

VADODARA MAHANAGAR SEVA SADAN

ELETRICAL/ MECHANICAL SEWAGE DISPOSAL WORKS DEPARTMENT

INTRODUCTION

Vadodara City is one of the privileged cities in India that has an underground drainage system built in the year 1894. The sewage is collected through a system comprising underground drainage network, Sewage Treatment Plant, auxiliary pumping stations (APS), pressure mains and disposal into the natural nallahs and rivers after treatment.

Wastewater generated from all this developments is collected by a network of underground sewers and pumping stations and conveyed to sewage treatment works for physical and biological treatment to meet the parameters prescribed by the Gujarat Pollution Control Board before discharge into nearest water course.

Vadodara Municipal Corporation has three drainage zones for sewerage system based on the natural topography of the city. Each of the drainage zones has a sewage treatment plant (STP). The sewage from drainage zones-I and II is disposed into the Ruparel Kaans, which meets the Jambuva River and ultimately joins the river Vishwamitri. The sewage from drainage zone-III is disposed into river Vishwamitri.

- **Based on the natural topography of the Vadodara city sewerage system is divided into three drainage zones.**

Drainage Zones	Collection Area	Sewage Treatment Plant	Sewage Treated in (MLD)
Zone - I Ward (4,12)	All the area to the south of meter gauge railway line and east of river Vishwamitri	Tarsali	52
Zone - II Ward (1,2,3,5,8,9)	All the area to the north of meter gauge railway line and east of river Vishwamitri	Gajarawadi & Kapurai	93 + 43 = 136

Zone - III Ward (6,7,10,11)	All the area to the west of river Vishwamitri	Atladra & Sayaji Garden	113 + 8.5 = 21.5
		TOTAL	309.50 MLD

FUNCTIONS

Sewage Disposal Works Department of the Vadodara Mahanagar Seva Sadan includes 6 Sewage Treatment Plants (STP) & 49 Auxiliary/Main Pumping stations (APS/MPS). The sole function of this department is to operate and maintain these STPs & APSs/MPSs. All the STPs & 24 APSs/MPSs are operated and maintained by private contractors. Supervision and monitoring of it is done by Engineers of the department. Remaining 25 APSs are operated and maintained by the employees of Sewage Disposal Works department.

In the Auxiliary Pumping Station(APS) , the waste (Sewage) water which comes from various part of the cities, is collected in the wet well of the APS and then it is pumped to the Main Pumping Station and ultimately to the STP for treatment.

In the Sewage Treatment Plant (STP), the waste water is treated to non hazardous level as per Gujarat Pollution Control Board (GPCB) norms and then is released to nearby natural drain/river.

All the physico chemical parameters are strictly maintained in the treatment procedure so that the sewage water must not be released untreated.

In this treatment of sewage water, solid bio organic waste which comes out as a bi product, is collected in the drying beds in the STP & then it is sold to a company for the production of low nutrient fertilizer and thus reduce health risks related to direct usage of the sludge as a fertilizer.

NAME OF STP	Ph		TSS		BOD		COD	
	Outlet data	6.5 -7.8		< 30		< 20		< 100
Inlet data	6.5-7.8		<456		<412		<655	
	Outlet	inlet	Outlet	inlet	Outlet	inlet	Outlet	inlet

Ataladara	7.52	7.15	17	238	14	218	52	423
Kapurai	7.58	6.80	16	172	17	75	74	73
Gajarawadi	7.5	7.2	25	222	15	210	52	408
Tarasali	7.4	7.07	20	196	19	162	76	378
Sayaji Garden	7.3	7.12	17	161	18	145	72	326

PHYSICO CHEMICAL PARAMETER RESULTS FOR THE YEAR OF 2012-13 FOR VARIOUS STPs :

SEWAGE NETWORK & ZONES:

The overall area of Vadodara Mahanagar Seva Sadan is divided into following three Sewage zones:

