan?	100,000 - 200,000 Rfs
Please mention if you have specific opinions to the Government for improvement of SWM in the inhabited islands.	-

(2) Viligili

Questionnaires to Maldives Housing & Urban Development Board regarding Viligili Island (1/2) 2 July, 1998

1. The board is in charge of the planning side of solid waste collection and disposal.
2. The execution system of solid waste collection and disposal is the same as in the Male island.
3. The Viligili island is legally in the process of becoming the 5th district of the Male Municipality.
4. Project planning and urban development are done under the board's initiative.
5. The board takes care of the general welfare, while other matters are under direct jurisdiction of respective governmental organs.

1.	**General Information**	
	Present population	1844. Projection for 2010: 15,000.
	Nos. of houses	286
	Nos. of households	n.a.
	Major industries	1) shipyard 2) carpentries 3) port under construction by Ministry of Fisheries
	Average annual income of a household	n.a.
	Future regional development plan	1) civic center 2) harbour development authority 3) ferry services
	When will the development plan be implemented?	June, 1999. But, depends on national priority.
	Which organization will implement the development plan?	-
	How much will be the investment cost?	US$1.15 million
	Nos. of primary schools & pupils	1 primary school
	Nos. of secondary schools & studentss	No secondary school
	Nos. of other schools & students	A nursery has just started.
	Nos. of shops	12
	Nos. of factories, types & Nos. of employees	shipyard : 1, carpentries: 20, workshops: 12
2.	**Infrastructures**	
	Water Supply Facilities	(Maldives Water & Sewerage Company is in charge of water supply.)
	Method of Treatment	Desalination
	Treatment Capacity	200 m^3 x 2 units. Storage capacity is 700 m^3.
	Installation Cost	n.a.
	Is there any expansion plan?	Capacity will be increased to 600 m^3.
	Particular Problems if any	No.
	Wastewater Treatment Facilities	No sewerage at the moment, but plot for it is secured already.
	Method of Treatment	Directly discharged to the sea.
	Treatment Capacity	-
	Installation Cost	-
	Is there any expansion plan?	4.7 million for water and sewerage. It is on-going.
	Particular Problems if any	No.

Power Plant	
Total Capacity of Generators	n.a.
Installation Cost	n.a.
Is there any expansion plan?	n.a.
Particular Problems if any	n.a.

Questionnaires to Maldives Housing & Urban Development Board regarding Viligili Island (2/2)

3. Solid Waste Management	
Amount of solid waste generated in a day (tons/day)	The barge comes 2 times a week.
Amount of recyclable wastes in a day (tons/day)	"No idea."
Amount of solid waste disposed in a day (tons/day)	-
Who is responsible for collection of solid wastes?	Owner of dust bin.
Where is the disposal site?	-
Who is responsible for operation & maintenance of the disposal?	32 people (Sri Lankan/Bangladeshi workers & Maldivian ladies). Average salary: Rf.1,500/month. Foreigners are hired by Viligili administration. Ladies are Villingili sdministration employees.
How much is spent for SWM in this island?	-
Who bears the expenses?	-
What is the major problem for SWM operation?	Trucks, pickups and more collection bins are necessary.
Do you carry out waste reduction program?	No.
What is the status of waste reduction program?	-
Do you carry out resource recovery?	No.
What is the status of resource recovery?	-
Can you sell the recovered resources? How much?	No.
Do you think that the polluters pay principle is applicable for cleansing services in this island?	Yes.
How much do you think is affordable for the residents per month?	"We cannot impose charges so much because of the short distance (only 10 minutes) to the disposal site. In this respect the circumstances here differ from those in the Male island."
Are there any plans to improve the current SWM operation?	-
How much is the budget for the improvement plan?	-
Please mention if you have specific opinions to the Government for improvement of SWM in Viligili island.	1) Awareness program. 2) Now bicycles must be equipped with the light under the law. If the bicycle lanes are lit, there will be no need for the light, thus reducing the generation of used batteries. 3) The management of garbage is not good. There is bad smell in the disposal site. Garbage should be separated into 3 categories: kitchen waste, glass & plastics and tin. 4) Right now there are 6 bins only. One truck with 5 tonnes is necessary.

(3)Bandos

Questionnaires to Resort Islands (1/2) Bandos Island 27 June, 1998

1.	**General Information**	
	Name of the company/owner	Orchid Holding (PVT) Co. LTD., Mr. M. W. Deen/Mr. E. S. Ong
	Year of establishment	1972
	Nos. of rooms	223
	Nos. of beds	446
	Nos. of guests arrival (guest/year)	20,000/year on average, 25,000 for this year
	Total nos. of days stay at hotels (guest-day/year)	130,232 (446x365x80%) Note: occupancy rate=80%
	Country of the guest: No. 1	Germany
	Country of the guest: No. 2	Italy
	Country of the guest: No. 3	Japan
	Total nos. of day visitors in a year	18,250 (50/day x 365)
	Nos. of staff in the resort island	450
	Nos. of staff in charge of solid waste disposal	30 (hygiene + maintenance)
	How much do you pay for the taxes?	US$600,000(bed tax)+US$1,100,000 (land tax) = US$1,700,000
	How much is the annual turnover?	US$10,000,000 to 11,000,000. Profit target: US$2,500,000/year.
	When is the lease contract period expired?	2013 (15 years from now)
	Do you plan to renew the lease contract?	It depends on how the government will evaluate the management of this resort.
2.	**Attractions of the Resort Island**	
	Strategies for Promotion of Hotel Guests	Stress the island as a family destination.
	Major Attractions for Promotion of Hotel Guests: No. 1	Diving (diving course for 9 languages, depression chamber)
	Major Attractions for Promotion of Hotel Guests: No. 2	Family destination
	Major Attractions for Promotion of Hotel Guests: No. 3	Medical facilities (good clinic and doctors)
	Special Attractions/Leisures Different from Other Resort	Meeting all round requirements for diving. Repeater ratio: 28%
3.	**Utilities**	
	Water Supply Facilities	
	Method of Treatment	Desalination
	Treatment Capacity	6 units. 475 tonnes/day.
	Installation Cost	US$85,000 x 4 + US$100,000 x 2 = US$540,000. O & M cost: US$1,900,000/year.
	Particular Problems if any	Complaints from guests: Water is colored. Water is not coming.
	Wastewater Treatment Facilities	
	Method of Treatment	No sewerage facilities. Seepage through septic tanks
	Treatment Capacity	-
	Installation Cost	-
	Particular Problems if any	Tanks are small. Wastewater can come back.
	Power Plant	
	Total Capacity of Generators	600kva x 2 + 450kva x 2 + 251kva x 2 = 2,602kva

	Installation Cost	US$120,000 x 6 = US$720,000. O & M (fuel) cost: US$438,000
	Particular Problems if any	Parts are not easily available.

Questionnaires to Resort Islands (2/2)

4.	Solid Waste Management	
	Amount of solid waste generated in a day (kg/day)	About 6 tonnes
	Treated amount of solid waste in a day (kg/day)	Pressing (cans, bottles): 100 kg. Incinerating: 2 tonnes
	Amount of recyclable wastes in a day (kg/day)	Not recycled.
	Amount of solid waste disposed without pre-treatment (kg/day)	About 4 tonnes (2 dhoni loads).
	Total amount of residuals to be disposed of in a day (kg/day)	-
	How much do you think is the solid waste amount reduction ratio in volume approximately for final disposal? (1/2-1/4-1/10)	About 2/3 to 3/4 including oil and those not incinerated are transported to Thilafushi.
	Total Capacity of Incinerators	1 unit. 5 tonnes
	Installation Year	1986
	Incinerator Maker	Norway
	Installation Cost	US$10,000. O & M cost: very little.
	What kind of wastes are incinerated?	Leaves, paper, cardboard, plastic bottles, etc.
	Total Capacity of Pressing Machine	2 units, one for cans, another for bottles.
	Installation Year	n. a.
	Pressing Machine Maker	n. a.
	Installation Cost	n. a.
	Do you carry out resource recovery?	No.
	How is the status of the resource recovery?	-
	Can you sell the recovered resources? How much?	-
	Where is the disposal site?	A place near the seashore. From there waste is transported to Thilafushi.
	Do you reduce amount of wastes before disposal?	Yes
	Do you mind to pay for the disposal fee in case enforced?	No. "There is no choice."
	How much do you spend for SWM cost in a year?	US$45,000 (personnel) + US$14,400 (transportation) + US$5,000 (treatment) = US$64,400
	What is the major problem for SWM operation?	No major problem. Routine is established. "We have a big island, and the capacity of the incinerator is big and sufficient."
	Do you have any plans to improve the current SWM operation?	(Introduction of sewerage system.)
	How much is the estimates to pay for the improvement plan?	-
	Please mention if you have specific opinions to the Government for improvement of SWM in resort islands	The solid waste is now randomly discharged in Thilafushi. It should be separated according to its nature and types. Some will be recycled, another incinerated and the third used for reclamation. Orderly and systematic disposal of solid waste is recommended.

(4) Vaadhoo

Questionnaires to Resort Islands (1/2) Vaadhoo Island 25 June, 1998

1.	**General Information**	
	Name of the company/owner	Sun Maldives International (PVT) Co. LTD.
	Year of establishment	1987
	Nos. of rooms	31
	Nos. of beds	66
	Nos. of guests arrival (guest/year)	2,500
	Total nos. of days stay at hotels (guest-day/year)	15,659 (66x365x65%) Note: occupancy rate=65%
	Country of the guest: No. 1	Japan
	Country of the guest: No. 2	France
	Country of the guest: No. 3	Belgium
	Total nos. of day visitors in a year	n. a.
	Nos. of staff in the resort island	75
	Nos. of staff in charge of solid waste disposal	6
	How much do you pay for the taxes?	US$64,284(bed tax)+US$87,032(land tax)=US$151,316
	How much is the annual turnover?	¥260,000,000
	When is the lease contract period expired?	2016
	Do you plan to renew the lease contract?	"We have just renewed the contract."
2.	**Attractions of the Resort Island**	
	Strategies for Promotion of Hotel Guests	Stress the natural environment.
	Major Attractions for Promotion of Hotel Guests: No. 1	Diving
	Major Attractions for Promotion of Hotel Guests: No. 2	Natural environment for honey mooners
	Major Attractions for Promotion of Hotel Guests: No. 3	
	Special Attractions/Leisures Different from Other Resort	Natural environment, corals and plenty of fish.
3.	**Utilities**	
	Water Supply Facilities	
	Method of Treatment	Desalination
	Treatment Capacity	25 tonnes (Kurita)+35 tonnes (self made)=60 tonnes
	Installation Cost	¥10,000,000 (Kurita)+¥3,000,000 (self made)= ¥13,000,000
	Particular Problems if any	Parts are expensive.
	Wastewater Treatment Facilities	
	Method of Treatment	Pumping out to the open sea from the 2 septic tanks.
	Treatment Capacity	72 tonnes (6mx6mx2m) x 2
	Installation Cost	O & M (pumping) cost: US$2,000/year
	Particular Problems if any	Wastewater is not cleaned. An advanced method, EM using bacteria with investment cost of ¥5,000,000 is planned.
	Power Plant	
	Total Capacity of Generators	150kva x 2 (10 years old)
	Installation Cost	O & M (oil) cost: US$700/week
	Particular Problems if any	1) Insuffucient capacity. Reinforcement (250kva x 3 + 150 kva x 1) is planned. 2) Disposal of engine oil.

Questionnaires to Resort Islands (2/2)

4.	Solid Waste Management	
	Amount of solid waste generated in a day (kg/day)	100 to 150 kg
	Treated amount of solid waste in a day (kg/day)	About 50% of total amount.
	Amount of recyclable wastes in a day (kg/day)	About 20% of total amount. Perishable waste will be turned into compost by introducing EM.
	Amount of solid waste disposed without pre-treatment (kg/day)	About 50% of total amount.
	Total amount of residuals to be disposed of in a day (kg/day)	-
	How much do you think is the solid waste amount reduction ratio in volume approximately for final disposal? (1/2-1/4-1/10)	About 3/5 composed of leaves, tree branches, cans, plastics, etc. is transported to Thilafushi.
	Total Capacity of Incinerators	175 kw/h (630 MJ)
	Installation Year	1992
	Incinerator Maker	KVERNER INCINERATION A. S., Norway
	Installation Cost	US$28,762
	What kind of wastes are incinerated?	Paper based waste and wood waste.
	Total Capacity of Pressing Machine	There are two, but they are not used.
	Installation Year	1987
	Pressing Machine Maker	Japan and Maldives
	Installation Cost	¥400,000 (more than 10 years ago)
	Do you carry out resource recovery?	They tried to sell alminium cans to Nippon Keikinzoku, but gave up due to slump of their price.
	How is the status of the resource recovery?	- ditto -
	Can you sell the recovered resources? How much?	- ditto -
	Where is the disposal site?	A place near the seashore. From there waste is transported to Thilafushi.
	Do you reduce amount of wastes before disposal?	Yes
	Do you mind to pay for the disposal fee in case enforced?	No. "It's better for us to pay."
	How much do you spend for SWM cost in a year?	About US$10,000/year for personnel & transportation.
	What is the major problem for SWM operation?	Motivation of workers is low.
	Do you have any plans to improve the current SWM operation?	Yes. "We are contemplating introduction of EM."
	How much is the estimates to pay for the improvement plan?	About US$50,000.
	Please mention if you have specific opinions to the Government for improvement of SWM in resort islands	1) Setting up standards for waste disposal that can be followed. 2) Countermeasures to salt damage. 3) Study should be done on environmental impact of Thilafushi. 4) Construction of a big incinerator in Male is proposed.

(5) Gulhi Questionnaire to Inhabited Islands (1/2)

Name of Island: Gulhi
Name of Atoll: South Male Atoll
Date of Survey: 23,July,'98

a. General Information		
1	Present Population	624
2	Number of house	89
3	Number of household	89
4	Major industries	Fishing, Boat-Yard
5	Average annual income of household	10,000-15,000Rf/year
6	Regional development plan for future	Electric Power Plant
7	Scheduled time of implementation of the pl	1998
8	Implementing body of the plan	Gulhi Island Office, Special Tax from residents
9	Investment cost estimated for the plan	100,000-150,000Rf
10	Number of primary schools and pupils	1 School and 201childs
11	Number of secondary schools & students	Non
12	Number of other schools & students	Non
13	Number of shops	6 Shops (one is for tourists)
14	Number of factories, type & employee	Non
15		
16		
b. Infrastructures		
(1) Water Supply		
1	Source of water	Rainfall water and ground water
2	Method of treatment	Non
3	Capacity of treatment facility	Non
4	Installation cost of the facility	Unknown
5	Plan of expansion ?	Construction plan of 3 rain water store tanks at Mosque
6	Any particular problem ?	The number of Rainfall water store tanks is not enough
(2) Sewage Treatment		
1	Method of treatment	Individual treatment tank and four pipelines
2	Capacity of treatment facility	Unknown
3	Installation cost of the facility	Government work
4	Plan of expansion ?	Non
5	Any particular problem ?	Non
(3) Power Plant		
1	Total capacity of generation	35Kw and 50Kw(broken), 74Kw(ordered)
2	Installation cost of the plant	74Kw, 100,000-150,000Rf
3	Plan of expansion ?	Same as above
4	Any particular problem ?	Non

c. Solid waste management

(1) Waste Volume		
1	Total waste generation per day (ton/day)	Unknown
2	Recyclable waste generation (ton/day)	Unknown
3	Disposed volume per day (ton/day)	Unknown
(2) Responsible Body		
1	Collection	Each household
2	Where is the disposal site ?	Disposal Site
3	Operation & Maintenance of disposal	Residents
4	Who bears the expenses for SWM ?	Residents(time and power)
(3) Expense for Waste management		
1	How much is spent for SWM in this island ?	Non
2	Polluter-pay-principle is applicable here ?	Non
3	How much do you think residents are affordable for SWM per month ?	No
(4) Waste Reduction and Recycling		
1	Do you carry out resource recovery progra	Non
2	Do you have a recovery program ?	Non
3	Can you sell recovered material, and how much ?	Non
(5) Problem and Improvement		
1	Major problems	Disposal Site is almost full
2	Improvement plan ?	There is expansion plan
3	Budget allocated for the plan	Non
4	Your opinion to the Gov't for improvement of SWM	Government provide heavy machines

(6) Guraidhoo Questionnaire to Inhabited Islands (1/2)

Name of Island: Graidhoo
Name of Atoll: South Male Atoll
Date of Survey: 23, July, '98

a. General Information		
1	Present Population	approx.. 1300
2	Number of house	230
3	Number of household	230 x 2 or 3 families
4	Major industries	Fishing, Tourists shops
5	Average annual income of household	100,000 Rf/year
6	Regional development plan for future	On-going, School, Power house, Mosque and Office
7	Scheduled time of implementation of the pl	1988
8	Implementing body of the plan	Central Government
9	Investment cost estimated for the plan	Unknown
10	Number of primary schools and pupils	1 and 400 children
11	Number of secondary schools & students	Non
12	Number of other schools & students	1 Nursery School, 160 child
13	Number of shops	54 shops (include tourist shops)
14	Number of factories, type & employee	Non
15		
16		
b. Infrastructures		
(1) Water Supply		
1	Source of water	Rain Water and ground water
2	Method of treatment	Non
3	Capacity of treatment facility	Non
4	Installation cost of the facility	Non
5	Plan of expansion ?	Non
6	Any particular problem ?	Non
(2) Sewage Treatment		
1	Method of treatment	Non
2	Capacity of treatment facility	Non
3	Installation cost of the facility	Non
4	Plan of expansion ?	Island request to construct the sewage system
5	Any particular problem ?	Sanitary problems
(3) Power Plant		
1	Total capacity of generation	65Kw and 80Kw
2	Installation cost of the plant	Unknown
3	Plan of expansion ?	Plus 150Kw x 2 Plants (1988)
4	Any particular problem ?	Non

c. Solid waste management

(1) Waste Volume		
1	Total waste generation per day (ton/day)	about 10t/day Unknown
2	Recyclable waste generation (ton/day)	Unknown
3	Disposed volume per day (ton/day)	Unknown
(2) Responsible Body		
1	Collection	Each residents
2	Where is the disposal site ?	Sea Coast
3	Operation & Maintenance of disposal	Non
4	Who bears the expenses for SWM ?	Non
(3) Expense for Waste management		
1	How much is spent for SWM in this island ?	Non
2	Polluter-pay-principle is applicable here ?	Non
3	How much do you think residents are affordable for SWM per month ?	Non
(4) Waste Reduction and Recycling		
1	Do you carry out resource recovery progra	Non
2	Do you have a recovery program ?	Non
3	Can you sell recovered material, and how much ?	Non
(5) Problem and Improvement		
1	Major problems	Secondary pollution to the resort island
2	Improvement plan ?	Non
3	Budget allocated for the plan	Non
4	Your opinion to the Gov't for improvement of SWM	Government introduce the incinerator

(7) Male'

Questionnaires to Inhabited Islands (1/2)

Name of Island : Male'

Name of Attol : North Male

Survey Date : 30 Aug.

1. General Information	
Present population	74895
Nos. of house	5842
Nos. of households	7451
Major industries	Tourism, Fisheries
Average annual income of a household	N / A GDP 216.6
Future reasional development plan	
When is the development plan implemented ?	
Which organization implement the development plan?	Min. of Planning, Human Resources & Environment
How much is the investment cost?	
Nos. of primary schools & pupils	4Primary Schools & 7124
Nos. of secondary schools & students	9 Secondary Schools & 17402
Nos. of other schools & students	3 & 2261
Nos. of shops	(S) 1536 (R) 25 (H) 343
Nos. of factories, type & employee	11 Factories
2. Infrastructures	
Water Supply Facilities	Pressurized 3.9 Bar Pipe System
Method of Treatment	Desalination, Deep Well (Sea Water)
Tratment Capacity	3200 m^3/day
Installation Cost	Rf 170/m
Is there any expansion plan?	Additional 2x500 m^3/day Ondemand
Particula Problems if any	
Sewage Treatmetn Facilities	
Method of Treatment	
Tratment Capacity	
Installation Cost	
Is there any expansion plan?	
Particula Problems if any	
Power Plant	
Total Capacity of Generators	
Installation Cost	
Is there any expansion plan?	
Particula Problems if any	

Questionnaires to Inhabited Islands (2/2)

3. Solid Waste Management	
Amount of solid waste generated in a day (ton/day)	200
Amount of recyclable wastes in a day (ton/day)	No Data
Amount of solid waste disposed in a day (ton/day)	200
Who is responsible for collection of solid wastes?	Male' Municipality
Where is the disposal site?	Thilafushi
Who is responsible for operation & maintanance of the disposal	Ministry of Construction & Public Works
How much is spent for SWM in this island?	
Who bear for the expenses?	Budget
What is the major problem for SWM operation?	Lack of Vehicles & Repair of Microbin
Do you carry out waste reduction program?	Yes
How is the status of the waste reduction program?	Not very effective
Do you carry out resource recovery program?	No
How is the status of the resource recovery plan?	
Can you sell the recovered resources ? How much?	Yes, Depend on the market price
Do you think that the polluters-pay-principle is applicable for cleansing services in this island?	Yes
How much do you think is affordable for the residents per month?	Rf 100/- to Rf 200/-
Is there any plans to improve the current SWM operation?	Tractor- 2, Microbin Truck- 2
How much is the budget for the improvement plan?	Rf 900000/- equipment + fuel
Please mention if you have specific opinions to the Government for improvement of SWM in the inhabited islands.	Procurement of Budget, Introduction of Door to Door collection

(8) Hithadhoo

Name of Island : Hithadhoo
Name of Atoll : Addu
Date of Survey : 9 July, 1998

(Sheet No. Hit - 1/2)

a. General Information		
1	Present Population	12,164-registered, 8,593-census
2	Number of house	1,403-existing, 900-under construction
3	Number of household	
4	Major industries	Fishery, MIFCO, Garment Factory
5	Average annual income of household	
6	Regional development plan for future	Tourism Development by ADB, Electrification
7	Scheduled time of implementation of the plan	On going
8	Implementing body of the plan	Ministry of Tourism
9	Investment cost estimated for the plan	
10	Number of primary schools and pupils	7-3,645
11	Number of secondary schools & students	1-566
12	Number of other schools & students	1-?
13	Number of shops	104
14	Number of factories, type & employee	1-Garment-400 employee
15		
16		
b. Infrastructures		
(1) Water Supply		
1	Source of water	No water supply system
2	Method of treatment	
3	Capacity of treatment facility	
4	Installation cost of the facility	
5	Plan of expansion ?	ADB Loan?
6	Any particular problem ?	
(2) Sewage Treatment		
1	Method of treatment	Septic tanks
2	Capacity of treatment facility	
3	Installation cost of the facility	
4	Plan of expansion ?	ADB Loan?
5	Any particular problem ?	
(3) Power Plant		
1	Total capacity of generation	640 kW (160kW x 4 units)
2	Installation cost of the plant	
3	Plan of expansion ?	
4	Any particular problem ?	

(Continued) Hithadhoo

(Sheet No. Hit - 2/2)

c. Solid waste management		
(1) Waste Volume		
1	Total waste generation per day (ton/day)	No records
2	Recyclable waste generation (ton/day)	Not practiced
3	Disposed amount per day (ton/day)	No records
(2) Responsible Body		
1	Collection	Not regulated
2	Where is the disposal site ?	No specific areas
3	Operation & Maintenance of disposal	Each House/Island Office, No monitoring staff
4	Who bears the expenses for SWM ?	Island Office for expense for the cleansing day
(3) Expense for Waste management		
1	How much is spent for SWM in this island ?	10,000 Rfs x 3 times per year
2	Polluter-pay-principle is applicable here ?	good idea but applicable only for the people affordable
3	How much do you think residents are affordable for SWM per month ?	150 Rfs, 200-300 Rfs for electricity
(4) Waste Reduction and Recycling		
1	Do you carry out resource recovery program ?	Not yet
2	Do you have a recovery program ?	-
3	Can you sell recovered material, and how much ?	-
(5) Problem and Improvement		
1	Major problems	No specific area for disposal
2	Improvement plan ?	-
3	Budget allocated for the plan	-
4	Your opinion to the Gov't for improvement of SWM	Provision of disposal site in low land area in the north and the south similar to the facilities of the Thilafushi

(9) Kanifinol Resort Island

(Sheet No. Kan - 1/2)

1. General Information		
	Name of the company/owner	Sprea Private Co. Ltd.
	Year of establishment	1978
	Nos. of rooms	150
	Nos. of beds	300
	Nos. of guests arrival (guest/year)	9,343
	Annual beds-nights (guest-day/year)	Not available
	Country of the guest : No.1	Germany
	Country of the guest : No.2	England
	Country of the guest : No.3	Austria/Japan/Korea
	Total nos. of day visitors in a year	Very few
	Nos. of staff in the resort island	356
	Nos. of staff in charge of solid waste disposal	26
	How much do you pay for the taxes?	Not available
	How much is the annual turnover ?	Not available
	When is the lease contract period expired?	Not available
	Do you plan to renew the lease contract?	Yes
2. Attractions of the Resort Island		
	Strategies for promotion of hotel guests	By 22 tour operators (tour agencies)
	Major attractions for promotion of guests : No.1	Diving
	Major attractions for promotion of guests : No.2	Beach
	Major attractions for promotion of guests : No.3	Natural beauty
	Special attractions/leisures different from other resort islands	Natural beauty
3. Utilities		
	Water Supply Facilities	
	Method of Treatment	Desalination/R.O.
	Tratment Capacity	210 m3/day
	Installation Cost	Not available
	Particula Problems if any	Nothing
	Wastewater Treatmetn Facilities	
	Method of Treatment	Septic tank
	Tratment Capacity	-
	Installation Cost	Not available
	Particula Problems if any	Nothing
	Power Plant	
	Total Capacity of Generators	1700 kVA(500kVA-2 units, 350kVA-2 units)
	Installation Cost	Not available
	Particula Problems if any	Lesser problems than water treatment plant

(Continued) Kanifinol Resort Island

(Sheet No. Kan - 2/2)

4. Solid Waste Management	
Amount of solid waste generated in a day (kg/day)	No records
Treated amount of solid waste in a day (kg/day)	No records
Amount of recyclable wastes in a day (kg/day)	No records/No market
Amount of solid waste disposed without pre-treatment (kg/day)	No records
Total amount of residuals to be disposed of in a day	No records
How much do you think is the solid waste amount reduction ratio in volume approximately for final disposal? (1/2 - 1/4 - 1/10)	Reduced to 10 to 20 % in volume
Total Capacity of Incinarators	2 units (135kg/hr and 100kg/hr?), operation 10
Installation Year	1990/1996
Incinerator Maker	Teamtec
Installation Cost	Not available
What kind of wastes are incinerated ?	Yard waste/cardboard/plastics/all other
Total Capacity of Pressing Machine	24cans/stroke, enough capacity, operate every 3
Installation Year	1992
Pressing Machine Maker	?
Installation Cost	Not available
Do you carry out resouce recovery?	Not yet. Will join the activities if its feasible.
How is the status of the resource recovery ?	-
Can you sell the recovered resources ? How much?	-
Where is the disposal site?	Thilafushi
Do you reduce amount of wastes before disposal ?	Yes by incineration
Do you mind to pay for the disposal fee in case enforced?.	No comment
How much do you spend for SWM cost in a year?	75,000-100,000 Rfs/month for transportation
What is the major problem for SWM operation?	Wet-garbage for incineration/cost for transportation/rough sea condition
Do you have any plans to improve the current	Separation of wastes for efficient incineration
How much is the cost for the improvement plan?	No cost
Please mention if you have specific opinions to the Government for improvement of SWM in resort islands.	Organized collection of resorts' wastes, activities for recycling of materials

(10) Thulhagiri Resort Island

Name of Resort Island : Thulhagiri Resort Island

(Sheet No. Thg - 1/2)

1. General Information		
	Name of the company/owner	Thulhagiri Island Resort co., Ltd.
	Year of establishment	1990
	Nos. of rooms	58
	Nos. of beds	116
	Nos. of guests arrival (guest/year)	4,300 in 1997
	Total nos. of days stay at hotels (guest-day/year)	36,000 in 1997
	Country of the guest : No.1	Germany
	Country of the guest : No.2	Swiss
	Country of the guest : No.3	France
	Total nos. of day visitors in a year	Approx. 300
	Nos. of staff in the resort island	134
	Nos. of staff in charge of solid waste disposal	11
	How much do you pay for the taxes?	Not available
	How much is the annual turnover ?	Not available
	When is the lease contract period expired?	2004 (starting from 1990)
	Do you plan to renew the lease contract?	Yes
2. Attractions of the Resort Island		
	Strategies for promotion of hotel guests	Local, tropical style facilities, Promotion by four tour agencies contracted
	Major attractions for promotion of guests : No.1	Many varaeties and quality of buffet meals
	Major attractions for promotion of guests : No.2	Sandy beaches,
	Major attractions for promotion of guests : No.3	Diving
	Special attractions/leisures different from other resort islands	Buffet meals, Live music band every week
3. Utilities		
	Water Supply Facilities	
	Method of Treatment	Desalination, R. O.
	Tratment Capacity	15 gal./min. (9 - 1 unit, 4 - 1 unit, 2 - 1 unit)
	Installation Cost	Not available
	Particula Problems if any	Coral get in the intake pipe and clog pipes.
	Wastewater Treatmetn Facilities	
	Method of Treatment	Discharge to the sea
	Tratment Capacity	-
	Installation Cost	-
	Particula Problems if any	-
	Power Plant	
	Total Capacity of Generators	860 kVA (250kVA - 2 units, 180kVA - 2 units)
	Installation Cost	Not available
	Particula Problems if any	Deterioration of cooler

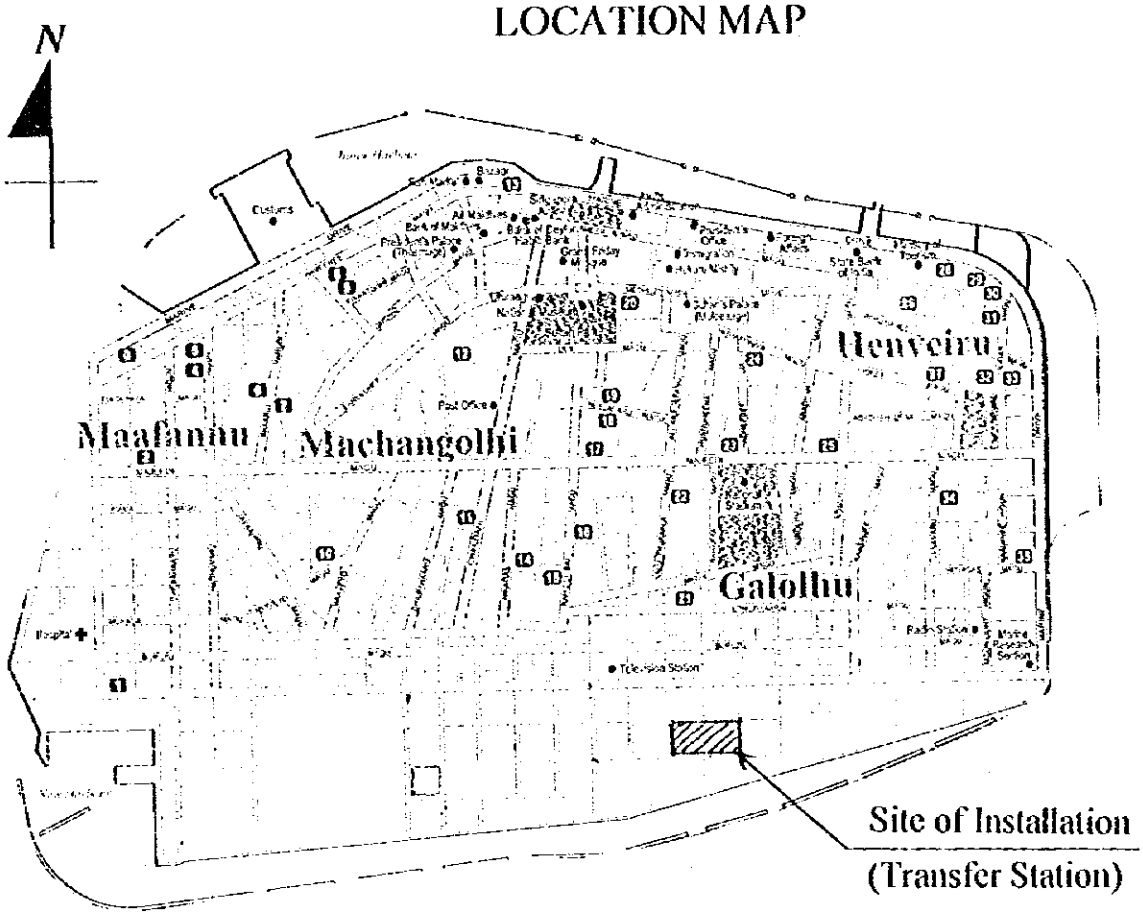
(Continued) Thulhagiri Resort Island

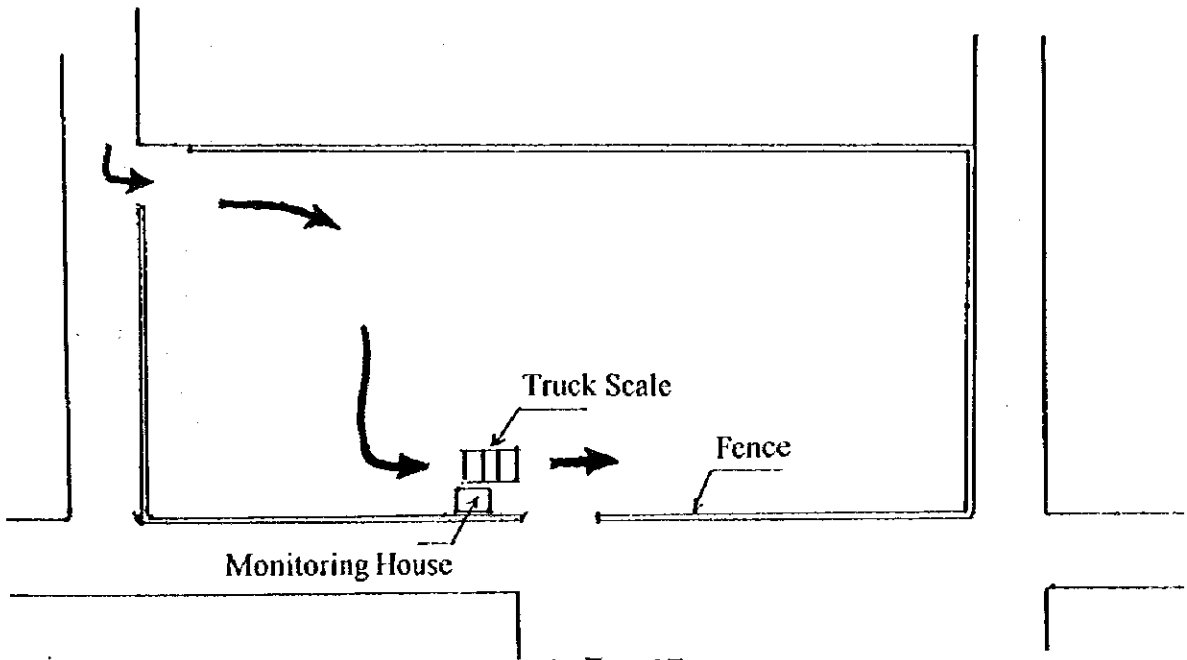
(Sheet No. Thg - 2/2)

4. Solid Waste Management	
Amount of solid waste generated in a day (kg/day)	No records
Treated amount of solid waste in a day (kg/day)	No records
Amount of recyclable wastes in a day (kg/day)	Not practices
Amount of solid waste disposed without pre-treatment (kg/day)	No records
Total amount of residuals to be disposed of in a	No records
How much do you think is the solid waste amount reduction ratio in volume approximately for final disposal? (1/2 - 1/4 - 1/10)	Reduced to 1/4
Total Capacity of Incinarators	100 kg/hr?, 5 hours to burn all wastes
Installation Year	1996
Incinerator Maker	KVAERNER-GOLAR, Norway
Installation Cost	Not available
What kind of wastes are incinerated ?	All waste except glass bottle, tins, cans and coral
Total Capacity of Pressing Machine	None
Installation Year	-
Pressing Machine Maker	-
Installation Cost	-
Do you carry out resouce recovery?	Not yet
How is the status of the resource recovery ?	-
Can you sell the recovered resources ? How	-
Where is the disposal site?	Thilafushi
Do you reduce amount of wastes before disposal ?	Yes
Do you mind to pay for the disposal fee in case enforced?.	Depend on the rate
How much do you spend for SWM cost in a year?	1,500 Rfs x 14 Dhonies per month
What is the major problem for SWM operation?	securing spare parts for incinerator
Do you have any plans to improve the current SWM operation?	Installation of pressing machine
How much is the estimates to pay for the improvement plan?	?
Please mention if you have specific opinions to the Government for improvement of SWM in resort islands.	Simplify the process of supply of spare parts, Improvement of the regulations

2. Installation of Truck Scale

LOCATION MAP





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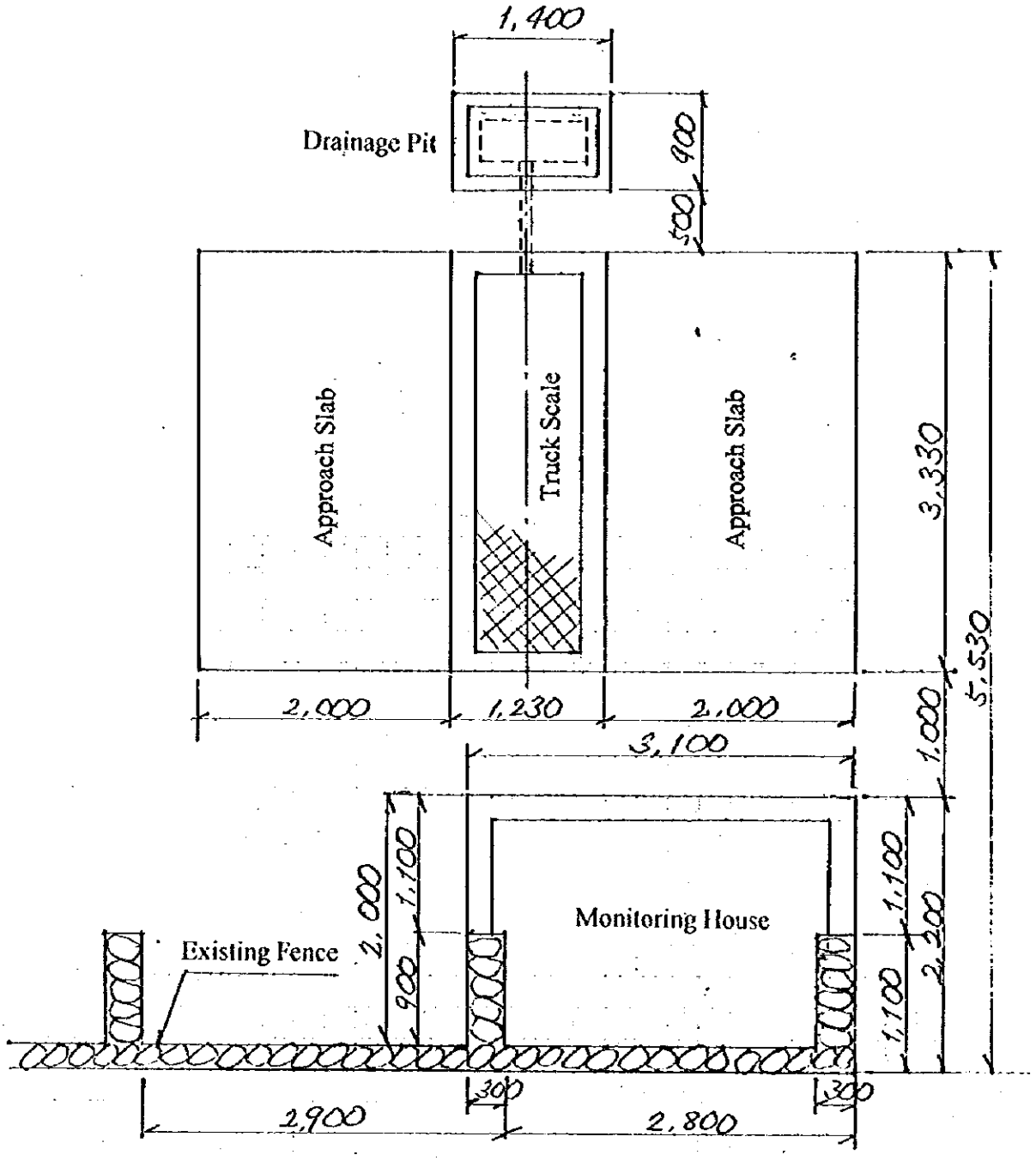
DRAWINGS FOR TRUCK SCALE INSTALLATION