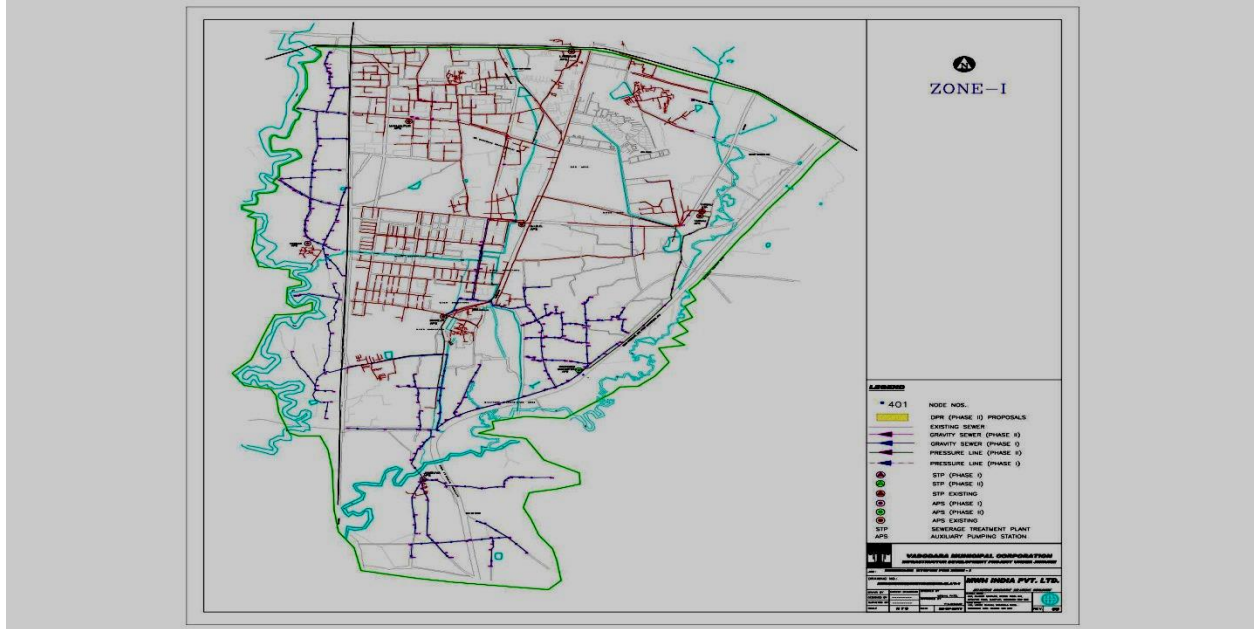
- [Tarsali Zone - I](#)
- [Gajarawadi Zone- II](#)
- [Atladara Zone - III](#)

The Important Constituents of the Sewage System are:

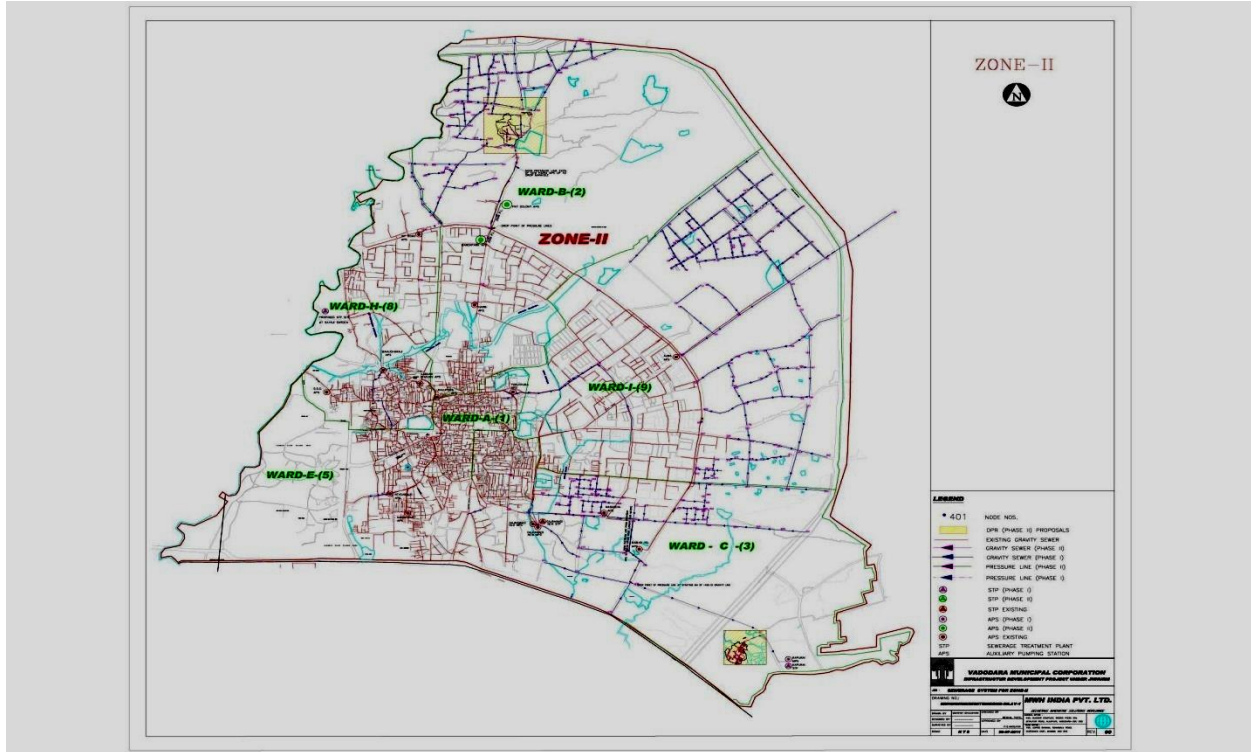
- [The Sewage Treatment Plants](#)
- [The Sewage Pumping Stations](#)