Drawing (1) Layout Plan



unit : mm

LATHGEE

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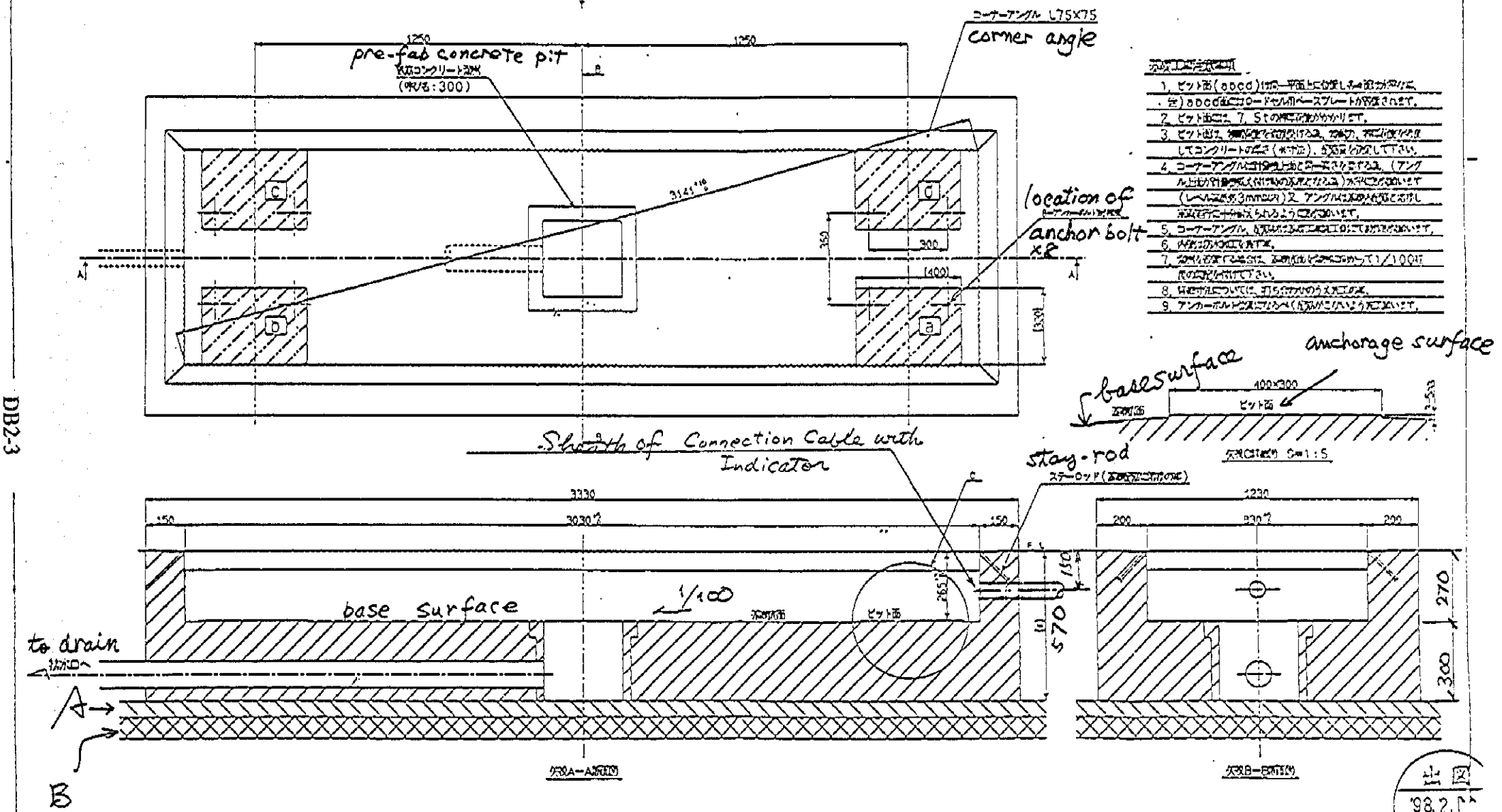
DRAWINGS FOR TRUCK SCALE INSTALLATION

Drawing (2) FOUNDATION OF TRUCK SCALE

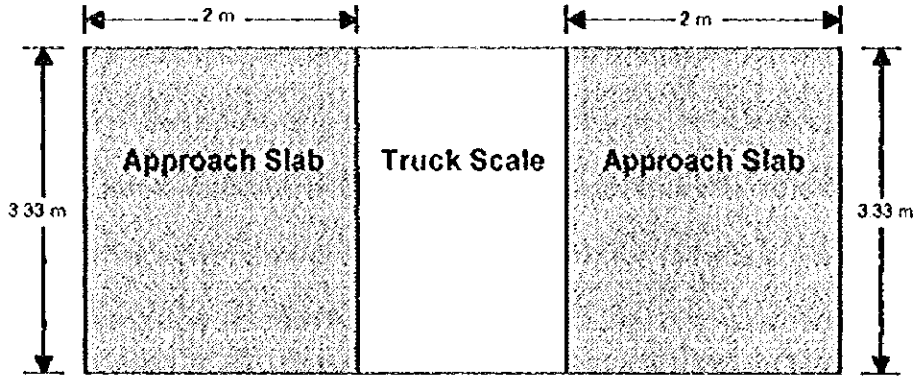


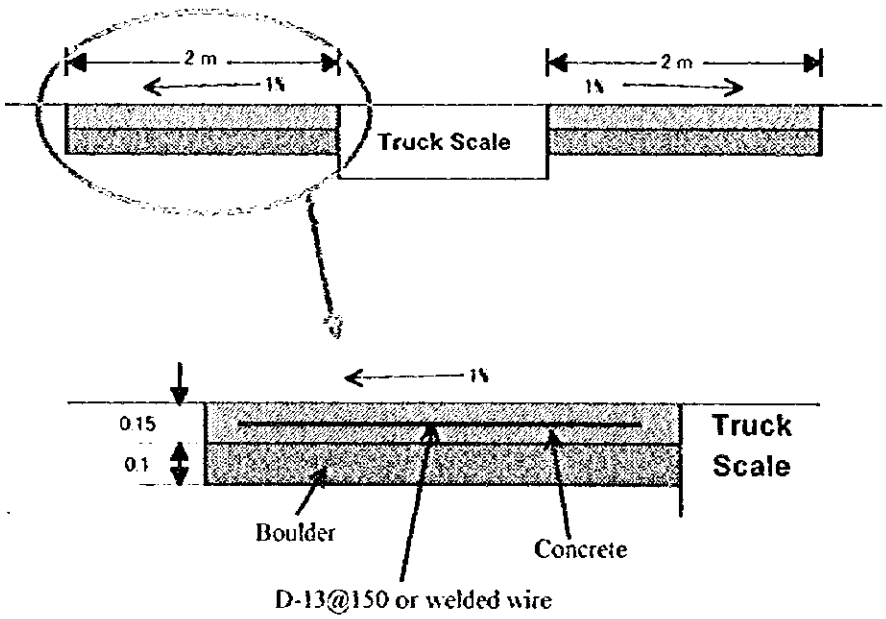
DB2-3

BRIDGESTONE	BRIDGESTONE MEC CO.,LTD.			NO.	NAME	MATERIAL	NO RECORD
				97. 5. 8	1:10	MME-195-B	
				DATE	SCALE	DRAWING NO	

'98.2.

Drawing (3) Approach Slab





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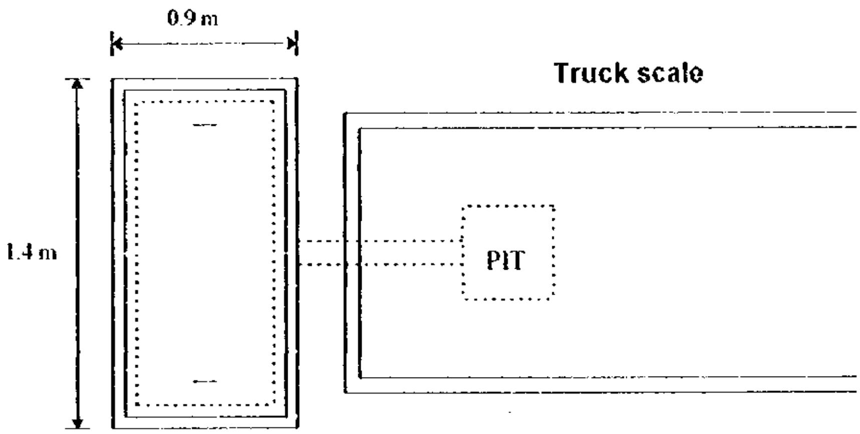
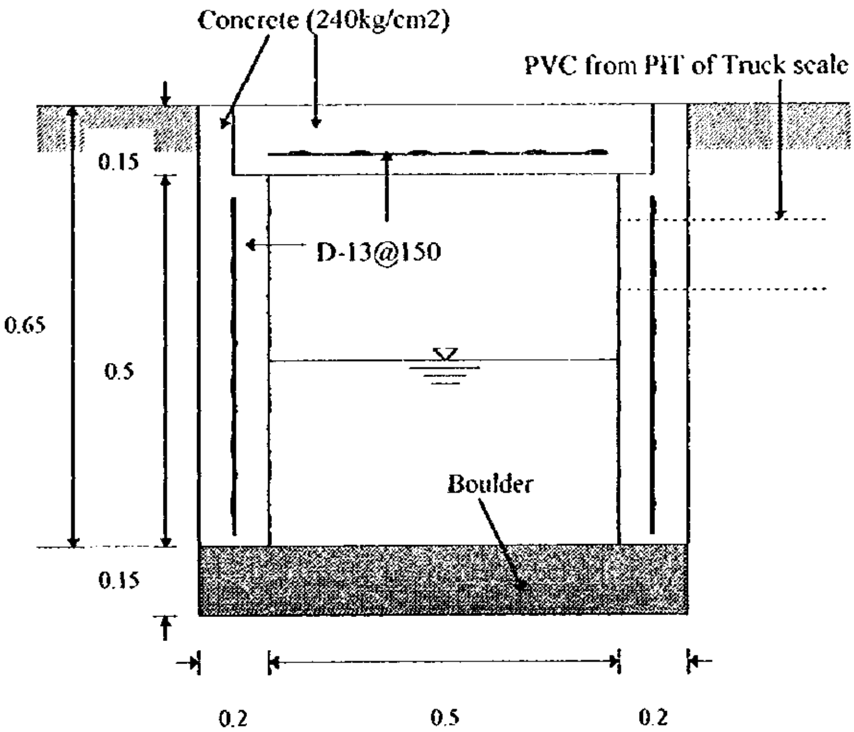
DRAWINGS FOR TRUCK SCALE INSTALLATION

Drawing (4) Drainage Pit

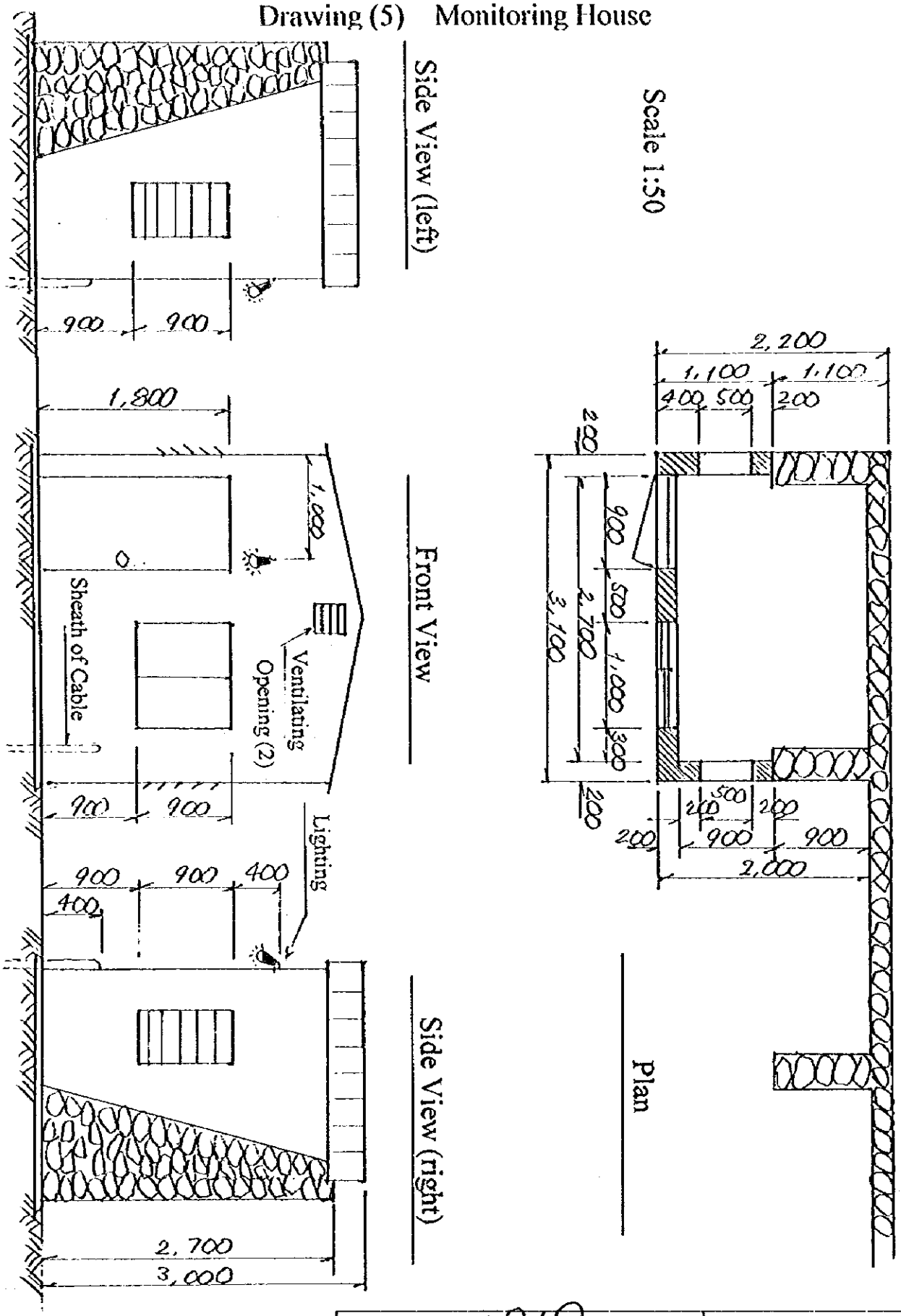




Approved by LATHGEF ,MCPW	Date : 11 June 1998

DRAWINGS FOR TRUCK SCALE INSTALLATION

Drawing (5) Monitoring House



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DRAWINGS FOR TRUCK SCALE INSTALLATION

3. Waste Volume and Composition

3. WASTE VOLUME AND COMPOSITION

This section is compiled of the data and information collected through the following surveys conducted in two phase from May to September and from November to December in 1998 in Male and all over the Maldives.

1) Solid Waste Amount and Composition Survey in Inhabited Islands
2) Solid Waste Amount and Composition Survey in Resort Islands
3) Solid Waste Amount Survey in Male'
4) Solid Waste Amount Survey in the Thilafushi
5) Solid Waste Composition Survey in Male'

3.1 Solid Waste Amount and Composition Survey in Inhabited Islands

3.1.1 Purpose and Survey Area

Solid waste amount and composition surveys are conducted for collection and accumulation of the fundamental data in formulation of the national level SWM policy for Maldives and for development of the SWM plan in the form of Master Plan and Feasibility Study for Male' Municipality.

The survey was conducted for residential houses in Villingili and Thulusdhoo islands to investigate the following factors.

- Amount and types & properties of wastes generated
- Rate of waste generation per house and/or per capita per day
- Amount and types of reusable and recyclable wastes
- Amount and types of hazardous wastes
- Difference in amount and types of wastes generaged in local islands

3.1.2 Survey Period

Villingili Island : 9 - 18 June, 1998

Thulusdhoo Island : 14 - 24 June, 1998

3.1.3 Procedures of Survey

(1) Numbers of Solid Waste Samples

For sampling wastes from residential houses, ten(10) houses were selected for Villingili Island in co-operation of Maldives Housing and Urban Development

Board. In Thulusdhoo Island, also ten(10) residential houses were selected in co-operation of Island Office.

(2) Procedures of Sampling and Survey

1. Explain the procedures to the residents for separating, storing and discharging wastes
2. Conduct the survey for 10 days consecutively
3. Separation of wastes are made by four types and put into each containers or bag every day
    - Food Waste : Plastic Container
    - Combustible/Organic Waste : Plastic Bag
    - Incombustible/Inorganic Waste : Plastic Bag
    - Hazardous Waste : Plastic Bag
4. Collection of wastes from 10 houses every morning at the time designated by the surveyor
5. Put all the waste onto the plastic sheet
6. Separate all the waste from 10 housed based on 19 types of wastes and measure wet-base weight of each type and record
7. Mix all the tested waste and put into the container and press lightly to have the natural condition as the waste is piled up
8. Measure the waste volume in the 80 lit. plastic container by counting the numbers of containers filled in and record
9. Dispose all the tested waste properly and clean the site
10. Continue the same test every day until taking 10 samples in each island
11. Analysis of 10 samples for each island

Result of Survey in Inhabited Island (Villingili)

Name of Inhabited Island		Villingili									
Survey Date	Year 1998	9 June	10 June	11 June	12 June	13 June	14 June	15 June	16 June	17 June	18 June
Weather		Fine	Fine/Shower	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Populaton		115									

(unit : grams)

Type of Waste		1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day	Maximum	Minimum	Average	Ratio (%)
Organic Waste															
Food Waste		24,700	24,620	24,000	6,200	15,600	21,500	19,500	6500	6660	29,950	29,950	6,200	17,923	21.64
Paper	Paper	10,000	3,700	3,000	4,250	3,500	1,600	1,740	2810	2600	3,600	10,000	1,600	3,680	4.44
	Cardboard	590	1640	2200	4300	2500	3500	640	1910	2890	1,000	4,300	590	2,117	2.56
Paper (Total)		10,590	5,340	5,200	8,550	6,000	5,100	2,380	4720	5490	4,600	10,590	2,380	5,797	7.00
Plastics	Film	2150	2450	1900	1030	4100	1500	1,960	2830	2930	1,580	4,100	1,030	2,243	2.71
	Bottle & Others	870	1,000	4,700	940	250	20	3,040	3940	4020	1,400	4,700	20	2,018	2.44
	PET	590	540	680	900	500	400	420	930	820	100	930	100	588	0.71
Plastic (Total)		3,610	3,990	7,280	2,870	4,850	1,920	5,420	7700	7770	3,080	7,770	1,920	4,849	5.86
Rubber & Leather		10	2,340	2,780	980	840	Nil.	640	2770	2370	1,500	2,780	10	1,581	1.91
Textiles		3,150	13,550	1,940	1,190	3,100	100	660	2200	2520	2,200	13,550	100	3,061	3.70
Yard Waste		5,550	16,000	6,600	26,200	18,200	5,100	5,150	9600	10100	12,600	26,200	5,100	11,510	13.90
Wood		1,230	4,130	3,740	2,630	7,000	1,600	520	3840	3020	340	7,000	340	2,805	3.39
Other Org. Waste		0	3,030	9,960	0	0	0	0	0	0	0	9,960	0	1,299	1.57
Subtotal (Organic Wastes)		48,840	73,000	61,500	48,620	55,590	35,320	34,270	37,330	37,930	54,270	73,000	34,270	48,825	58.96
In-organic Waste															
Glass	Broken Glass	60	380	640	780	260	Nil.	920	2020	2040	520	2,040	60	847	1.02
	Bottle	780	1,200	2,500	1,200	1,220	3,300	760	3240	3400	1,220	3,400	760	1,882	2.27
Glass (Total)		840	1,580	3,140	1,980	1,480	3,300	1,680	5260	5440	1,740	5,440	840	2,729	3.30
Tin Cans (Steel Cans)		1360	1940	4300	2160	3950	3500	840	3570	3750	2,400	4,300	840	2,777	3.35
Aluminum cans		100	Nil.	100	100	420	100	220	980	420	none	980	100	305	0.37
Other Metals		1600	2240	2780	1020	800	Nil.	660	1020	980	200	2,780	200	1,256	1.52
Dirt, Ash, Stone, Sand		42,540	47,400	30,400	29,180	32,900	30,430	25,450	10450	11400	6,800	47,400	6,800	26,695	32.24
Subtotal (Inorganic Wastes)		46,440	53,160	40,720	34,440	39,550	37,330	28,850	21,280	21,990	11,140	53,160	11,140	33,761	40.77
Hazardous Waste															
Hazardous Waste (Batteries)		30	40	260	160	420	20	220	420	220	440	440	20	223	0.27
Other Hazardous Waste		0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Subtotal (Hazardous Waste)		30	40	260	160	420	20	220	420	220	440	440	20	223	0.27
Total Weight (kg) :		95,310	126,200	102,480	83,220	95,560	72,670	63,340	59,030	60,140	65,850	126,200	59,030	82,809	100.00
Total Waste Volume (lit.)		244	342	342	312	342	294	234	304	254	296	234	296.2	342	
Bulk Density (kg/lit.)		0.391	0.369	0.300	0.267	0.279	0.247	0.271	0.194	0.237	0.224	0.194	0.278	0.391	

Record Sheets (Inhabited Island) (No. 1/10)

Name of Inhabited Island : Villingili
Survey Date : 9 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste		Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste						
Food Waste		1,300	26,000			24,700
Paper	Paper	2,500	12,500			10,000
	Cardboard	50	640			590
Paper (Total)		2,550	13,140	0	0	10,590
Plastics	Film	50	2,200			2,150
	Bottle & Others	50	920			870
	PET	50	640			590
Plastic (Total)		150	3,760			3,610
Rubber & Leather		0	10			10
Textiles		50	3,200			3,150
Yard Waste		50	5,600			5,550
Wood		280	1,510			1,230
Other Org. Waste		-	0			0
Subtotal (Organic Wastes)		4,380	53,220			48,840
In-organic Waste						
Glass	Broken Glass	0	60			60
	Bottle	0	780			780
Glass (Total)		0	840	0	0	840
Tin Cans (Steel Cans)		280	1,640			1,360
Aluminum cans		280	380			100
Other Metals		280	1,880			1,600
Dirt, Ash, Stone, Sand		2,640	26,000	1,320	20,500	42,540
Subtotal (Inorganic Wastes)		3,480	30,740	1,320	20,500	46,440
Hazardous Waste (Batteries)			30			30
Other Hazardous Waste			0			0
Subtotal (Hazardous Waste)		0	30	0	0	30
Total Weight (kg) :		7,860	83,990	1,320	20,500	95,310