The Sewage Network: Click here to See [Sewage Network](#)

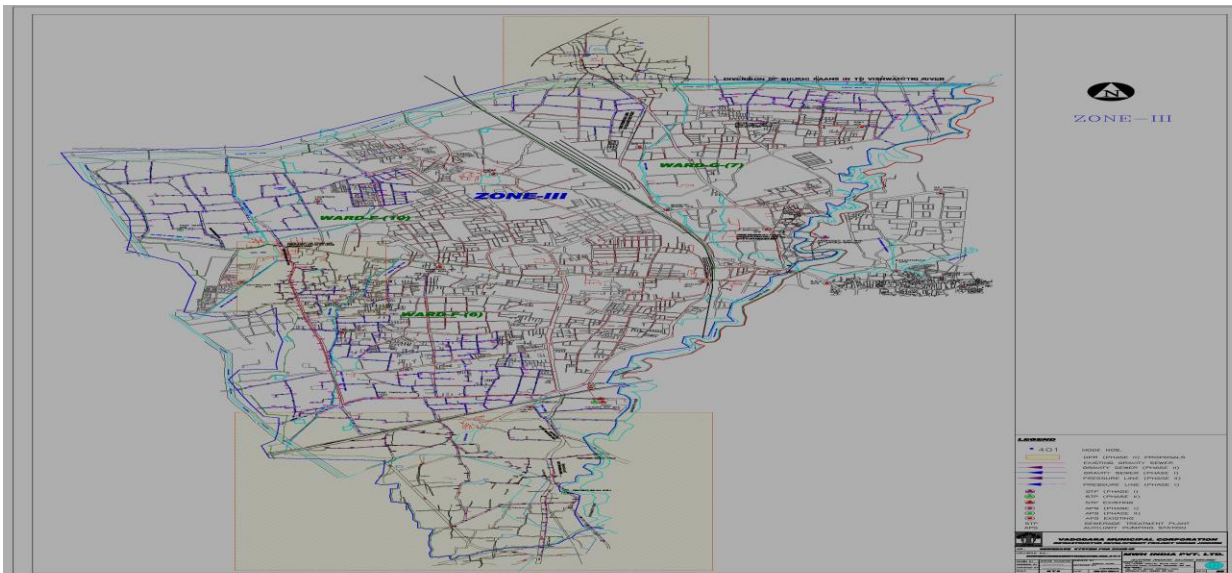
ZONE : I



ZONE - II



ZONE : III



[Tarsali Zone - I \(Description\)](#)

ZONE- I

Total nos. of
STP :
1. Tarsali 52
MLD STP

Total nos. of
APS :
10 nos. of APSs

Total nos. of
MPS :
01 no. MPS




Sewerage Pumping Stations:

- ✓ The developed area of the zone has been provided with total 11 numbers of sewage pumping stations at different locations(.....) and 1 Main pumping station .

Sewerage Treatment Plant:

- ✓ A sewage treatment plant of capacity of 52 MLD based on the Conventional Activated Sludge Process was completed and commissioned in 2001 at Tarsali.

- Gajarawadi Zone- II (Description)

<p>ZONE- II</p> <p>Total nos. of STP :</p> <p>1. Gajarawadi 66 MLD STP</p> <p>2. Kapurai 43 MLD STP</p> <p>3. Sayaji Garden 8.5 MLD STP</p> <p>Total nos. of APS :</p> <p>22 nos. of APSs</p> <p>Total nos. of MPS :</p> <p>03 no. MPS</p>	
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Sewerage Pumping Stations:

- ✓ The developed area of the zone has been provided with total 23 numbers of sewage pumping stations at different locations(.....) and 3 Main pumping station .