Total Waste Volume (lit.) : 244
Bulk Density (kg/lit.) : 0.391

Record Sheets (Inhabited Island) (No. 2/10)

Name of Inhabited Island	:	Villingili
Survey Date	:	10 June, 1998
Weather	:	Fine/Shower
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,300	22,000	280	4,200	24,620
	Paper	Paper	1,300	5,000			3,700
		Cardboard	0	1,640			1,640
	Paper (Total)		1,300	6,640	0	0	5,340
	Plastics	Film	50	2,120	0	380	2,450
		Bottle & Others	280	1,280			1,000
		PET	0	540			540
	Plastic (Total)		330	3,940			3,990
	Rubber & Leather		280	2,620			2,340
	Textiles		2,500	13,500	50	2,600	13,550
	Yard Waste		2,500	7,500	2,500	13,500	16,000
	Wood		0	2,440	50	1,740	4,130
	Other Org. Waste		50	3,080			3,030
Subtotal (Organic Wastes)			**8,260**	**61,720**			**73,000**
In-organic Waste							
	Glass	Broken Glass	0	380			380
		Bottle	0	1,200			1,200
	Glass (Total)		0	1,580	0	0	1,580
	Tin Cans (Steel Cans)			1,940			1,940
	Aluminum cans			Nil.			Nil.
	Other Metals		280	2,520			2,240
	Dirt, Ash, Stone, Sand		1,300	28,000	1,300	22,000	47,400
Subtotal (Inorganic Wastes)			**1,580**	**34,040**	**1,300**	**22,000**	**53,160**
Hazardous Waste (Batteries)				40			40
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			**0**	**40**	**0**	**0**	**40**
Total Weight (kg) :			9,840	95,800	1,300	22,000	126,200

Total Waste Volume (lit.)	:	342
Bulk Density (kg/lit.)	:	0.369

Record Sheets (Inhabited Island) (No. 3/10)

Name of Inhabited Island	:	Villingili
Survey Date	:	11 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,000	25,000			24,000
	Paper	Paper	1,300	4,300			3,000
		Cardboard	600	2,800			2,200
	Paper (Total)		1,900	7,100			5,200
	Plastics	Film	1400	3,300			1,900
		Bottle & Others	2,300	7,000			4,700
		PET	300	980			680
	Plastic (Total)		4,000	11,280			7,280
	Rubber & Leather		600	3,380			2,780
	Textiles		300	2,240			1,940
	Yard Waste		1,400	8,000			6,600
	Wood		0	3,740			3,740
	Other Org. Waste		2,540	12,500			9,960
Subtotal (Organic Wastes)			**11,740**	**73,240**			**61,500**
In-organic Waste							
	Glass	Broken Glass	300	940			640
		Bottle	300	2,800			2,500
	Glass (Total)		600	3,740			3,140
	Tin Cans (Steel Cans)		0	4,300			4,300
	Aluminum cans		0	100			100
	Other Metals		300	3,080			2,780
	Dirt, Ash, Stone, Sand		2,800	33,200			30,400
Subtotal (Inorganic Wastes)			**3,700**	**44,420**			**40,720**
Hazardous Waste (Batteries)			0	260			260
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			**0**	**260**			**260**
Total Weight (kg) :			15,440	117,920			102,480

Total Waste Volume (lit.)	:	342
Bulk Density (kg/lit.)	:	0.300

Record Sheets (Inhabited Island) (No. 4/10)

Name of Inhabited Island : Villingili
Survey Date : 12 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,000	2,700	1,000	5,500	6,200
	Paper	Paper	50	4,300			4,250
		Cardboard	50	3,700	50	700	4,300
	Paper (Total)		100	8,000	50	700	8,550
	Plastics	Film	50	1,080			1,030
		Bottle & Others	300	1,240			940
		PET	1300	2,200			900
	Plastic (Total)		1,650	4,520			2,870
	Rubber & Leather		300	1,280			980
	Textiles		50	1,240			1,190
	Yard Waste		2,300	28,500			26,200
	Wood		50	2,680			2,630
	Other Org. Waste		2,540	4,080			0
Subtotal (Organic Wastes)			7,990	53,000	1,050	6,200	48,620
In-organic Waste							
	Glass	Broken Glass	300	1,080			780
		Bottle	300	1,500			1,200
	Glass (Total)		600	2,580			1,980
	Tin Cans (Steel Cans)		1300	3,460			2,160
	Aluminum cans		-	100			100
	Other Metals		300	1,320			1,020
	Dirt, Ash, Stone, Sand		1,300	27,000	1,300	4,780	29,180
Subtotal (Inorganic Wastes)			3,500	34,460	1,300	4,780	34,440
Hazardous Waste (Batteries)				160			160
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			0	160	0	0	160
Total Weight (kg) :			11,490	87,620	2,350	10,980	83,220

Total Waste Volume (lit.) : 312
Bulk Density (kg/lit.) : 0.267

Record Sheets (Inhabited Island) (No. 5/10)

Name of Inhabited Island : Villingili
Survey Date : 13 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		10,000	11,500	1,400	15,500	15,600
	Paper	Paper	2,500	6,000			3,500
		Cardboard	0	2,040	0	460	2,500
	Paper (Total)		2,500	8,040	0	460	6,000
	Plastics	Film	2400	6,500			4,100
		Bottle & Others	0	250			250
		PET	300	800			500
	Plastic (Total)		2,700	7,550			4,850
	Rubber & Leather		300	1,140			840
	Textiles		1,400	4,500			3,100
	Yard Waste		2,300	20,500			18,200
	Wood		0	7,000			7,000
	Other Org. Waste		300	7,540			0
Subtotal (Organic Wastes)			19,500	67,770	1,400	15,960	55,590
In-organic Waste							
	Glass	Broken Glass	0	260			260
		Bottle	0	1,220			1,220
	Glass (Total)		0	1,480			1,480
	Tin Cans (Steel Cans)		50	4,000			3,950
	Aluminum cans		0	420			420
	Other Metals		0	800			800
	Dirt, Ash, Stone, Sand		100	33,000			32,900
Subtotal (Inorganic Wastes)			150	39,700	0	0	39,550
Hazardous Waste (Batteries)			0	420			420
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			0	420	0	0	420
Total Weight (kg) :			19,650	107,890	1,400	15,960	95,560

Total Waste Volume (lit.) : 342
Bulk Density (kg/lit.) : 0.279

Record Sheets (Inhabited Island) (No. 6/10)

Name of Inhabited Island	:	Villingili
Survey Date	:	14 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,000	22,500			21,500
	Paper	Paper	2,500	4,100			1,600
		Cardboard	0	3,500			3,500
	Paper (Total)		2,500	7,600	0	0	5,100
	Plastics	Film	2400	3,900			1,500
		Bottle & Others	0	20			20
		PET	300	700			400
	Plastic (Total)		2,700	4,620			1,920
	Rubber & Leather			Nil.			Nil.
	Textiles		0	100			100
	Yard Waste		2,400	7,500			5,100
	Wood		300	1,900			1,600
	Other Org. Waste		1,400	8,000			0
Subtotal (Organic Wastes)			**10,300**	**52,220**	**0**	**0**	**35,320**
In-organic Waste							
	Glass	Broken Glass	0	Nil.			Nil.
		Bottle	300	3,600			3,300
	Glass (Total)		300	3,600			3,300
	Tin Cans (Steel Cans)		1400	4,900			3,500
	Aluminum cans		0	100			100
	Other Metals		0	0			Nil.
	Dirt, Ash, Stone, Sand		50	27,000	1,300	4,780	30,430
Subtotal (Inorganic Wastes)			**1,750**	**35,600**	**1,300**	**4,780**	**37,330**
Hazardous Waste (Batteries)			0	20			20
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			0	20	0	0	20
Total Weight (kg) :			12,050	87,840	1,300	4,780	72,670

Total Waste Volume (lit.)	:	294
Bulk Density (kg/lit.)	:	0.247

Record Sheets (Inhabited Island) (No. 7/10)

Name of Inhabited Island	:	Villingili
Survey Date	:	15 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste		Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste						
Food Waste		1,000	20,500			19,500
Paper	Paper	1,400	3,140			1,740
	Cardboard	0	640			640
Paper (Total)		1,400	3,780			2,380
Plastics	Film	1400	3,360			1,960
	Bottle & Others	1,400	3,040			3,040
	PET	0	420			420
Plastic (Total)		2,800	6,820			5,420
Rubber & Leather		0	640			640
Textiles		0	660			660
Yard Waste		50	5,200			5,150
Wood		0	520			520
Other Org. Waste		2,400	9,100			0
Subtotal (Organic Wastes)		7,650	47,220			34,270
In-organic Waste						
Glass	Broken Glass	0	920			920
	Bottle	0	760			760
Glass (Total)		0	1,680			1,680
Tin Cans (Steel Cans)		0	840			840
Aluminum cans		0	220			220
Other Metals		0	660			660
Dirt, Ash, Stone, Sand		50	25,500			25,450
Subtotal (Inorganic Wastes)		50	28,900	0	0	28,850
Hazardous Waste (Batteries)		0	220			220
Other Hazardous Waste			0			0
Subtotal (Hazardous Waste)		0	220	0	0	220
Total Weight (kg) :		7,700	76,340	0	0	63,340

Total Waste Volume (lit.)	:	234
Bulk Density (kg/lit.)	:	0.271

Record Sheets (Inhabited Island) (No. 8/10)

Name of Inhabited Island	:	Villingili
Survey Date	:	16 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,000	7,500			6,500
	Paper	Paper	50	2,860			2,810
		Cardboard	50	1,960			1,910
	Paper (Total)		100	4,820			4,720
	Plastics	Film	50	2,880			2,830
		Bottle & Others	50	3,940			3,940
		PET	50	980			930
	Plastic (Total)		150	7,800			7,700
	Rubber & Leather		50	2,820			2,770
	Textiles		50	2,200			2,200
	Yard Waste		1,400	11,000			9,600
	Wood		0	3,840			3,840
	Other Org. Waste		2,400	10,500			0
Subtotal (Organic Wastes)			5,150	50,480			37,330
In-organic Waste							
	Glass	Broken Glass	0	2020			2,020
		Bottle	0	3,240			3,240
	Glass (Total)		0	5,260			5,260
	Tin Cans (Steel Cans)		50	3,620			3,570
	Aluminum cans		0	980			980
	Other Metals		0	1,020			1,020
	Dirt, Ash, Stone, Sand		50	10,500			10,450
Subtotal (Inorganic Wastes)			100	21,380			21,280
Hazardous Waste (Batteries)			0	420			420
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			0	420			420
Total Weight (kg) :			5,250	72,280			59,030

Total Waste Volume (lit.)	:	304
Bulk Density (kg/lit.)	:	0.194

Record Sheets (Inhabited Island) (No. 9/10)

Name of Inhabited Island	:	Villingili
Survey Date	:	17 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,000	7,660			6,660
	Paper	Paper	50	2,650			2,600
		Cardboard	50	2,940			2,890
	Paper (Total)		100	5,590			5,490
	Plastics	Film	50	2,980			2,930
		Bottle & Others	50	4,020			4,020
		PET	0	820			820
	Plastic (Total)		100	7,820			7,770
	Rubber & Leather		50	2,420			2,370
	Textiles		50	2,520			2,520
	Yard Waste		1,400	11,500			10,100
	Wood		0	3,020			3,020
	Other Org. Waste		2,400	10,000			0
Subtotal (Organic Wastes)			5,100	50,530			37,930
In-organic Waste							
	Glass	Broken Glass	0	2040			2,040
		Bottle	0	3,400			3,400
	Glass (Total)		0	5,440			5,440
	Tin Cans (Steel Cans)		50	3,800			3,750
	Aluminum cans		0	420			420
	Other Metals		0	980			980
	Dirt, Ash, Stone, Sand		50	5,500	50	6,000	11,400
Subtotal (Inorganic Wastes)			100	16,140	50	6,000	21,990
Hazardous Waste (Batteries)			0	220			220
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			0	220	0	0	220
Total Weight (kg) :			5,200	66,890	50	6,000	60,140

Total Waste Volume (lit.)	:	254
Bulk Density (kg/lit.)	:	0.237

Record Sheets (Inhabited Island) (No. 10/10)

Name of Inhabited Island : Villingili
Survey Date : 18 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		1,000	25,000	50	6000	29,950
	Paper	Paper	2,400	6,000			3,600
		Cardboard	300	1,300			1,000
	Paper (Total)		2,700	7,300			4,600
	Plastics	Film	1400	2,980			1,580
		Bottle & Others	300	1,400			1,400
		PET	0	100			100
	Plastic (Total)		1,700	4,480			3,080
	Rubber & Leather		300	1,800			1,500
	Textiles		300	2,200			2,200
	Yard Waste		2,400	15,000			12,600
	Wood		0	340			340
	Other Org. Waste		1,400	20,000			0
Subtotal (Organic Wastes)			**9,800**	**76,120**	**50**	**6,000**	**54,270**
In-organic Waste							
	Glass	Broken Glass	0	520			520
		Bottle	0	1,220			1,220
	Glass (Total)		0	1,740			1,740
	Tin Cans (Steel Cans)		300	1,700	300	1300	2,400
	Aluminum cans		0	none			none
	Other Metals		0	200			200
	Dirt, Ash, Stone, Sand		1,600	8,400			6,800
Subtotal (Inorganic Wastes)			**1,900**	**12,040**	**300**	**1,300**	**11,140**
Hazardous Waste (Batteries)			0	440			440
Other Hazardous Waste				0			0
Subtotal (Hazardous Waste)			**0**	**440**	**0**	**0**	**440**
Total Weight (kg) :			11,700	88,600	350	7,300	65,850

Total Waste Volume (lit.) : 294
Bulk Density (kg/lit.) : 0.224

Result of Survey in Inhabited Island (Thulusdhoo)

Name of Inhabited Island		Thulusdhoo									
Survey Date	Year 1998	14 June	15 June	16 June	17 June	18 June	20 June	21 June	22 June	23 June	24 June
Weather		Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Population		119									

(unit: grams) (unit : grams)

Type of Waste		1st Day	2nd Day	3rd Day	4th Day	5th Day	6&7th Day	8th Day	9th Day	10th Day	11th Day	Maximum	Minimum	Average	Ratio (%)
Organic Waste															
Food Waste					31,090	12,660	26,100	14,560	24060	22560	16,560	31,090	12,660	21,084	21.87
Paper	Paper				580	2,780	2,400	1,200	2540	2300	600	2,780	580	1,771	1.84
	Cardboard				2440	1940	2300	500	980	940	1,180	2,440	500	1,469	1.52
Paper (Total)					3,020	4,720	4,700	1,700	3520	3240	1,780	4,720	1,700	3,240	3.36
Plastics	Film				1,300	2,900	1,200	1,520	1540	1480	2,280	2,900	1,200	1,746	1.81
	Bottle & Others				200	460	400	940	600	650	1,160	1,160	200	630	0.65
	PET				nil.	none	40	200	340	320	Nil.	340	40	225	0.23
Plastic (Total)					1,500	3,360	1,640	2,660	2480	2450	3,440	3,440	1,500	2,601	2.70
Rubber & Leather					140	none	400	380	2220	1990	None	2,220	140	1,026	1.06
Textiles					2,300	1,320	1,300	1,800	1100	1490	2,320	2,320	1,100	1,661	1.72
Yard Waste					51,010	60,710	73,960	22,600	63200	60600	5,680	73,960	5,680	48,251	50.05
Wood					nil.	320	100	940	Nil.	380	9,800	9,800	100	2,308	2.39
Other Org. Waste					0	1,220	2,750	8,620	3490	3630	11,100	11,100	0	4,401	4.57
Subtotal (Organic Wastes)					89,060	84,310	110,950	53,260	100,070	96,340	50,680	110,950	50,680	84,573	87.72
In-organic Waste															
Glass	Broken Glass				1,000	480	none	880	1,320	1,140	nil.	1,320	480	964	1.00
	Bottle				360	800	640	740	Nil.	980	740	980	360	710	0.74
Glass (Total)					1,360	1,280	640	1,620	1320	2120	740	2,120	640	1,674	1.74
Tin Cans (Steel Cans)					1140	900	2060	680	5,160	4,460	1,240	5,160	680	2,234	2.32
Aluminum cans					nil.	60	40	200	220	180	280	280	40	163	0.17
Other Metals					nil.	100	120	720	500	620	180	720	100	373	0.39
Dirt, Ash, Stone, Sand					11,430	8,450	1,350	10,120	3750	3930	11,450	11,450	1,350	7,211	7.48
Subtotal (Inorganic Wastes)					13,930	10,790	4,210	13,340	10,950	11,310	13,890	13,930	4,210	11,656	12.09
Hazardous Waste															
Hazardous Waste (Batteries)					40	nil.	40	420	240	180	180	420	40	183	0.19
Other Hazardous Waste					0	none	0	0	0	0	0	0	0	0	0.00
Subtotal (Hazardous Waste)					40	0	40	420	240	180	180	420	0	183	0.19
Total Weight (kg) :		67,390	148,880	164,970	103,030	95,100	115,200	67,020	111,260	107,830	64,750	164,970	64,750	96,413	100.00
Total Waste Volume (lit.)					488	362	390	186	312	332	312	488	186	342	
Bulk Density (kg/lit.)					0.211	0.263	0.295	0.360	0.357	0.325	0.208	0.360	0.208	0.391	

Record Sheets (Inhabited Island) (No. 1-3/10)

1st day

Container Weight (g)	Gross Weight (g)	Net Weight (g)
960	7,000	6,040
100	4,000	3,900
100	3,000	2,900
100	2,300	2,200
100	3,400	3,300
50	3,240	3,190
100	2,820	2,720
50	4,040	3,990
50	16,000	15,950
50	7,500	7,450
50	1,900	1,850
50	8,000	7,950
50	6,000	5,950
Total Net Weight		67,390

2nd day

Container Weight (g)	Gross Weight (g)	Net Weight (g)
50	1,490	1,440
50	2,370	2,320
50	1,390	1,340
50	1,750	1,700
50	3,080	3,030
50	4,930	4,880
50	4,430	4,380
50	650	600
50	640	590
50	2,640	2,590
50	2,680	2,630
50	3,820	3,770
50	1,760	1,710
50	2,200	2,150
50	3,220	3,170
50	2,730	2,680
50	2,150	2,100
50	600	550
50	4,500	4,450
50	15,000	14,950
50	7,000	6,950
50	5,500	5,450
50	10,000	9,950
50	15,500	15,450
50	5,250	5,200
0	16,500	16,500
0	2,920	2,920
2,250	9,750	7,500
1,320	19,250	17,930
		0
		0
		0
		0
Total Net Weight		148,880

3rd day

Container Weight (g)	Gross Weight (g)	Net Weight (g)
50	5,000	4,950
50	1,300	1,250
50	1,960	1,910
50	4,160	4,110
50	5,500	5,450
50	5,000	4,950
50	7,000	6,950
50	6,500	6,450
50	5,000	4,950
50	3,840	3,790
50	10,500	10,450
50	12,000	11,950
50	5,000	4,950
50	3,680	3,630
50	3,660	3,610
50	2,580	2,530
50	2,200	2,150
50	3,040	2,990
50	4,200	4,150
50	760	710
50	2,000	1,950
50	8,000	7,950
940	17,500	16,560
50	11,000	10,950
50	9,500	9,450
50	4,880	4,830
50	11,500	11,450
50	10,000	9,950
		0
		0
		0
		0
Total Net Weight		164,970

Record Sheets (Inhabited Island) (No. 4/10)

Name of Inhabited Island : Thulusdhoo
Survey Date : 17 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste		Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste						
Food Waste		1,360	18,000	50	14,500	31,090
Paper	Paper	1,360	1,940			580
	Cardboard	0	2,440			2,440
Paper (Total)		1,360	4,380			3,020
Plastics	Film	2240	3,540			1,300
	Bottle & Others	0	200			200
	PET		nil.			nil.
Plastic (Total)		2,240	3,740			1,500
Rubber & Leather		0	140			140
Textiles		2,240	4,540			2,300
Yard Waste		2,950	53,960			51,010
Wood			nil.			nil.
Other Org. Waste		860	2,040	1,360	15,500	0
Subtotal (Organic Wastes)		**11,010**	**86,800**	**1,410**	**30,000**	**89,060**
In-organic Waste						
Glass	Broken Glass	0	1,000			1,000
	Bottle	0	360			360
Glass (Total)		0	1,360			1,360
Tin Cans (Steel Cans)		860	2,000			1,140
Aluminum cans			nil.			nil.
Other Metals			nil.			nil.
Dirt, Ash, Stone, Sand		50	8,000	1,300	4,780	11,430
Subtotal (Inorganic Wastes)		**910**	**11,360**	**1,300**	**4,780**	**13,930**
Hazardous Waste (Batteries)			40			40
Other Hazardous Waste			0			0
Subtotal (Hazardous Waste)		**0**	**40**	**0**	**0**	**40**
Total Weight (kg) :		11,920	98,200	2,710	34,780	103,030

Total Waste Volume (lit.) : 488
Bulk Density (kg/lit.) : 0.211

Record Sheets (Inhabited Island) (No. 5/10)

Name of Inhabited Island	:	Thulusdhoo
Survey Date	:	18 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste		Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste						
Food Waste		1,340	14,000			12,660
Paper	Paper	1,340	4,120			2,780
	Cardboard	0	1,940			1,940
Paper (Total)		1,340	6,060			4,720
Plastics	Film	0	2,900			2,900
	Bottle & Others	940	1,400			460
	PET		none			none
Plastic (Total)		940	4,300			3,360
Rubber & Leather			none			none
Textiles		880	2,200			1,320
Yard Waste		50	14,500	1740	48000	60,710
Wood		0	320			320
Other Org. Waste		880	2,100			1,220
Subtotal (Organic Wastes)		**5,430**	**43,480**	**1,740**	**48,000**	**84,310**
In-organic Waste						
Glass	Broken Glass	0	480			480
	Bottle	0	800			800
Glass (Total)		0	1,280			1,280
Tin Cans (Steel Cans)		0	900			900
Aluminum cans		0	60			60
Other Metals		0	100			100
Dirt, Ash, Stone, Sand		50	8,500			8,450
Subtotal (Inorganic Wastes)		**50**	**10,840**	**0**	**0**	**10,790**
Hazardous Waste (Batteries)			nil.			nil.
Other Hazardous Waste			none			none
Subtotal (Hazardous Waste)		**0**	**0**	**0**	**0**	**0**
Total Weight (kg) :		5,480	54,320	1,740	48,000	95,100

Total Waste Volume (lit.)	:	362
Bulk Density (kg/lit.)	:	0.263

Record Sheets (Inhabited Island) (No. 6&7/10)

Name of Inhabited Island	:	Thulusdhoo
Survey Date	:	20 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste		Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste						
Food Waste		1,400	27,500			26,100
Paper	Paper	2,400	4,800			2,400
	Cardboard	0	2,300			2,300
Paper (Total)		2,400	7,100			4,700
Plastics	Film	2,300	3,500			1,200
	Bottle & Others	0	400			400
	PET	0	40			40
Plastic (Total)		2,300	3,940			1,640
Rubber & Leather		0	400			400
Textiles		1,400	2,700			1,300
Yard Waste		600	68,160	100	6,500	73,960
Wood		0	100			100
Other Org. Waste		50	2,800			2,750
Subtotal (Organic Wastes)		**8,150**	**112,700**	**100**	**6,500**	**110,950**
In-organic Waste						
Glass	Broken Glass	0	0			0
	Bottle	0	640			640
Glass (Total)		0	640			640
Tin Cans (Steel Cans)		940	3,000			2,060
Aluminum cans		0	40			40
Other Metals		0	120			120
Dirt, Ash, Stone, Sand		50	1,400			1,350
Subtotal (Inorganic Wastes)		**990**	**5,200**	**0**	**0**	**4,210**
Hazardous Waste (Batteries)		0	40			40
Other Hazardous Waste		0	0			0
Subtotal (Hazardous Waste)		**0**	**40**	**0**	**0**	**40**
Total Weight (kg) :		9,140	117,940	100	6,500	115,200

Total Waste Volume (lit.)	:	390
Bulk Density (kg/lit.)	:	0.295

Record Sheets (Inhabited Island) (No. 8/10)

Name of Inhabited Island : Thulusdhoo
Survey Date : 21 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		940	15,500			14,560
	Paper	Paper	1,340	2,540			1,200
		Cardboard	0	500			500
	Paper (Total)		1,340	3,040			1,700
	Plastics	Film	880	2,400			1,520
		Bottle & Others	0	940			940
		PET	0	200			200
	Plastic (Total)		880	3,540			2,660
	Rubber & Leather		0	380			380
	Textiles		880	2,680			1,800
	Yard Waste		2,400	25,000			22,600
	Wood		0	940			940
	Other Org. Waste		880	9,500			8,620
Subtotal (Organic Wastes)			7,320	60,580	0	0	53,260
In-organic Waste							
	Glass	Broken Glass	0	880			880
		Bottle	0	740			740
	Glass (Total)		0	1,620			1,620
	Tin Cans (Steel Cans)		0	680			680
	Aluminum cans		0	200			200
	Other Metals		0	720			720
	Dirt, Ash, Stone, Sand		880	11,000			10,120
Subtotal (Inorganic Wastes)			880	14,220	0	0	13,340
Hazardous Waste (Batteries)			0	420			420
Other Hazardous Waste			0	0			0
Subtotal (Hazardous Waste)			0	420	0	0	420
Total Weight (kg) :			8,200	75,220	0	0	67,020

Total Waste Volume (lit.) : 186
Bulk Density (kg/lit.) : 0.360

Record Sheets (Inhabited Island) (No. 9/10)

Name of Inhabited Island	:	Thulusdhoo
Survey Date	:	22 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		940	25,000			24,060
	Paper	Paper	1,340	3,880			2,540
		Cardboard	0	980			980
	Paper (Total)		1,340	4,860			3,520
	Plastics	Film	1,340	2,880			1,540
		Bottle & Others	0	600			600
		PET	0	340			340
	Plastic (Total)		1,340	3,820			2,480
	Rubber & Leather		880	3,100			2,220
	Textiles		880	1,980			1,100
	Yard Waste		4,800	68,000			63,200
	Wood		0	Nil.			Nil.
	Other Org. Waste		50	3,540			3,490
Subtotal (Organic Wastes)			**10,230**	**110,300**	**0**	**0**	**100,070**
In-organic Waste							
	Glass	Broken Glass	880	2,200			1,320
		Bottle	0	Nil.			Nil.
	Glass (Total)		880	2,200			1,320
	Tin Cans (Steel Cans)		1340	6,500			5,160
	Aluminum cans		0	220			220
	Other Metals		0	500			500
	Dirt, Ash, Stone, Sand		50	3,800			3,750
Subtotal (Inorganic Wastes)			2,270	13,220	0	0	10,950
Hazardous Waste (Batteries)			0	240			240
Other Hazardous Waste			0	0			0
Subtotal (Hazardous Waste)			0	240	0	0	240
Total Weight (kg) :			12,500	123,760	0	0	111,260

Total Waste Volume (lit.)	:	312
Bulk Density (kg/lit.)	:	0.357

Record Sheets (Inhabited Island) (No. 10/10)

Name of Inhabited Island	:	Thulusdhoo
Survey Date	:	23 June, 1998
Weather	:	Fine
Name of Surveyor	:	Mohemad Ameen

Composition

Type of Waste			Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste							
	Food Waste		940	23,500			22,560
	Paper	Paper	1,340	3,640			2,300
		Cardboard	0	940			940
	Paper (Total)		1,340	4,580			3,240
	Plastics	Film	1,340	2,820			1,480
		Bottle & Others	0	650			650
		PET	0	320			320
	Plastic (Total)		1,340	3,790			2,450
	Rubber & Leather		50	2,040			1,990
	Textiles		50	1,540			1,490
	Yard Waste		4,400	65,000			60,600
	Wood		0	380			380
	Other Org. Waste		50	3,680			3,630
Subtotal (Organic Wastes)			**8,170**	**104,510**	**0**	**0**	**96,340**
In-organic Waste							
	Glass	Broken Glass	880	2,020			1,140
		Bottle	0	980			980
	Glass (Total)		880	3,000			2,120
	Tin Cans (Steel Cans)		1340	5,800			4,460
	Aluminum cans		0	180			180
	Other Metals		0	620			620
	Dirt, Ash, Stone, Sand		50	3,980			3,930
Subtotal (Inorganic Wastes)			**2,270**	**13,580**	**0**	**0**	**11,310**
Hazardous Waste (Batteries)			0	180			180
Other Hazardous Waste			0	0			0
Subtotal (Hazardous Waste)			**0**	**180**	**0**	**0**	**180**
Total Weight (kg) :			10,440	118,270	0	0	107,830

Total Waste Volume (lit.)	:	332
Bulk Density (kg/lit.)	:	0.325

Record Sheets (Inhabited Island) (No. 11/10)

Name of Inhabited Island : Thulusdhoo
Survey Date : 24 June, 1998
Weather : Fine
Name of Surveyor : Mohemad Ameen

Composition

Type of Waste		Container 1 Weight (g)	Weight 1 (g)	Container 2 Weight (g)	Weight 2 (g)	Net Weight (g)
Organic Waste						
Food Waste		940	17,500			16,560
Paper	Paper	880	1,480			600
	Cardboard	2200	3,380			1,180
Paper (Total)		3,080	4,860			1,780
Plastics	Film	1,320	3,600			2,280
	Bottle & Others	1,320	2,480			1,160
	PET	0	Nil.			Nil.
Plastic (Total)		2,640	6,080			3,440
Rubber & Leather		0	None			None
Textiles		880	3,200			2,320
Yard Waste		500	6,180			5,680
Wood		0	9,800			9,800
Other Org. Waste		2,400	13,500			11,100
Subtotal (Organic Wastes)		**10,440**	**61,120**	**0**	**0**	**50,680**
In-organic Waste						
Glass	Broken Glass	0	Nil.			Nil.
	Bottle	0	740			740
Glass (Total)		0	740			740
Tin Cans (Steel Cans)		880	2,120			1,240
Aluminum cans		0	280			280
Other Metals		0	180			180
Dirt, Ash, Stone, Sand		50	11,500			11,450
Subtotal (Inorganic Wastes)		**930**	**14,820**	**0**	**0**	**13,890**
Hazardous Waste (Batteries)		0	180			180
Other Hazardous Waste		0	0			0
Subtotal (Hazardous Waste)		**0**	**180**	**0**	**0**	**180**
Total Weight (kg) :		11,370	76,120	0	0	64,750

Total Waste Volume (lit.) : 312
Bulk Density (kg/lit.) : 0.208

3.2 Solid Waste Amount and Composition Survey in Resort Islands

3.2.1 Purpose and Survey Area

Solid waste amount and composition surveys are conducted for Kanifinol Resort Island and Thulhagiri Island Resort. The survey is aiming at collecting and accumulating data for the amount and composition of solid wastes generated in the resort islands for the purpose to utilise the results in formulation of the national level SWM policies. Most of the resort islands transport wastes to the Thilafushi for final disposal. The result of the survey will be reflected in planning for improvement and expansion of the Thilafushi disposal site.

Accordingly the survey was carried out to obtain the data of the followings as a major factors.

- Amount, types & properties of wastes generated in the hotels
- Rate of waste generation per hotel room and/or per guest per day
- Amount and types of reusable and recyclable wastes
- Amount and types of hazardous wastes

3.2.2 Survey Period

Kanifinol Resort Island : 22 June - 4 July, 1998

Thulhagiri Island Resort : 22 June - 4 July, 1998

3.2.3 Procedures of Survey

(1) Numbers of Solid Waste Samples

All the solid wastes generated in the islands were sampled for the survey for 10 days respectively for each island.

(2) Procedures of Sampling and Survey

1. Explanation of the procedures to the manager in charge of SWM of the resort island for how to separate, store and discharge wastes for sampling
2. Conduct the survey for 10 days consecutively
3. Separation of wastes are made by four types and put into each containers or bag every day
    - Food Waste : Plastic Container
    - Yard Waste : Sacks or gathered in the stock yard
    - Other Wastes : Containers or Sacks used at the hotel

4. Collection of wastes from hotel rooms, restaurants and staff quarters
5. Put all the wastes onto the concrete floor
6. Weigh food waste containers
7. Weigh a part of the yard waste and estimate the remainings by sighting
8. Separate all the waste into 19 types of wastes and measure wet-base weight of each type and record
9. Clean the site
10. Continue the same test every day for taking 10 samples in each island
11. Analysis of 10 samples for each island

Result of Survey in Resort Island (Kanifinol Resort Island)

Survey Date :Year 1998	22 June	24 June	25 June	26 June	27 June	28 June	29 June	30 June	1 July	4 July	Average
Nos. of Hotel Guests	146	149	138	141	149	163	156	148	158	152	150
Weather	Fine	Fine	Fine	Cloudy	Cloudy	Cloudy	Cloudy	Fine	Cloudy	Cloudy	

(unit : grams)

Type of Waste			1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day	Maximum	Minimum	Average	Ratio (%)
Organic Waste																
	Food Waste		340,850	276,000	220,800	276,000	276,000	281,000	248,400	276,000	282,100	248,400	340,850	220,800	272,555	26.45
	Paper	Paper	4,100	12,950	10,140	9,220	14,400	15,490	23,560	22,500	61,070	45,600	61,070	4,100	21,903	2.13
		Cardboard	29,260	23,720	27,300	28,250	56,640	23,500	35,300	19,620	35,300	35,400	56,640	19,620	31,429	3.05
		Total	33,360	36,670	37,440	37,470	71,040	38,990	58,860	42,120	96,370	81,000	117,710	23,720	53,332	5.18
	Plastics	Film	2,150	1,980	1,500	3,550	2,400	3,200	6,100	2,200	3,120	7,930	7,930	1,500	3,413	0.33
		Bottle & Others	2,010	1,330	1,030	12,200	1,670	2,730	7,800	0	2,780	7,300	12,200	0	3,885	0.38
		PET	1,100	880	1,780	2,400	930	4,250	5,420	6,350	1,960	6,830	6,830	880	3,190	0.31
		Total	5,260	4,190	4,310	18,150	5,000	10,180	19,320	8,550	7,860	22,060	26,960	2,380	10,488	1.02
	Rubber & Leather		0	0	0	20	4,200	1,800	none	none	2,400	6,450	6,450	0	1,487	0.14
	Textiles		1,000	2,250	1,120	3,000	3,890	3,650	2,200	7,100	3,300	4,900	7,100	1,000	3,241	0.31
	Yard Waste		1,224,000	450,000	360,000	360,000	270,000	270,000	270,000	270,000	270,000	270,000	1,224,000	270,000	401,400	38.96
	Wood		240	8,120	4,610	2,100	nil.	7,570	9,180	7,500	13,340	13,700	13,700	240	6,636	0.64
	Other Org. Waste		0	27,250	33,170	12,850	28,300	47,200	65,360	8,400	200	47,450	65,360	0	27,018	2.62
Total (Organic Wastes)			1,604,710	804,480	661,450	709,590	658,430	658,590	675,120	619,670	675,570	693,960	1,802,130	518,140	776,157	75.33
In-organic Waste																
	Glass	Broken Glass	1,740	0	340	1,100	1,290	680	0	2,750	1,000	3,800	3,800	0	1,270	0.12
		Bottle	110,240	38,040	23,600	20,650	26,050	44,110	34,800	29,700	36,600	44,650	110,240	20,650	40,844	3.96
		Total	111,980	38,040	23,940	21,750	27,340	44,790	34,800	32,450	37,600	48,450	114,040	20,650	42,114	4.09
	Tin Cans (Steel Cans)		8,500	9,760	8,550	14,080	6,940	15,650	9,440	15,550	5,200	13,950	15,650	5,200	10,762	1.04
	Aluminum cans		870	1,230	450	1,170	700	650	1,750	920	600	7,750	7,750	450	1,609	0.16
	Other Metals		540	100	3,920	980	1,250	1,380	3,750	4,750	900	2,800	4,750	100	2,037	0.20
	Dirt, Ash, Sand		104,950	300,000	240,000	240,000	180,000	180,000	180,000	180,000	180,000	180,000	300,000	104,950	196,495	19.07
Total (Inorganic Wastes)			226,840	349,130	276,860	277,980	216,230	242,470	229,740	233,670	224,300	252,950	442,190	131,350	253,017	24.56
Hazardous Waste																
	Batteries		Nil.	0	0	0	nil.	nil.	nil.	nil.	260	340	340	0	60	0.01
	Other Hazardous Waste		Nil.	600	none	880	6,350	540	800	980	260	980	6,350	260	1,139	0.11
Total (Hazardous Waste)			0	600	none	880	6,350	540	800	980	520	1,320	6,690	260	1,199	0.12
Total Weight (kg) :			1,831,550	1,154,210	938,310	988,450	881,010	901,600	905,660	854,320	900,390	948,230	2,251,010	649,750	1,030,373	100.00

Record Sheets (Resort Island) (No. 1/10)

Survey Date : 22 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 124 Nos. of Visitors : 22 Nos. of Staff : 356
Weather : Fine
Name of Surve : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		1,350	11,000	28,800	360,000							340,850
	Paper	Paper	2,400	6,500									4,100
		Cardboard	0	15,000	0	3,180	0	3,460	0	1,520	2,400	8,500	29,260
		Total	2,400	21,500	0	3,180	0	3,460	0	1,520	2,400	8,500	33,360
	Plastics	Film	1,350	3,500									2,150
		Bottle & Others	50	2,060									2,010
		PET	2,400	3,500									1,100
		Total	3,800	9,060	0	0	0	0	0	0			5,260
	Rubber & Leather			0									0
	Textiles		0	1,000									1,000
	Yard Waste		6,000	1,230,000									1,224,000
	Wood		0	240									240
	Other Org. Waste												0
Total (Organic Wastes)			13,550	1,272,800	28,800	363,180	0	3,460	0	1,520	2,400	8,500	1,604,710
In-organic Waste													0
	Glass	Broken Glass	300	2,040									1,740
		Bottle	12,600	84,000	0	7,000	50	10,500	50	11,500	0	9,940	110,240
		Total	12,900	86,040	0	7,000	50	10,500	50	11,500	0	9,940	111,980
	Tin Cans (Steel Cans)		2,400	8,000	100	3,000							8,500
	Aluminum cans		50	920									870
	Other Metals		300	840									540
	Dirt, Ash, Sand		2,400	30,000	2,400	45,500	2,400	25,000	1,350	13,000			104,950
Total (Inorganic Wastes)			18,050	125,800	2,500	55,500	2,450	35,500	1,400	24,500	0	9,940	226,840
Hazardous Waste													0
	Batteries			Nil.									Nil.
	Other Hazardous Waste			Nil.									Nil.
Total (Hazardous Waste)			0	0	0	0	0	0	0	0	0	0	0
Total Weight (g) :			31,600	1,398,600	31,300	418,680	2,450	38,960	1,400	26,020	2,400	18,440	1,831,550

Record Sheets (Resort Island) (No. 2/10)

Survey Date : 24 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 149 Nos. of Visitors : none Nos. of Staff : 356
Weather : Fine
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		24,000	300,000									276,000
	Paper	Paper	1,350	4,200	100	3,750	200	5,750	100	1,000			12,950
		Cardboard	0	5,000	0	3,920	0	4,080	0	3,410	0	7,310	23,720
		Total	1,350	9,200	100	7,670	200	9,830	100	4,410	0	7,310	36,670
	Plastics	Film	0	700	100	1,380							1,980
		Bottle & Others	1,350	2,680									1,330
		PET	2,400	3,280									880
		Total	3,750	6,660	100	1,380	0	0	0	0			4,190
	Rubber & Leather			0									0
	Textiles		1,350	3,600									2,250
	Yard Waste		0	450,000									450,000
	Wood		0	3,000	0	3,820	0	1,300					8,120
	Other Org. Waste		1,350	14,000	2,350	13,500	50	3,500					27,250
Total (Organic Wastes)			31,800	786,460	2,550	26,370	250	14,630	100	4,410	0	7,310	804,480
In-organic Waste													0
	Glass	Broken Glass		0									0
		Bottle	50	8,500	50	9,500	50	10,250			0	9,940	38,040
		Total	50	8,500	50	9,500	50	10,250			0	9,940	38,040
	Tin Cans (Steel Cans)		1,350	5,000	50	4,730	50	1,480					9,760
	Aluminum cans		50	1,280									1,230
	Other Metals		0	100									100
	Dirt, Ash, Sand		0	300,000									300,000
Total (Inorganic Wastes)			1,450	314,880	100	14,230	100	11,730	0	0	0	9,940	349,130
Hazardous Waste													
	Batteries			none									0
	Other Hazardous Waste			600									600
Total (Hazardous Waste)			0	600	0	0	0	0	0	0	0	0	600
Total Weight (kg):			33,250	1,101,940	2,650	40,600	350	26,360	100	4,410	0	17,250	1,154,210

Record Sheets (Resort Island) (No. 3/10)

Survey Date : 25 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 138 Nos. of Visitors : none Nos. of Staff : 356
Weather : Fine
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		19,200	240,000									220,800
	Paper	Paper	2,800	9,780	100	3,260							10,140
		Cardboard	0	27,300									27,300
		Total	2,800	37,080	100	3,260							37,440
	Plastics	Film	100	1,600									1,500
		Bottle & Others	50	1,080									1,030
		PET	100	1,880									1,780
		Total	250	4,560									4,310
	Rubber & Leather			0									0
	Textiles		0	1,120									1,120
	Yard Waste		0	360,000									360,000
	Wood		0	2,760	0	1,850							4,610
	Other Org. Waste		1,350	17,000	1,980	19,500							33,170
Total (Organic Wastes)			23,600	662,520	2,080	24,610							661,450
In-organic Waste													0
	Glass	Broken Glass	0	340									340
		Bottle	200	23,600									23,600
		Total	200	24,140									23,940
	Tin Cans (Steel Cans)		250	8,800									8,550
	Aluminum cans		1,350	1,800									450
	Other Metals		0	3,920									3,920
	Dirt, Ash, Sand		0	240,000									240,000
Total (Inorganic Wastes)			1,800	278,660									276,860
Hazardous Waste													
	Batteries			none									0
	Other Hazardous Waste			none									none
Total (Hazardous Waste)				none									none
Total Weight (kg) :			25,400	941,180	2,080	24,610	0	0	0	0	0	0	938,310