Sewerage Treatment Plant:

- ✓ A sewage treatment plant of capacity of 66 MLD based on the Conventional Activated Sludge Process was completed and commissioned in 2003 at Gajarawadi.

✓ A sewage treatment plant of capacity of 43 MLD based on the U.A.S.B. Technique Process was completed and commissioned in 2010 at Kapurai

✓ A sewage treatment plant of capacity of 8.5 MLD based on the Activated Sludge Process Process was completed and commissioned in 2010 at Sayaji Garden.

- [Atladara Zone- III \(Description\)](#)

ZONE- III

Total nos. of STP :

1. Atladara 43 MLD STP(old)
2. Atladara 43 MLD STP(new)

Total nos. of APS :
12 nos. of APSs

Total nos. of MPS :
01 no. MPS



Sewerage Pumping Stations:

- ✓ The developed area of the zone has been provided with total 12 numbers of sewage pumping stations at different locations(.....) and 1 Main pumping station .

Sewerage Treatment Plant:

- ✓ A sewage treatment plant of capacity of 43 MLD based on the U.A.S.B. Technique Process was completed and commissioned in 2001.
- ✓ A sewage treatment plant of capacity of 43 MLD based on the U.A.S.B. Technique Process was completed and commissioned in 2009 at Atladara.

TREATMENT PLANTS :



[A] EXHISTING :

Sr.No.	Location	Capacity(In MLD)
1	Ataladara Sewage Treatment Plant- OLD	43 + 27
2	Ataladara Sewage Treatment Plant- NEW	43
3	Kapurai Sewage Treatment Plant	43
4	Gajarawadi Sewage Treatment Plant	66 + 27
5	Tarasali Sewage Treatment Plant	52
6	Sayaji Garden Sewage Treatment Plant	8.5

***At Atladara and Gajarawadi, both 27 MLD plants are based on oldest 'Trickling Filter' Technique for treatment which is out dated, and it could not meet the present GPCB norms of treated water. So, both of these plants are under up gradation with new treatment technology and higher capacity.**

(B) ONGOING PROJECTS :

Sr. No.	Location	Capacity (In MLD)
1	Chhani Sewage Treatment Plant	21 Capacity

(C) PROPOSED PROJECTS :

Sr. No.	Location	Capacity (In MLD)
1.	Rajivnagar Sewage Treatment Plant	106.00
2.	Atladara Sewage Treatment Plant	66.00

Sewage Auxiliary Pumping Stations (APS) :-



Pumping Stations :

[A] Existing :

Sr.No.	NAME OF PUMPING STATION	MLD
TARASALI ZONE 1		
1	TARASALI PUMPING STATION	12
2	GIDC NEW PUMPING STATION	25
3	GIDC OLD PUMPING STATION	40
4	MANJALPUR PUMPING STATION	15
5	DANTESHWAR PUMPING STATION	10
6	MANEJA PUMPING STATION	18
7	LALBAG APS-10	10
8	SHARADNAGAR APS	10
9	MAKARPURA APS	30
10	JAMBUA APS	15
11	VADSAR APS	15
GAJARAWADI ZONE : II		
12	GAJARAWADI OLD MPS	27
13	GAJARAWADI NEW MPS	132

14	AJAWA PUMPING STATION	20
15	WAGHODIYA PUMPING STATION	25
16	HARANI PUMPING STATION	20
17	KALAGHODA APS-1	3.5
18	S.S.G. HOSPITAL APS-3	3.5
19	SARADAR BHUVAN APS-5	5
20	KALUPURA APS-6	7
21	AJABADI MILL APS-8	20
22	KEVDABAG APS-9	4.2
23	NAVAPURA APS-12	4
24	NARAHARI HOSPITAL APS-13	8
25	SAMA PUMPING STATION	6
26	NIZAMPURA PUMPING STATION	30
27	VIP PUMPING STATION	5
28	AMITNAGAR PUMPING STATION	3
29	ZALA COMPOUND PUMPING STATION	20
30	DABHOI ROAD OLD PUMPING STATION	55
31	DABHOI ROAD NEW PUMPING STATION	45
32	NEW SAMA APS	10
33	NEW HARNI APS	15
34	AYODHYANAGAR APS	5
35	BAUCHARAJI APS	5
36	KAMLA NAGAR APS	15
ATLADARA ZONE III		
37	ATALADARA NEW MPS	172
38	SHASTRI BRIDGE PUMPING STATION	35
39	GOTRI PUMPING STATION	20
40	GORWA PUMPING STATION	25
41	KALALI PUMPING STATION	10
42	SAID-VASNA PUMPING STATION	10
43	GAYATRINAGAR PUMPING STATION	10
44	LAKSHMIPURA PUMPING STATION	12
45	DINESH MILL APS-11	5
46	NEW GOTRI APS	15
47	TANDALJA APS	10
48	KALALI I APS	15
49	KALALI II APS	15