Record Sheets (Resort Island) (No. 4/10)

Survey Date : 26 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 141 Nos. of Visitors : none Nos. of Staff : 356
Weather : Cloudy
Name of Surv : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		24,000	300,000									276,000
	Paper	Paper	2,400	5,000	2,400	5,750	1,350	4,620					9,220
		Cardboard	0	3,080	0	8,000	0	920	0	7,000	0	9,250	28,250
		Total	2,400	8,080	2,400	13,750	1,350	5,540	0	7,000	0	9,250	37,470
	Plastics	Film	1,350	4,900									3,550
		Bottle & Others	0	1,300	1,350	7,500	0	4,750					12,200
		PET	50	1,280	50	1,220							2,400
		Total	1,400	7,480	1,400	8,720	0	4,750					18,150
	Rubber & Leather		0	20									20
	Textiles		0	3,000									3,000
	Yard Waste		0	360,000									360,000
	Wood		0	2,100									2,100
	Other Org. Waste		2,400	15,250									12,850
Total (Organic Wastes)			30,200	695,930	3,800	22,470	1,350	10,290	0	7,000	0	9,250	709,590
In-organic Waste													0
	Glass	Broken Glass	300	1,020	0	380							1,100
		Bottle	50	5,000	50	6,500	0	9,250					20,650
		Total	350	6,020	50	6,880	0	9,250					21,750
	Tin Cans (Steel Cans)		300	1,950	1,350	5,000	0	1,010	1,350	2,020	0	7,100	14,080
	Aluminum cans		1,350	2,520									1,170
	Other Metals		300	1,280									980
	Dirt, Ash, Sand		0	240,000									240,000
Total (Inorganic Wastes)			2,300	251,770	1,400	11,880	0	10,260	1,350	2,020	0	7,100	277,950
Hazardous Waste													
	Batteries			Nil									nil.
	Other Hazardous Waste		300	1,180									880
Total (Hazardous Waste)			300	1,180									880
Total Weight (kg) :			32,800	948,880	5,200	34,350	1,350	20,550	1,350	9,020	0	16,350	988,450

Record Sheets (Resort Island) (No. 5/10)

Survey Date : 27 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 146 Nos. of Visitors : 3 Nos. of Staff : 356
Weather : Cloudy
Name of Surve : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		24,000	300,000									276,000
	Paper	Paper	2,400	13,000	2,400	6,200							14,400
		Cardboard	2,400	13,800	2,400	15,000	2,400	8,300	0	10,000	2,400	19,140	56,640
		Total	4,800	26,800	4,800	21,200	2,400	8,300	0	10,000	2,400	19,140	71,040
	Plastics	Film	1,350	3,750									2,400
		Bottle & Others	1,350	3,020									1,670
		PET	50	980									930
		Total	2,750	7,750									5,000
	Rubber & Leather		0	4,200									4,200
	Textiles		300	2,540	0	1,650							3,890
	Yard Waste		0	270,000									270,000
	Wood		0	Nil.									nil.
	Other Org. Waste		1,350	9,500	1,350	21,500							28,300
Total (Organic Wastes)			33,200	620,790	6,150	44,350	2,400	8,300	0	10,000	2,400	19,140	658,430
In-organic Waste													0
	Glass	Broken Glass	300	1,590									1,290
		Bottle	2,400	19,000	50	9,500							26,050
		Total	2,700	20,590	50	9,500							27,340
	Tin Cans (Steel Cans)		1,350	4,880	50	3,460							6,940
	Aluminum cans		2,400	3,100									700
	Other Metals		300	1,090	0	450							1,250
	Dirt, Ash, Sand		0	180,000									180,000
Total (Inorganic Wastes)			6,750	209,660	100	13,420							216,230
Hazardous Waste													
	Batteries			Nil									nil.
	Other Hazardous Waste		0	6,350									6,350
Total (Hazardous Waste)			0	6,350									6,350
Total Weight (kg) :			39,950	836,800	6,250	57,770	2,400	8,300	0	10,000	2,400	19,140	881,010

Record Sheets (Resort Island) (No. 6/10)

Survey Date : 28 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 146 Nos. of Visitors : 17 Nos. of Staff : 356
Weather : Cloudy
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		21,600	270,000	2,400	35,000							281,000
	Paper	Paper	1,350	5,500	2,400	7,500	1,350	5,500	1,350	3,440			15,490
		Cardboard	0	23,500									23,500
		Total	1,350	29,000	2,400	7,500	1,350	5,500	1,350	3,440	0	0	38,990
	Plastics	Film	2,400	4,900	2,400	3,100							3,200
		Bottle & Others	1,350	2,000	0	860	300	1,380	0	140			2,730
		PET	2,400	4,500	50	2,200							4,250
		Total	6,150	11,400	2,450	6,160	300	1,380	0	140	0	0	10,180
	Rubber & Leather			none									none
	Textiles		1,350	5,000									3,650
	Yard Waste		0	270,000									270,000
	Wood		0	350	0	4,120	0	3,100					7,570
	Other Org. Waste		2,400	29,000	2,400	23,000							47,200
Total (Organic Wastes)			32,850	614,750	9,650	75,780	1,650	9,980	1,350	3,580	0	0	658,590
In-organic Waste													0
	Glass	Broken Glass	0	680									680
		Bottle	2,400	20,500	1,350	7,500	300	2,360	2,700	20,500			41,110
		Total	2,400	21,180	1,350	7,500	300	2,360	2,700	20,500	0	0	44,790
	Tin Cans (Steel Cans)		2,400	6,000	1,350	4,500	1,350	4,500	3,750	9,500			15,650
	Aluminum cans		1,350	2,000									650
	Other Metals		300	1,680									1,380
	Dirt, Ash, Sand		0	180,000									180,000
Total (Inorganic Wastes)			6,450	210,860	2,700	12,000	1,650	6,860	6,450	30,000	0	0	242,470
Hazardous Waste													
	Batteries			none									nil.
	Other Hazardous Waste		300	840									540
Total (Hazardous Waste)			300	840									540
Total Weight (kg) :			39,600	826,450	12,350	87,780	3,300	16,840	7,800	33,580	0	0	901,600

Record Sheets (Resort Island) (No. 7/10)

Survey Date : 29 June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 156 Nos. of Visitors : none Nos. of Staff : 356
Weather : Cloudy
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		21,600	270,000									248,400
	Paper	Paper	2,400	11,000	100	5,500	5,140	14,700					23,560
		Cardboard	0	35,300									35,300
		Total	2,400	46,300	100	5,500	5,140	14,700	0	0	0	0	58,860
	Plastics	Film	2,400	8,500									6,100
		Bottle & Others	1,350	4,000	1,350	5,000	0	1,500					7,800
		PET	2,400	4,720	2,400	5,500							5,420
		Total	6,150	17,220	3,750	10,500	0	1,500	0	0	0	0	19,320
	Rubber & Leather		0	1,800									1,800
	Textiles		300	2,500									2,200
	Yard Waste		0	270,000									270,000
	Wood		0	9,180									9,180
	Other Org. Waste		2,640	68,000									65,360
Total (Organic Wastes)			33,090	685,000	3,850	16,000	5,140	16,200	0	0	0	0	675,120
In-organic Waste													
	Glass	Broken Glass	0	nil									0
		Bottle	50	8,500	50	11,500	50	10,000	50	5,000			34,800
		Total	50	8,500	50	11,500	50	10,000	50	5,000	0	0	34,800
	Tin Cans (Steel Cans)		1,400	4,340	2,800	9,300							9,440
	Aluminum cans		50	1,800									1,750
	Other Metals		50	3,800									3,750
	Dirt, Ash, Sand		0	180,000									180,000
Total (Inorganic Wastes)			1,550	198,440	2,850	20,800	50	10,000	50	5,000	0	0	229,740
Hazardous Waste													
	Batteries			none									nil.
	Other Hazardous Waste		0	800									800
Total (Hazardous Waste)			0	800									800
Total Weight (kg) :			34,640	884,240	6,700	36,800	5,190	26,200	50	5,000	0	0	905,660

Record Sheets (Resort Island) (No. 8/10)

Survey Date : 30June, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 142 Nos. of Visitors : 6 Nos. of Staff : 356
Weather : Fine
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		24,000	300,000									276,000
	Paper	Paper	1,400	7,500	1,400	6,000	1,400	3,300	100	10,000			22,500
		Cardboard	0	5,000	0	4,020	0	3,500	0	7,100			19,620
		Total	1,400	12,500	1,400	10,020	1,400	6,800	100	17,100	0	0	42,120
	Plastics	Film	1,400	3,600									2,200
		Bottle & Others											0
		PET	2,400	4,300	50	4,500							6,350
		Total	3,800	7,900	50	4,500	0	0	0	0	0	0	8,550
	Rubber & Leather		0	none									none
	Textiles		1,400	8,500									7,100
	Yard Waste		0	270,000									270,000
	Wood		0	7,500									7,500
	Other Org. Waste		2,400	2,700	1,400	9,500							8,400
Total (Organic Wastes)			33,000	609,100	2,850	24,020	1,400	6,800	100	17,100	0	0	619,670
In-organic Waste													
	Glass	Broken Glass	50	2,800									2,750
		Bottle	2,400	22,500	2,400	12,000							29,700
		Total	2,450	25,300	2,400	12,000	0	0	0	0	0	0	32,450
	Tin Cans (Steel Cans)		2,400	8,500	50	9,500							15,550
	Aluminum cans		880	1,800									920
	Other Metals		50	4,800									4,750
	Dirt, Ash, Sand		0	180,000									180,000
Total (Inorganic Wastes)			5,780	220,400	2,450	21,500	0	0	0	0	0	0	233,670
Hazardous Waste				0									
	Batteries			nil.									nil.
	Other Hazardous Waste		0	980									980
Total (Hazardous Waste)			0	980									980
Total Weight (kg) :			38,780	830,480	5,300	45,520	1,400	6,800	100	17,100	0	0	854,320

Record Sheets (Resort Island) (No. 9/10)

Survey Date : 1 July, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 147 Nos. of Visitors : 11 Nos. of Staff : 356
Weather : Cloudy
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		21,600	270,000	1,400	17,500	1,400	19,000					282,100
	Paper	Paper	2,400	8,500	2,400	14,500	1,400	4,620	2,400	11,500	0	30,550	61,070
		Cardboard	0	35,300									35,300
		Total	2,400	43,800	2,400	14,500	1,400	4,620	2,400	11,500	0	30,550	96,370
	Plastics	Film	1,400	3,320	1,400	2,600							3,120
		Bottle & Others	0	2,780									2,780
		PET	2,400	4,360									1,960
		Total	3,800	10,460	1,400	2,600	0	0	0	0	0	0	7,850
	Rubber & Leather		0	2,400									2,400
	Textiles		1,400	4,700									3,300
	Yard Waste		0	270,000									270,000
	Wood		0	13,340									13,340
	Other Org. Waste		2,400	2,600									200
Total (Organic Wastes)			31,600	617,300	5,200	34,600	2,800	23,620	2,400	11,500	0	30,550	675,570
In-organic Waste													
	Glass	Broken Glass	300	1,300									1,000
		Bottle	2,400	29,000	0	10,000							36,600
		Total	2,700	30,300	0	10,000	0	0	0	0	0	0	37,600
	Tin Cans (Steel Cans)		1,400	3,000	1,400	5,000							5,200
	Aluminum cans		1,400	2,000									600
	Other Metals		300	1,200									900
	Dirt, Ash, Sand		0	180,000									180,000
Total (Inorganic Wastes)			5,800	216,500	1,400	15,000	0	0	0	0	0	0	224,300
Hazardous Waste													
	Batteries		0	260									260
	Other Hazardous Waste		300	560									260
Total (Hazardous Waste)			300	820									520
Total Weight (kg):			37,700	834,620	6,600	49,600	2,800	23,620	2,400	11,500	0	30,550	900,390

Record Sheets (Resort Island) (No. 10/10)

Survey Date : 4 July, 1998
Resort Island : Kanifinol
Nos. of Hotel Guests: 137 Nos. of Visitors : 5 Nos. of Staff : 356
Weather : Cloudy
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		21,600	270,000									248,400
	Paper	Paper	2,400	8,500	1,400	4,900	50	5,500			0	30,550	45,600
		Cardboard	0	28,000	0	2,500	0	4,900					35,400
		Total	2,400	36,500	1,400	7,400	50	10,400	0	0	0	30,550	81,000
	Plastics	Film	2,400	5,500	50	4,880							7,930
		Bottle & Others	2,400	7,500	1,400	3,600							7,300
		PET	50	5,500	1,400	2,780							6,830
		Total	4,850	18,500	2,850	11,260	0	0	0	0	0	0	22,060
	Rubber & Leather		50	6,500									6,450
	Textiles		0	4,900									4,900
	Yard Waste		0	270,000									270,000
	Wood		0	4,800	0	3,900	0	5,000					13,700
	Other Org. Waste		2,400	28,000	50	13,500	1,400	9,800					47,450
Total (Organic Wastes)			31,300	639,200	4,300	36,060	1,450	25,200	0	0	0	30,550	693,960
In-organic Waste													
	Glass	Broken Glass	0	3,800									3,800
		Bottle	2,400	25,000	1,400	11,000	50	12,500					44,650
		Total	2,400	28,800	1,400	11,000	50	12,500	0	0	0	0	48,450
	Tin Cans (Steel Cans)		2,400	6,500	50	7,500	0	2,400					13,950
	Aluminum cans		1,400	5,000	50	4,200							7,750
	Other Metals		0	2,800									2,800
	Dirt, Ash, Sand		0	180,000									180,000
Total (Inorganic Wastes)			6,200	223,100	1,500	22,700	50	14,900	0	0	0	0	252,950
Hazardous Waste													
	Batteries		0	340									340
	Other Hazardous Waste		0	980									980
Total (Hazardous Waste)			0	1,320									1,320
Total Weight (kg) :			37,500	863,620	5,800	58,760	1,500	40,100	0	0	0	30,550	948,230

Result of Survey in Resort Island (Thulhagiri Resort Island)

Survey Date :Year 1998	22 June	24 June	25 June	26 June	27 June	28 June	29 June	30 June	1 July	4 July	Average
Nos. of Hotel Guests	66	N.A.	76	94	85	69	79	65	60	65	73
Weather	Rain		Fine	Cloudy	Cloudy	Cloudy	Cloudy	Fine	Cloudy	Cloudy	

(unit : grams)

Type of Waste		1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day	Maximum	Minimum	Average	Ratio (%)
Organic Waste															
Food Waste		364,400		248,400	220,800	220,800	276,000	248,400	250,800	276,000	193,200	364,400	193,200	255,422	43.32
Paper	Paper	8,550		4,020	3,700	6,380	0	13,950	18,450	0	14,200	18,450	0	7,694	1.30
	Cardboard	26,400		23,410	10,820	3,100	0	13,450	40,700	0	28,500	40,700	0	16,264	2.76
	Total	34,950		27,430	14,520	9,480	0	27,400	59,150	0	42,700	59,150	0	23,959	4.06
Plastics	Film	1,100		2,230	1,970	150	0	4,600	7,100	0	7,450	7,450	0	2,733	0.46
	Bottle & Others	6,660		2,900	3,360	3,520	0	5,450	6,450	0	6,850	6,850	0	3,910	0.66
	PET	2,680		4,950	870	2,450	0	5,950	4,270	0	5,350	5,950	0	2,947	0.50
	Total	10,440		10,080	6,200	6,120	0	16,000	17,820	0	19,650	20,250	0	9,590	1.63
Rubber & Leather		0		0	0	0	0	0	980	0	2,350	2,350	0	370	0.06
Textiles		1,420		1,300	200	200	0	200	3,020	0	2,480	3,020	0	980	0.17
Yard Waste		68,200		67,800	161,100	62,650	161,100	179,000	89,500	179,000	447,500	447,500	62,650	157,317	26.68
Wood		0		880	0	0	0	8,200	8,480	0	14,500	14,500	0	3,562	0.60
Other Org. Waste		78,850		54,000	4,430	950	0	950	26,100	0	33,050	78,850	0	22,037	3.74
Total (Organic Wastes)		558,260		409,890	407,250	300,200	437,100	480,150	455,850	455,000	755,430	990,020	255,850	473,237	80.26
In-organic Waste									0		0				
Glass	Broken Glass	0		660	100	820	0	0	0	0	2,300	2,300	0	431	0.07
	Bottle	16,090		3,080	1,630	3,700	0	9,100	7,120	0	26,730	26,730	0	7,494	1.27
	Total	16,090		3,740	1,730	4,520	0	9,100	9,620	0	29,030	29,030	0	7,926	1.34
Tin Cans (Steel Cans)		3,470		1,870	4,900	3,280	0	8,100	7,450	0	7,550	8,100	0	4,069	0.69
Aluminum cans		1,400		2,520	500	70	0	620	1,890	0	4,100	4,100	0	1,233	0.21
Other Metals		420		880	10	570	0	2,420	2,840	0	2,800	2,840	0	1,104	0.19
Dirt, Ash, Sand		35,750		45,000	107,100	41,650	107,100	119,000	53,550	107,100	297,500	297,500	35,750	101,528	17.22
Total (Inorganic Wastes)		57,130		54,010	114,240	50,090	107,100	139,240	75,350	107,100	340,980	341,570	35,750	115,860	19.65
Hazardous Waste		0													
Batteries		340		none	none	none	none	none	none	none	none	340	340	38	0.01
Other Hazardous Waste		620		400	150	none	none	300	1,800	none	1,400	1,800	150	519	0.09
Total (Hazardous Waste)		960		400	150	none	none	300	1,800	none	1,400	2,140	490	557	0.09
Total Weight (kg) :		616,350		464,300	521,640	350,290	544,200	619,690	533,000	562,100	1,097,810	1,333,730	292,090	589,653	100.00

Record Sheets (Resort Island) (No. 1/10)

Survey Date : 22 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 66 Nos. of Visitors : none Nos. of Staff : 125
Weather : Rain
Name of Surve : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		31,200	390,000	2,400	8,000							364,400
	Paper	Paper	1,350	5,500	1,350	5,750							8,550
		Cardboard	50	8,500	50	9,500						8,500	26,400
		Total	1,400	14,000	1,400	15,250	0	0	0	0	0	8,500	34,950
	Plastics	Film	2,400	3,500									1,100
		Bottle & Others	1,350	3,260	1,350	3,020	0	3,080					6,660
		PET	2,400	4,500	1,350	1,930							2,680
		Total	6,150	11,260	2,700	4,950	0	3,080	0	0			10,440
	Rubber & Leather			0									0
	Textiles		300	1,720									1,420
	Yard Waste		100	9,000	50	18,500	50	13,500	50	10,500	50	17,000	68,200
	Wood		0	0									0
	Other Org. Waste		2,400	16,500	100	15,500	50	18,500	100	31,000			78,850
Total (Organic Wastes)			41,550	442,480	6,650	62,200	100	35,080	150	41,500	50	25,500	558,260
In-organic Waste													0
	Glass	Broken Glass	0	0									0
		Bottle	1,350	7,500							0	9,940	16,090
		Total	1,350	7,500	0	0	0	0	0	0	0	9,940	16,090
	Tin Cans (Steel Cans)		1,350	4,820									3,470
	Aluminum cans		1,350	2,750									1,400
	Other Metals		300	720									420
	Dirt, Ash, Sand		1,350	10,000	300	27,400							35,750
Total (Inorganic Wastes)			5,700	25,790	300	27,400	0	0	0	0	0	9,940	57,130
Hazardous Waste													0
	Batteries		0	340									340
	Other Hazardous Waste		300	920									620
Total (Hazardous Waste)			300	1,260	0	0	0	0	0	0	0	0	960
Total Weight (kg) :			47,550	469,530	6,950	89,600	100	35,080	150	41,500	50	35,440	616,350

2nd day Thulhagiri Island Resort

Wastes were transported to the Thilafushi incidentally before arrival of the survey team.

Record Sheets (Resort Island) (No. 3/10)

Survey Date : 25 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 72 Nos. of Visitors :4 Nos. of Staff : 125
Weather : Fine
Name of Surveyo : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		21,600	270,000									248,400
	Paper	Paper	2,400	4,780	2,400	4,040							4,020
		Cardboard	0	3,660	0	17,000	1,350	4,100					23,410
		Total	2,400	8,440	2,400	21,040	1,350	4,100					27,430
	Plastics	Film	1,350	2,700	2,400	3,280							2,230
		Bottle & Others	2,400	5,000	0	300							2,900
		PET	50	5,000									4,950
		Total	3,800	12,700	2,400	3,580							10,080
	Rubber & Leather			0									0
	Textiles		0	1,300									1,300
	Yard Waste		600	68,400									67,800
	Wood		0	880									880
	Other Org. Waste		2,400	16,500	100	40,000	saw dust						54,000
Total (Organic Wastes)			30,800	378,220	4,900	64,620	1,350	4,100					409,890
In-organic Waste													0
	Glass	Broken Glass	0	660									660
		Bottle	900	3,980									3,080
		Total	900	4,640									3,740
	Tin Cans (Steel Cans)		1,350	3,220									1,870
	Aluminum cans		1,350	2,720	1,350	2,500							2,520
	Other Metals		900	1,780									880
	Dirt, Ash, Sand		600	45,600									45,000
Total (Inorganic Wastes)			5,100	57,960	1,350	2,500							54,010
Hazardous Waste													
	Batteries		0	none									none
	Other Hazardous Waste		0	400									400
Total (Hazardous Waste)			0	400									400
Total Weight (kg) :			35,900	436,580	6,250	67,120	1,350	4,100	0	0	0	0	464,300

Record Sheets (Resort Island) (No. 4/10)

Survey Date : 26 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 69 Nos. of Visitors :25 Nos. of Staff : 125
Weather : Cloudy
Name of Surve : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		19,200	240,000									220,800
	Paper	Paper	2,400	4,000	2,400	2,820	2,400	4,080					3,700
		Cardboard	0	2,000	0	1,320	0	7,500					10,820
		Total	2,400	6,000	2,400	4,140	2,400	11,580					14,520
	Plastics	Film	1,350	3,080	900	1,140							1,970
		Bottle & Others	0	3,360									3,360
		PET	50	920									870
		Total	1,400	7,360	900	1,140							6,200
	Rubber & Leather			0									0
	Textiles		0	200									200
	Yard Waste		900	162,000									161,100
	Wood			none									0
	Other Org. Waste		900	3,400	900	2,830							4,430
Total (Organic Wastes)			24,800	418,960	4,200	8,110	2,400	11,580					407,250
In-organic Waste													0
	Glass	Broken Glass	0	100									100
		Bottle	1,350	2,980									1,630
		Total	1,350	3,080									1,730
	Tin Cans (Steel Cans)		2,400	6,750	1,350	1,900							4,900
	Aluminum cans		50	550									500
	Other Metals		0	10									10
	Dirt, Ash, Sand		900	108,000									107,100
Total (Inorganic Wastes)			4,700	118,390	1,350	1,900							114,240
Hazardous Waste													
	Batteries		0	none									none
	Other Hazardous Waste		0	150									150
Total (Hazardous Waste)			0	150									150
Total Weight (kg):			29,500	537,500	5,550	10,010	2,400	11,580	0	0	0	0	521,640

Record Sheets (Resort Island) (No. 5/10)

Survey Date : 27 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 79 Nos. of Visitors :6 Nos. of Staff : 125
Weather : Cloudy
Name of Surve : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		19,200	240,000									220,800
	Paper	Paper	2,400	6,780	0	2,000							6,380
		Cardboard	0	3,100									3,100
		Total	2,400	9,880	0	2,000							9,480
	Plastics	Film	1,350	1,500									150
		Bottle & Others	1,350	4,870									3,520
		PET	50	2,500									2,450
		Total	2,750	8,870									6,120
	Rubber & Leather			0									0
	Textiles		0	200									200
	Yard Waste		350	63,000									62,650
	Wood			none									0
	Other Org. Waste		50	1,000									950
Total (Organic Wastes)			24,750	322,950	0	2,000							300,200
In-organic Waste													0
	Glass	Broken Glass	900	1,720									820
		Bottle	900	4,600									3,700
		Total	1,800	6,320									4,520
	Tin Cans (Steel Cans)		1,350	1,800	1,350	4,180							3,280
	Aluminum cans		50	120									70
	Other Metals		900	1,470									570
	Dirt, Ash, Sand		350	42,000									41,650
Total (Inorganic Wastes)			4,450	51,710	1,350	4,180							50,090
Hazardous Waste													
	Batteries		0	none									none
	Other Hazardous Waste		0	none									none
Total (Hazardous Waste)			0	none									none
Total Weight (kg):			29,200	374,660	1,350	6,180							350,290

Record Sheets (Resort Island) (No. 6/10)

Survey Date : 28 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 69 Nos. of Visitors : none Nos. of Staff : 125
Weather : Cloudy
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island (No collection except for food waste and yard waste)

Type of Waste		Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste												
Food Waste		24,000	300,000									276,000
Paper	Paper											0
	Cardboard											0
	Total											0
Plastics	Film											0
	Bottle & Others											0
	PET											0
	Total											0
Rubber & Leather												0
Textiles												0
Yard Waste		900	162,000									161,100
Wood												0
Other Org. Waste												0
Total (Organic Wastes)		24,900	462,000									437,100
In-organic Waste												0
Glass	Broken Glass											0
	Bottle											0
	Total											0
Tin Cans (Steel Cans)												0
Aluminum cans												0
Other Metals												0
Dirt, Ash, Sand		900	108,000									107,100
Total (Inorganic Wastes)		900	108,000									107,100
Hazardous Waste												
Batteries												none
Other Hazardous Waste												none
Total (Hazardous Waste)												none
Total Weight (kg) :		25,800	570,000									544,200

Record Sheets (Resort Island) (No. 7/10)

Survey Date : 29 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 71 Nos. of Visitors :8 Nos. of Staff : 125
Weather : Cloudy
Name of Surve : Mr. Ibrahim

Composition of Solid Waste in Resort Island

Type of Waste		Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste												
Food Waste		21,600	270,000									248,400
Paper	Paper	50	14,000									13,950
	Cardboard	50	13,500									13,450
	Total	100	27,500	0	0							27,400
Plastics	Film	2,400	7,000									4,600
	Bottle & Others	50	5,500									5,450
	PET	50	6,000									5,950
	Total	2,500	18,500									16,000
Rubber & Leather			nil.									0
Textiles		0	200									200
Yard Waste		1,000	180,000									179,000
Wood		0	5,000	0	3,200							8,200
Other Org. Waste		50	1,000									950
Total (Organic Wastes)		25,250	502,200	0	3,200							480,150
In-organic Waste												0
Glass	Broken Glass	0	nil.									0
	Bottle	1,400	10,500									9,100
	Total	1,400	10,500									9,100
Tin Cans (Steel Cans)		2,400	10,500									8,100
Aluminum cans		1,400	2,020									620
Other Metals		880	3,300									2,420
Dirt, Ash, Sand		1,000	120,000									119,000
Total (Inorganic Wastes)		7,080	146,320	0	0							139,240
Hazardous Waste												
Batteries		0	none									none
Other Hazardous Waste		0	300									300
Total (Hazardous Waste)		0	300									300
Total Weight (kg) :		32,330	648,820	0	3,200							619,690

Record Sheets (Resort Island) (No. 8/10)

Survey Date : 30 June, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 65 Nos. of Visitors :none Nos. of Staff : 125
Weather : Fine
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		19,200	270,000									250,800
	Paper	Paper	50	18,500									18,450
		Cardboard	0	40,700									40,200
		Total	50	59,200	0	0							59,150
	Plastics	Film	1,400	8,500									7,100
		Bottle & Others	50	6,500									6,450
		PET	50	2,980	880	2,220							4,270
		Total	1,500	17,980	880	2,220							17,820
	Rubber & Leather		0	980									0
	Textiles		0	3,020									3,020
	Yard Waste		500	90,000									89,500
	Wood		0	7,500	0	980							8,480
	Other Org. Waste		2,400	28,500									26,100
Total (Organic Wastes)			23,650	477,180	880	3,200							455,850
In-organic Waste													0
	Glass	Broken Glass	0	2,500									0
		Bottle	880	8,000									7,120
		Total	880	10,500									9,620
	Tin Cans (Steel Cans)		50	7,500									7,450
	Aluminum cans		50	1,940									1,890
	Other Metals		0	2,840									2,840
	Dirt, Ash, Sand		450	54,000									53,550
Total (Inorganic Wastes)			1,430	76,780	0	0							75,350
Hazardous Waste													
	Batteries		0	none									none
	Other Hazardous Waste		0	1,800									1,800
Total (Hazardous Waste)			0	1,800									1,800
Total Weight (kg) :			25,080	555,760	880	3,200							533,000

Record Sheets (Resort Island) (No. 9/10)
Collected and transported to the Thilafushi already.

Survey Date : 1 July, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 60 Nos. of Visitors : 6 Nos. of Staff : 125
Weather : Cloudy
Name of Surve : Mr. Ameen

Composition of Solid Waste in Resort Island (No collection except for food waste and yard waste)

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		24,000	300,000									276,000
	Paper	Paper											0
		Cardboard											0
		Total											0
	Plastics	Film											0
		Bottle & Others											0
		PET											0
		Total											0
	Rubber & Leather												0
	Textiles												0
	Yard Waste		1,000	180,000									179,000
	Wood												0
	Other Org. Waste												0
Total (Organic Wastes)			25,000	480,000									455,000
In-organic Waste													0
	Glass	Broken Glass											0
		Bottle											0
		Total											0
	Tin Cans (Steel Cans)												0
	Aluminum cans												0
	Other Metals												0
	Dirt, Ash, Sand		900	108,000									107,100
Total (Inorganic Wastes)			900	108,000									107,100
Hazardous Waste													
	Batteries												none
	Other Hazardous Waste												none
Total (Hazardous Waste)													none
Total Weight (kg) :			25,900	588,000									562,100

Record Sheets (Resort Island) (No. 10/10)

Survey Date : 4 July, 1998
Resort Island : Thulhagiri
Nos. of Hotel Guests: 65 Nos. of Visitors : none Nos. of Staff : 125
Weather : Cloudy
Name of Survr : Mr. Ameen

Composition of Solid Waste in Resort Island

Type of Waste			Container Weight 1 (g)	Gross Weight 1 (g)	Container Weight 2 (g)	Gross Weight 2 (g)	Container Weight 3 (g)	Gross Weight 3 (g)	Container Weight 4 (g)	Gross Weight 4 (g)	Container Weight 5 (g)	Gross Weight 5 (g)	Total Net Weight (g)
Organic Waste													
	Food Waste		16,800	210,000									193,200
	Paper	Paper	50	9,500	50	4,800							14,200
		Cardboard	0	25,000	0	3,500							28,500
		Total	50	34,500	50	8,300							42,700
	Plastics	Film	50	7,500									7,450
		Bottle & Others	2,400	7,100	50	2,200							6,850
		PET	50	5,400									5,350
		Total	2,500	20,000	50	2,200							19,650
	Rubber & Leather		50	2,400									2,350
	Textiles		0	2,480									2,480
	Yard Waste		2,500	450,000									447,500
	Wood		0	14,500									14,500
	Other Org. Waste		2,400	25,000	50	10,500							33,050
Total (Organic Wastes)			24,300	758,880	150	21,000							755,430
In-organic Waste													0
	Glass	Broken Glass	0	2,300									0
		Bottle	50	26,500	0	280							26,730
		Total	50	28,800	0	280							29,030
	Tin Cans (Steel Cans)		2,400	5,500	50	4,500							7,550
	Aluminum cans		1,400	5,500									4,100
	Other Metals		0	2,800									2,800
	Dirt, Ash, Sand		2,500	300,000									297,500
Total (Inorganic Wastes)			6,350	342,600	50	4,780							340,980
Hazardous Waste													
	Batteries		0	nil									none
	Other Hazardous Waste		0	1,400									1,400
Total (Hazardous Waste)			0	1,400									1,400
Total Weight (kg) :			30,650	1,102,880	200	25,780							1,097,810

3.3 Solid Waste Amount Survey in Male'

3.3.1 Purpose and Survey Items

The survey is aiming at weighing solid waste amount discharged in Male' Island to collect and accumulate data as one of the most important element in formulation of Master Plan and Feasibility Study of SWM plan for Male' Municipality. The survey was conducted to weigh all the carried-in wastes and carried-out wastes to and from the Transfer Station for 20 days and 10 days respectively in order to investigate the following data.

- Amount of carried-in wastes separated by generation sources
- Amont of carried-out wastes transported to the Thiafushi
- Waste generation rate per unit per day
- Amount and types of reusable and recyclable wastes
- Amount and types of hazardous wastes
- Loading rate of MCPW truck per unit
- Difference in loading amount by types of waste collection means

3.3.2 Survey Period

The survey was conducted after completion of installation of the weighing station at Transfer Station on 13th August, 1998. The first survey was carried on 15th and 16th August to collect tare weight of the vehicles and hand cart entering to the station. Actual survey started on 17 August until 20 September except on Friday for collecting the data for 30days based on the schedule shown as follows.

Day	Date		Waste for Weighing	Objective Vehicles
1	17 August	Mon	Carried-in Waste 1st day	Municipality, private and hand cart
2	18 August	Tue	Carried-in Waste 2nd day	Municipality, private and hand cart
3	19 August	Wed	Carried-in Waste 3rd day	Municipality, private and hand cart
4	20 August	Thu	Carried-in Waste 4th day	Municipality, private and hand cart
	21 August	Fri	Holiday	
5	22 August	Sat	Carried-out Waste 1st day	MCPW Trucks
6	23 August	Sun	Carried-out Waste 2nd day	MCPW Trucks
7	24 August	Mon	Carried-out Waste 3rd day	MCPW Trucks
8	25 August	Tue	Carried-in Waste 5th day	Municipality, private and hand cart
9	26 August	Wed	Carried-in Waste 6th day	Municipality, private and hand cart
10	27 August	Thu	Carried-in Waste 7th day	Municipality, private and hand cart
	28 August	Fri	Holiday	
11	29 August	Sat	Carried-in Waste 8th day	Municipality, private and hand cart
12	30 August	Sun	Carried-in Waste 9th day	Municipality, private and hand cart
13	31 August	Mon	Carried-in Waste 10th day	Municipality, private and hand cart
14	1 September	Tue	Carried-in Waste 11th day	Municipality, private and hand cart
15	2 September	Wed	Carried-in Waste 12th day	Municipality, private and hand cart

16	3 September	Thu	Carried-in Waste 13th day	Municipality, private and hand cart
	4 September	Fri	Holiday	
17	5 September	Sat	Carried-in Waste 14th day	Municipality, private and hand cart
18	6 September	Sun	Carried-in Waste 15th day	Municipality, private and hand cart
19	7 September	Mon	Carried-in Waste 16th day	Municipality, private and hand cart
20	8 September	Tue	Carried-in Waste 17th day	Municipality, private and hand cart
21	9 September	Wed	Carried-in Waste 18th day	Municipality, private and hand cart
22	10 September	Thu	Carried-in Waste 19th day	Municipality, private and hand cart
	11 September	Fri	Holiday	
23	12 September	Sat	Carried-in Waste 20th day	Municipality, private and hand cart
24	13 September	Sun	Carried-out Waste 4th day	MCPW Trucks
25	14 September	Mon	Carried-out Waste 5th day	MCPW Trucks
26	15 September	Tue	Carried-out Waste 6th day	MCPW Trucks
27	16 September	Wed	Carried-out Waste 7th day	MCPW Trucks
28	17 September	Thu	Carried-out Waste 8th day	MCPW Trucks
	18 September	Fri	Holiday	
29	19 September	Sat	Carried-out Waste 9th day	MCPW Trucks
30	20 September	Sun	Carried-out Waste 10th day	MCPW Trucks

3.3.3 Procedures of Survey

Survey Time

The survey was conducted from 5 to 22 hours for the carried-in wastes and from 6 to 19 hours for carried-out wastes.

Objective Vehicles for Weighing

All the vehicles including municipality collection cars, micro bin trucks, private vehicles, dumpers, loaders, etc. entering to the Transfer Station were directed to the weighing station for measuring carried-in waste amount. All the transportation trucks belongs to MCPW were weighed before leaving for the Thilafushi to take data for the carried-out waste.

Weighing Machine

The truck scale installed in connection with surveying solid waste amount is a temporary use having the minimum function for measuring and recording the weight of waste collection vehicles and so the survey was made to weigh the axial load of one wheel to another one by one for two times normally for one vehicle. The truck scale is designed for the maximum load for 15 tons and the minimum load for 10 kg for the axial loads. The recorder is designed to have several functions for data recording, processing and transferring the data to computer and also have the function to memorise tare weigh for 100 vehicles.

Waste Amount Carried-in from Midnight to Early Morning Time

The survey was not conducted from 22:00 to 5:00 hours. But there are some amount of waste carried into the Transfer Station from midnight to early morning

time. For weighing these wastes, the site was cleaned at 22:00 hours to separate/distinguish the carried-in wastes from the remaining garbage and gathered to load on the MCPW truck for weighing on the next morning everyday before starting operation of waste transportation to the Thilafushi.

Waste Amount Carried-in form Neighbouring Area

The neighbouring residents bring waste into the Transfer Station on foot, loaded on bicycle or on small cart. The individual waste amount is too small to weigh by the truck scale and so the wastes were directed to pile up in the corner of the Transfer Station for storing through out the day and loaded onto the MCPW truck in the next morning for measuring the weight by the truck scale.

Recording of Data and Information

Each vehicle was recorded by the axial loads, time, number plate, and the type of waste loaded based on the categorised indicated in the followings. The type of waste was determined by means of hearing the collection points from the driver and by sighting the type of waste loaded on the vehicle

Code	Category of Waste Generation Source
A-1	Residential Area (Residential House)
A-2	Residential Area (Micro Bins)
B-1	Commercial Area (General)
B-2	Commercial Waste (STO)
C-1	Buildings (Government Office)
C-2	Building (Private Office & Shops)
D	Fruits Market & Parks
E	Restaurant & Hotels
F-1	Home Industry (Carpentry - Saw Dust)
F-2	Home Industry (Metals)
F-3	Home Industry (Others)
G	School
H	Hospital & Clinics
I-1	Construction Waste (Sand & Concrete Debris)
I-2	Demolition Waste (Mostly Wood)
I-3	Construction Waste (Mixed)

3.3.4 Survey Data

(1) Carried-in Waste Amount Data

Generation Source Category	Code	Total - 19 days (ton)	Average-per day (ton)
Residential Area by Vehicles	A1	463.38	24.39
Hand Cart		70.48	3.71
Individual, Midnight to Morning Waste		69.72	3.67
Micro Bin	A2	461.10	24.27
Sub Total	(A1&2)	1064.67	56.04
Commercial Area (General) by Vehicles	B-1	271.30	14.28
Hand Cart		70.48	3.71
Individual, Midnight to Morning Waste		69.72	3.67
Commercial Waste (STO)	B-2	40.26	2.12
Sub Total	(B1&2)	451.76	23.78
Total (A+B)		1516.44	79.81
Buildings (Government Office)	C-1	133.99	7.05
Building (Private Office & Shops)	C-2	231.55	12.19
Sub Total	(C1&2)	365.54	19.24
Fruits Market & Parks	D	107.57	5.66
Restaurant & Hotels	E	77.37	4.07
Home Industry (Carpentry - Saw Dust)	F-1	100.88	5.31
Home Industry (Metals)	F-2	30.29	1.59
Home Industry (Others)	F-3	100.16	5.27
Sub Total	(F1 to 3)	231.33	12.18
School	G	1.84	0.10
Hospital & Clinics	H	18.26	0.96
Total (C-H)		801.92	42.21
Construction Waste (Sand & Concrete Debris)	I-1	679.44	35.76
Midnight to Morning Concrete Debris & Sand	I-1	229.05	12.06
Construction Demolition Waste	I-2	268.36	14.12
Construction Waste (Mixed)	I-3	348.31	18.33
Total (I)	(I1 to 3)	1525.16	80.27
Ground Total	(A to I)	3843.51	202.29

Summary for 20 days by the types of collection means (only the weight for each day shall be shown)

Solid Waste Amount Carried into the Transfer Station

	Date:	17/August/1998			
Transportation Mode	Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	63	6.33	4.11	Avg.	101 kg/time
Vehicle	207	128.29	83.35	Avg.	620 kg/vehicle
Micro Bin Truck	47	19.30	12.54	Avg.	411 kg/vehicle
Midnight/Morning Waste Carried-In	many	0.00	0.00		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		153.92	100.00		

Note: Mid-night/Early Morning Carried-in Waste and Concrete Debris & Sand were mixed together.

	Date:	18/August/1998			
Transportation Mode	Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	54	5.17	2.50	Avg.	96 kg/time
Vehicle	245	151.22	73.12	Avg.	617 kg/vehicle
Micro Bin Truck	45	17.66	8.54	Avg.	392 kg/vehicle
Individual Carried-In	many	1.80	0.87		
Midnight/Morning Waste Carried-In	many	4.97	2.40		
Mid-night/Early Morning Concrete Debris & Sand		25.98	12.56		
Total		206.79	100.00		

	Date:	19/August/1998			
Transportation Mode	Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	65	7.36	3.83	Avg.	113 kg/time
Vehicle	219	122.25	63.60	Avg.	558 kg/vehicle
Micro Bin Truck	56	24.32	12.65	Avg.	434 kg/vehicle
Individual Carried-In	many	1.92	1.00		
Midnight/Morning Waste Carried-In	many	0.00	0.00		
Mid-night/Early Morning Concrete Debris & Sand		36.36	18.92		
Total		192.20	100.00		

Note: Mid-night/Early Morning Carried-in Waste and Concrete Debris & Sand were mixed together.