(B) Under Execution :

Sr.No.	NAME OF PUMPING STATION
1	Madanzapa (Bakarawadi) Pumping

	Station
2	Manekpark Pumping Station
3	RTO Pumping Station
4	Karelibaug Pumping Station
5	Ward-1 Pumping Station

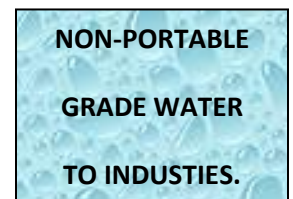
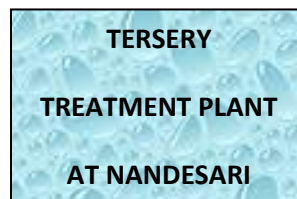
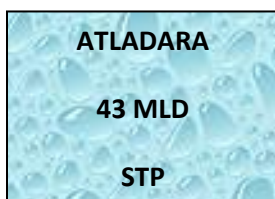
RECYCLE & REUSE :

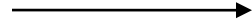
WHY RECYCLE & REUSE ?

Water reuse is increasingly been integrated in the planning and development of water resources in Mediterranean region, particularly for agricultural and landscape irrigation. Important projects are being developed and wastewater recycling and reuse facilities have been built. Regulations on wastewater recycling and reuse are essential. They help protect public health, increase water availability, prevent coastal pollution and enhance water resources and nature conservation policies.

✓ **RECYCLE & REUSE OF TREATED SEWAGE**

- VMSS has taken initiative to supply 50 MLD Treated Sewage to '**Nandesari Industries Association , Vadodara**' for their use as a non-portable industrial grade water for industries.





TREATED SEWAGE TO NANDESARI GIDC

✓ **RECYCLE & REUSE OF BIOSOLIDS**

- To establish Biosolids Processing Facilities in Vadodara, Gujarat.
- Collaborators:
Gujarat State Fertilizers & Chemicals LTD. (GSFC)

Vadodara Municipal Corporation

N – Viro Systems Canada LP.



PROJECT BACKGROUND:

- Municipal Dewatered bio solids cake is blended with alkaline admixture , a product from GSFC.
- Pasteurization Process stabilize and pasteurize the waste organic materials destroy the harmful bacteria and the beneficial soil bacteria survives.
- Produces low nutrients fertilizer for local condition which is marketed/sold by GSFC.



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**Organic Waste
Waste**

Alkaline

Industrial



Commercial Fertilizer

BENEFITS :

- **Improves Crop Yields:**
 - Improves Root Growth.
 - Improves Symbiotic Nitrogen Fixation in Legumes.
- **Improves the Physical Condition of the Soil:**
 - Stimulates Microbial Activity in Soils.
 - Increases Availability of Several Nutrients.
- **Reduces Toxicity and Improves Soil Health.**

IMPACT OUT COME:

- VMSS introduced Up flow Anaerobic Sludge Blanket (UASB) plant in 2001 as the process was a success we introduced a new plant in 2008 with provision of Gas based electricity generation from bio-gas.
- Atladra STP generated more than 2 million units (KWH) of power since commissioned from bio-gas. The same electricity is used of the operation of the plant, making it a self-sustaining.
- An international delegation from JAPAN, CANADA , SWEDEN, AFGHANISTAN & at nation level Karnataka, Delhi , Hyderabad & Mangalore have visited various plants and appreciated the initiative.
- VMSS STPs are preferred for various academic visit /modeling by school & colleges for study on waste water management & non-conventional power generation from Biogas.

MILESTONES :

- Vadodara city has received following National Awards under JnNURM by GOI for the year 2009-10 :
 - ❖ "Best City For Improvement In Water Supply & Waste Water Sector"
 - &
 - ❖ "Best City For Implementation of Project"