	Date:	20/August/1998			
Transportation Mode	Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	54	5.54	2.27	Avg.	103 kg/time
Vehicle	265	169.09	69.17	Avg.	638 kg/vehicle
Micro Bin Truck	57	23.42	9.58	Avg.	411 kg/vehicle
Individual Carried-In	many	1.20	0.49		
Midnight/Morning Waste Carried-In	many	9.78	4.00		
Mid-night/Early Morning Concrete Debris & Sand		35.43	14.49		
Total		244.46	100.00		

Transportation Mode	Date: 25/August/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	53	6.10	4.35	Avg.	115 kg/time
Vehicle	160	102.49	73.08	Avg.	641 kg/vehicle
Micro Bin Truck	38	18.42	13.13	Avg.	485 kg/vehicle
Midnight/Morning Waste Carried-In	many	13.25	9.45		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		140.25	100.00		

Transportation Mode	Date: 26/August/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	59	7.25	3.19	Avg.	123 kg/time
Vehicle	226	183.79	80.91	Avg.	813 kg/vehicle
Micro Bin Truck	55	23.41	10.31	Avg.	426 kg/vehicle
Midnight/Morning Waste Carried-In	many	12.70	5.59		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		227.15	100.00		

Transportation Mode	Date: 27/August/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	67	6.68	2.61	Avg.	100 kg/time
Vehicle	245	180.65	70.50	Avg.	734 kg/vehicle
Micro Bin Truck	61	25.67	10.02	Avg.	421 kg/vehicle
Midnight/Morning Waste Carried-In	many	7.41	2.89		
Mid-night/Early Morning Concrete Debris & Sand		35.84	13.99		
Total		256.24	100.00		

Transportation Mode	Date: 29/August/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	60	8.59	4.22	Avg.	143 kg/time
Vehicle	241	157.59	77.46	Avg.	654 kg/vehicle
Micro Bin Truck	61	29.24	14.37	Avg.	479 kg/vehicle
Midnight/Morning Waste Carried-In	many	8.03	3.95		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		203.45	100.00		

Transportation Mode	Date: 30/August/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	66	9.38	5.25	Avg.	142 kg/time
Vehicle	199	130.15	72.85	Avg.	654 kg/vehicle
Micro Bin Truck	58	27.18	15.21	Avg.	469 kg/vehicle
Midnight/Morning Waste Carried-In	many	11.94	6.68		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		178.65	100.00		

Transportation Mode	Date: 31/August/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	63	7.76	3.26	Avg.	123 kg/time
Vehicle	218	165.34	69.60	Avg.	758 kg/vehicle
Micro Bin Truck	60	26.10	10.99	Avg.	435 kg/vehicle
Midnight/Morning Waste Carried-In	many	8.91	3.75		
Mid-night/Early Morning Concrete Debris & Sand		29.46	12.40		
Total		237.56	100.00		

Transportation Mode	Date: 1/September/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	61	7.76	3.15	Avg.	127 kg/time
Vehicle	236	178.05	72.29	Avg.	754 kg/vehicle
Micro Bin Truck	59	25.21	10.24	Avg.	427 kg/vehicle
Midnight/Morning Waste Carried-In	many	7.11	2.89		
Mid-night/Early Morning Concrete Debris & Sand		28.16	11.43		
Total		246.29	100.00		

Transportation Mode	Date: 2/September/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	68	8.12	4.59	Avg.	119 kg/time
Vehicle	204	140.40	79.42	Avg.	688 kg/vehicle
Micro Bin Truck	52	23.07	13.05	Avg.	444 kg/vehicle
Midnight/Morning Waste Carried-In	many	5.19	2.93		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		176.78	100.00		

Transportation Mode	Date: 3/September/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	60	6.44	4.47	Avg.	107 kg/time
Vehicle	187	113.01	78.41	Avg.	604 kg/vehicle
Micro Bin Truck	46	18.86	13.09	Avg.	410 kg/vehicle
Midnight/Morning Waste Carried-In	many	5.82	4.04		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		144.13	100.00		

Transportation Mode	Date: 5/September/1998 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	72	9.70	4.43	Avg.	135 kg/time
Vehicle	235	158.03	72.20	Avg.	670 kg/vehicle
Micro Bin Truck	64	28.93	13.22	Avg.	452 kg/vehicle
Midnight/Morning Waste Carried-In	many	7.59	3.47		
Mid-night/Early Morning Concrete Debris & Sand		14.62	6.68		
Total		218.86	100.00		

Transportation Mode	Date: 7/September/1993 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	71	8.11	3.73	Avg.	114 kg/time
Vehicle	234	156.38	71.95	Avg.	668 kg/vehicle
Micro Bin Truck	54	24.29	11.18	Avg.	450 kg/vehicle
Midnight/Morning Waste Carried-In	many	5.37	2.47		
Mid-night/Early Morning Concrete Debris & Sand		23.2	10.67		
Total		217.35	100.00		

Transportation Mode	Date: 8/September/1993 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	66	7.55	3.68	Avg.	114 kg/time
Vehicle	239	169.49	82.68	Avg.	709 kg/vehicle
Micro Bin Truck	54	24.57	11.99	Avg.	455 kg/vehicle
Midnight/Morning Waste Carried-In	many	3.38	1.65		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		204.99	100.00		

Transportation Mode	Date: 9/September/1993 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	65	7.33	3.62	Avg.	113 kg/time
Vehicle	241	158.55	78.31	Avg.	658 kg/vehicle
Micro Bin Truck	57	27.08	13.38	Avg.	475 kg/vehicle
Midnight/Morning Waste Carried-In	many	9.50	4.69		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		202.45	100.00		

Transportation Mode	Date: 10/September/1993 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	68	8.13	3.88	Avg.	120 kg/time
Vehicle	251	163.26	77.88	Avg.	650 kg/vehicle
Micro Bin Truck	59	27.11	12.93	Avg.	460 kg/vehicle
Midnight/Morning Waste Carried-In	many	11.13	5.31		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		209.64	100.00		

Transportation Mode	Date: 12/September/1993 Nos. of Times of Hauling (times)	Amount of Waste (ton)	Ratio (%)	Remarks	
Hand Cart	64	7.67	4.21	Avg.	120 kg/time
Vehicle	234	144.85	79.48	Avg.	619 kg/vehicle
Micro Bin Truck	61	27.26	14.96	Avg.	447 kg/vehicle
Midnight/Morning Waste Carried-In	many	2.48	1.36		
Mid-night/Early Morning Concrete Debris & Sand		0	0.00		
Total		182.25	100.00		

(2) Carried-out Waste Amount Data

Carried-out Solid Waste Amount from Transfer Station

Date : 22 August, 1998				Date : 23 August, 1998				24 August, 1998			
Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)	Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)	Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)
T03-1277	19.80	10.42	9.38	T03-1320	15.9	10.42	5.48	T03-1277	19.54	10.42	9.12
T03-2590	21.19	10.35	10.84	T03-1491	17.24	10.88	6.36	T03-2598	17.80	10.35	7.45
T03-2588	21.93	10.87	11.06	T03-2588	16.78	10.87	5.91	T03-1490	17.12	10.11	7.01
T03-1320	19.32	10.42	8.90	T03-1271	13.59	7.85	5.74	T03-1149	14.07	7.61	6.46
T03-1217	16.71	7.50	9.21	T03-1148	13.94	6.33	7.61	T03-1320	17.18	10.45	6.73
T03-1491	23.25	10.88	12.37	T03-2590	16.5	10.45	6.05	T03-2590	19.60	10.35	9.25
T03-1148	15.62	6.33	9.29	T03-1217	10.62	7.50	3.12	T03-2598	18.94	10.35	8.59
T03-2598	21.57	10.35	11.22	T03-2598	16.22	10.35	5.87	T03-1491	21.48	10.88	10.60
T03-1271	16.54	7.85	8.69	T03-1277	16.13	10.42	5.71	T03-2588	21.95	10.87	11.08
T03-1490	16.89	10.11	6.78	T03-1490	15.08	10.11	4.97	T03-1217	12.53	7.50	5.03
T03-1277	17.07	10.42	6.65	T03-1271	12.33	7.85	4.48	T03-1490	17.39	10.11	7.28
T03-1217	13.96	7.50	6.46	T03-1320	15.31	10.42	4.89	T03-1320	15.63	10.42	5.21
T03-2590	15.69	10.35	5.34	T03-2598	18.18	10.35	7.83	T03-1491	15.98	10.88	5.10
T03-2588	17.13	10.87	6.26	T03-1148	15.44	6.33	9.11	T03-1148	11.60	6.33	5.27
T03-1491	17.57	10.80	6.77	T03-1217	14.03	7.50	6.53	T03-2590	18.11	10.35	7.76
T03-1271	13.30	7.85	5.45	T03-2590	19.88	10.35	9.53	T03-2588	17.61	10.87	6.74
T03-1490	15.32	10.11	5.21	T03-1277	18.88	10.42	8.46	T03-2598	16.10	10.35	5.75
T03-1277	13.58	10.42	3.16	T03-1490	16.47	10.11	6.36	T03-1277	16.45	10.42	6.03
T03-2598	15.54	10.35	5.19	T03-1320	18.26	10.42	7.84	T03-2589	16.43	10.22	6.21
T03-2590	15.41	10.35	5.06	T03-2589	17.03	10.22	6.81	T03-1320	16.17	10.42	5.75
T03-1217	13.01	7.50	5.51	T03-2590	17.35	10.35	7.00	T03-1217	13.61	7.50	6.11
T03-1491	16.85	10.88	5.97	T03-2598	16.24	10.35	5.89	T03-1490	17.22	10.11	7.11
T03-1271	12.12	7.85	4.27	T03-1491	17.03	10.88	6.15	T03-1148	13.73	6.33	7.40
T03-2588	16.59	10.87	5.72	T03-1217	13.42	7.50	5.92	T03-1491	15.62	10.88	4.74
T03-1148	11.92	6.33	5.59	T03-1271	13.69	7.85	5.84	T03-2588	14.55	10.87	3.68
T03-1320	15.17	10.42	4.75	T03-1277	15.74	10.42	5.32	T03-2590	15.20	10.35	4.85
T03-2598	15.41	10.35	5.06	T03-1490	16.22	10.11	6.11	T03-2598	15.62	10.35	5.27
T03-1277	18.45	10.42	8.03	T03-1148	12.08	6.33	5.75				
T03-2590	16.03	10.35	5.68	T03-1320	16.32	10.42	5.90				
T03-1490	15.54	10.11	5.43	T03-2589	13.91	10.22	3.69				
				T03-1271	14.35	7.85	6.50				
				T03-2590	18.05	10.35	7.70				
				T03-1491	15.41	10.88	4.53				
				T03-1217	13.63	7.50	6.13				
				T03-2588	19.41	10.87	8.54				
Total Amount (t)			209.30	Total Amount (t)			219.63	Total Amount (t)			181.58
Avg. per Trip (t/time)			6.98	Avg. per Trip (t/time)			6.28	Avg. per Trip (t/time)			6.73
No. of Times of Hauling			30	No. of Times of Hauling			35	No. of Times of Hauling			27

13 September, 1998				14 September, 1998				15 September, 1998			
Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)	Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)	Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)
T03-1277	17.59	10.42	7.17	T03-1491	14.77	10.88	3.89	T03-1148	10.04	6.33	3.71
T03-2590	17.45	10.22	7.23	T03-2598	14.49	10.35	4.14	T03-2589	15.9	10.22	5.68
T03-2588	18.28	10.87	7.41	T03-2588	15.14	10.87	4.27	T03-1491	16.97	10.88	6.09
T03-2589	18.16	10.22	7.94	T03-1490	13.61	10.11	3.50	T03-1277	15.22	10.42	4.80
T03-2598	19.32	10.35	8.97	T04-1236	15.55	10.2	5.35	T03-2589	20.04	10.35	9.69
T03-1148	14.14	6.33	7.81	T03-1217	10.27	7.5	2.77	T03-1490	15.58	10.11	5.47
T04-1236	18.25	10.2	8.05	T03-1148	10.92	6.33	4.59	T03-1491	16.31	10.88	5.43
T03-1491	17.32	10.88	6.44	T03-1490	13.98	10.11	3.87	T04-1236	15.95	10.2	5.75
T03-1277	19.89	10.42	9.47	T03-2598	15.81	10.35	5.46	T03-1217	8.71	7.5	1.21
T03-2589	18.59	10.22	8.37	T03-2588	14.36	10.87	3.49	T03-1148	8.28	6.33	1.95
T03-2588	17.61	10.87	6.74	T03-2589	14.26	10.22	4.04	T03-1277	17.49	10.42	7.07
T03-2590	18.86	10.35	8.51	T03-1491	16.15	10.88	5.27	T03-2588	16.86	10.87	5.99
T03-2598	19.65	10.35	9.30	T03-1148	12.63	7.05	5.58	T03-2589	14.52	10.22	4.30
T03-1490	16.02	10.11	5.91	T03-1217	13.32	7.5	5.82	T04-1235	14.93	10.2	4.73
T04-1236	19.77	10.2	9.57	T04-1236	15.2	10.2	5.00	T03-2590	14.48	10.45	4.03
T03-1148	15.46	6.33	9.13	T03-2590	17.24	10.45	6.79	T03-1217	11.69	7.5	4.19
T03-1491	16.11	10.88	5.23	T03-1277	16.59	10.42	6.17	T03-1491	15.25	10.88	4.37
T03-2588	12.51	10.87	1.64	T03-2589	15.77	10.22	5.55	T03-1490	16.13	10.11	6.02
T03-2589	14.34	10.22	4.12	T03-2588	16.29	10.87	5.42	T03-2589	14.49	10.35	4.14
T03-2590	13.68	10.35	3.33	T03-2598	14.57	10.35	4.22	T03-1148	10.81	6.33	4.48
T03-1277	14.56	10.42	4.14	T03-1490	16.41	10.11	6.30	T03-1277	15.14	10.42	4.72
T04-1236	13.77	10.2	3.57	T04-1236	16.53	10.2	6.33	T03-2589	15.11	10.22	4.89
T03-1148	11.12	6.33	4.79	T03-1491	17.54	10.88	6.66	T03-2588	15.45	10.87	4.58
T03-1490	14.65	10.11	4.54	T03-1148	12.2	6.33	5.87	T03-2590	13.32	10.45	2.87
T03-2598	15.87	10.35	5.52	T03-1217	8.47	7.5	0.97	T03-1490	14.4	10.11	4.29
T03-1491	15.92	10.88	5.04	T03-2590	15.89	10.45	5.44	T04-1236	15.23	10.2	5.03
T03-1490	15.97	10.11	5.86					T03-1217	11.55	7.5	4.05
T03-2598	13.39	10.35	3.04								
T03-2588	13.84	10.87	2.97								
T03-1277	14.89	10.42	4.47								
T03-2589	14.42	10.22	4.20								
T03-1148	15.97	6.33	9.64								
T03-1491	18.18	10.88	7.30								
Total Amount (t)			207.42	Total Amount (t)			126.76	Total Amount (t)			129.53
Avg. per Trip (Utime)			6.29	Avg. per Trip (Utime)			4.88	Avg. per Trip (Utime)			4.80
No. of Times of Hauling			33	No. of Times of Hauling			26	No. of Times of Hauling			27

16 September, 1998			
Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)
T03-2590	12.51	10.45	2.06
T03-2598	14.4	10.35	4.05
T03-1491	14.36	10.88	3.48
T03-2588	14.95	10.87	4.08
T03-1277	15.08	10.42	4.66
T03-1217	14.25	7.5	6.75
T03-1148	12.7	6.33	6.37
T03-1490	15.34	10.11	5.23
T04-1236	15.73	10.2	5.53
T03-2589	15.54	10.22	5.32
T03-2590	17.34	10.45	6.89
T03-1277	17.06	10.42	6.64
T03-1491	11.53	10.88	0.65
T03-2589	16.4	10.22	6.18
T04-1236	15.41	10.2	5.21
T03-1217	11.99	7.5	4.49
T03-1490	16.91	10.11	6.80
T03-1148	10	6.33	3.67
T03-1277	14.55	10.42	4.13
T03-2588	13.77	10.87	2.90
T03-2590	14.92	10.45	4.47
T03-1491	14.78	10.88	3.90
T03-1217	11.29	7.5	3.79
T03-1490	17.88	10.11	7.77
T03-2589	14.69	10.22	4.47
T04-1236	13.48	10.2	3.28
T03-1277	15.48	10.42	5.06
T03-2588	16.77	10.87	5.90
T03-1148	11.61	6.33	5.28
T03-1491	19.21	10.88	8.33
T03-2590	16.65	10.35	6.30
T03-2598	16.36	10.35	6.01
T03-1490	14.75	10.11	4.64
T04-1236	16.37	10.2	6.17
T03-1217	8.88	7.5	1.38
Total Amount (t)			171.84
Avg. per Trip (t/time)			4.91
No. of Times of Hauling			35

17 September, 1998			
Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)
T04-1236	17.98	10.2	7.78
T03-1270	19.25	10.42	8.83
T03-1491	18.35	10.88	7.47
T03-2588	16.09	10.87	5.22
T03-2590	14.84	10.45	4.39
T03-2589	15.22	10.22	5.00
T03-1148	12.17	6.33	5.84
T03-2598	15.82	10.35	5.47
T03-1491	14.08	10.88	3.20
T03-1217	10.84	7.5	3.34
T03-1277	16.72	10.42	6.30
T03-1148	11.73	6.33	5.40
T03-2590	14.85	10.45	4.40
T03-2588	15.1	10.87	4.23
T03-2589	16.09	10.22	5.87
T03-1490	16.11	10.35	5.76
T03-1277	17.46	10.42	7.04
T03-2598	16.58	10.35	6.23
T03-1491	16.61	10.88	5.73
T03-2589	17.33	10.22	7.11
T03-1148	11.72	7.05	4.67
T04-1236	16.02	10.2	5.82
T03-1217	11.59	7.5	4.09
Total Amount (t)			129.19
Avg. per Trip (t/time)			5.62
No. of Times of Hauling			23

19 September, 1998			
Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)
T03-1217	9.65	7.5	2.15
T03-2588	12.61	10.87	1.74
T03-1490	14.29	10.11	4.18
T03-1148	10.38	6.33	4.05
T03-2598	14.88	10.35	4.53
T03-2589	14.04	10.22	3.82
T03-1491	13.98	10.88	3.10
T03-1446	8.02	6.65	1.37
T03-2588	15.01	10.87	4.14
T04-1236	14.72	10.2	4.52
T03-1217	9.83	7.5	2.33
T03-1217	11.39	7.5	3.89
T03-1148	7.17	6.33	0.84
T03-1490	15.45	10.11	5.34
T03-1148	11.14	6.33	4.81
T03-2589	16.45	10.22	6.23
T03-1491	16.5	10.88	5.62
T03-1353	7.15	6.45	0.70
T03-2598	14.24	10.35	3.89
T03-1446	7.17	6.65	0.52
T03-1490	13.96	10.11	3.85
T03-1148	10.82	6.33	4.49
T03-2598	13.2	10.35	2.85
T03-1491	14.46	10.88	3.58
T03-2589	13.93	10.22	3.71
T03-2588	14.52	10.87	3.65
T03-1277	15.02	10.42	4.60
T03-1217	10.69	7.5	3.19
Total Amount (t)			97.69
Avg. per Trip (t/time)			3.49
No. of Times of Hauling			28

20 September, 1998			
Plate No. of Vehicle	Gross Weight (t)	Tare Weight (t)	Net Weight (t)
T03-2590	13.95	10.45	3.50
T03-2589	13.3	10.22	3.08
T03-1490	13.48	10.11	3.37
T03-2588	14.42	10.87	3.55
T03-1217	11.2	7.5	3.70
T03-1353	8.75	6.45	2.30
T04-1236	11.88	10.2	1.68
T03-1277	13.61	10.42	3.19
T03-1490	11.15	10.11	1.04
T03-2590	12.67	10.45	2.22
T03-1217	9.97	7.5	2.47
T03-1446	8.3	6.65	1.65
T03-1353	8.48	6.45	2.03
T03-2589	14.82	10.22	4.60
T03-1277	15.69	10.42	5.27
T04-1236	14.73	10.2	4.53
T03-2590	12.8	10.45	2.35
T03-1217	8.72	7.5	1.22
T03-1446	7.71	6.65	1.06
T03-1490	11.53	10.11	1.42
T03-1353	8.01	6.45	1.56
T03-2589	12.82	10.22	2.60
T04-1236	17.91	10.2	7.71
T03-1217	11.43	7.5	3.93
T03-1277	17.6	10.42	7.18
T03-2590	15.17	10.45	4.72
Total Amount (t)			81.93
Avg. per Trip (t/time)			3.15
No. of Times of Hauling			26

Summary : Transportation Loading by Trucks			
Plate No. of Vehicle	Total Weight (t0n)	Total Times of Trans-	Truck Loading per Trip (ton)
T03-2598	141.80	24	5.91
T03-2590	158.56	28	5.66
T03-2589	137.62	26	5.29
T03-2588	136.91	26	5.27
T03-1491	163.37	29	5.63
T03-1490	151.42	29	5.22
T03-1446	4.60	4	1.15
T03-1353	6.59	4	1.65
T03-1320	55.45	9	6.16
T03-1271	204.91	34	6.03
T03-1270	8.83	1	8.83
T03-1217	119.75	29	4.13
T03-1149	6.46	1	6.46
T03-1148	152.99	27	5.67
Total	1554.87	290	5.36
Total Amount (t)			1,554.87
Avg. per Trip (t/time)			5.36
No. of Times of Hauling			290