

## ***6. Storm Water Management***

### ***6.1 Present Status***

A well-planned system for drainage, and holding ponds for tidal water that ensure freedom from flooding during monsoon exists in NMMC area.

There are RCC storm water drains network totalling 220.77 km in length. 160.65 km drains are closed and balance 60.12 km is open drains. The ratio of length of storm water drains to total length of major roads in NMMC area is 90 %.

Storm water management of Navi Mumbai has been planned on the lines of the Netherlands. The system is called as 'Dutch method' Netherlands is the country that is located below sea level. This method is used for control of ingress of seawater during high tide and allowing the wastewater/rainwater to flow in to sea during low tide naturally or by pumping with the help of high capacity pumps during high tide. The high tide levels and low tide levels difference has been used to control the ingress of sea water during high tide and disposal of wastewater/rainwater during low tide. Essential parts of the system are Storm water holding pond, Retaining wall. Flap gates and Storm water pumping station.

Navi Mumbai is located below High tide level. CIDCO used this system of flood control to optimise the reclamation levels.

For disposal of rainwater, holding ponds have been constructed in Belapur (sector 12 & 20), Vashi (sector 8, 12, 10A, Vashi gaon), Turbhe (Sanpada sector 30 A), Koparkhairane (sector 14 & 20), and Airoli (sector 18) nodes. High capacity storm water pumping stations have been provided at Sector 12 CBD and Sector-8 at Vashi

Bunds have been constructed around these ponds and control mechanism for release of water during low tides has been installed. NMMC maintains these ponds.

NMMC has reorganized the O & M of storm water system. All drains and Nallah are combined with road sweeping under comprehensive contract, Hereafter all drains shall be kept clean round the year. Storm water pumping stations shall be maintained by PHE department along with all sewage pumping stations under area O & M comprehensive contract. CE department maintains holding ponds and flap gates

These holding ponds are useful for monsoon season. To utilize its recreational potential during balance 8 months, NMMC has started work of beautification of holding pond at Nerul to provide jogging track, boating facility and other facilities. NMMC has intentions to lease the other holding pond for fishing purpose.

There are more than 18 numbers of major nallas (Table 6.1.1 Length -74 Km) which discharge storm water in monsoon and polluted water other time in creek area. These nallas originate in MIDC area and carries industrial effluent from industries MIDC. Many of nalls are connected to slum in MIDC. Hence these carry wastewater from these residential areas during dry season. Pawane nalla carries treated effluent discharge from effluent treatment plant. Herdillia nalls and NOCIL nalla carry heavily polluted water.

## **6.2 Status of Environmental Quality**

### **6.2.1 Surface Discharges**

There are 9 numbers of holding ponds in NMMC area those are connected to Thane creek. The samples were collected and analysed during May 2006 (Table 6.2.1). Water from ponds found to be unsuitable for recreational and fishing purpose. The major environmental problem in NMMC area is pollution due to disposal of partially-treated/untreated wastewater in Thane creek by neighbouring corporations including NMMC. Polluted water from creek freely flows in and out all developed nodes of Navi Mumbai viva holding pond and drainage system. This needs to be prevented. Water remains stagnant in drainage system many times due to thrown garbage etc. This does not cause flushing action as assumed.

**Table 6.2.1: Water Quality of Holding Ponds**

<b>Parameters</b>	<b>Nerul ( palm beach)</b>	<b>Vashi Sector10</b>	<b>Airoli Sector18</b>	<b>KK- Sector19</b>	<b>Vashi Sector8</b>	<b>KK- Sector14</b>
PH	6.5	6.1	6.7	6.4	6.8	6.5
SSmg/l	310	397	174	321	334	394
DO mg/l	Nil	Nil	Nil	Nil	Nil	1.7
COD, mg/l	304	359	189	298	361	294
BOD mg/l	116	133	75	111	130	105
TKN mg/l	1.3	2.1	0.6	0.82	0.9	1.8
Nitrates mg/l	0.1	0.13	0.1	0.47	0.08	0.21
Nitrites, mg/l	0.1	0.06	0.04	0.09	0.4	0.06
Chlorides mg/l	310	285	229	254	512	355
Phosphate mg/l	1.1	1.0	35	0.78	1.5	1.2
Ssulphate, mg/l	43	203	43	62	153	203
MPN Count /100 ml	70	140	140	130	115	110
Fecal Coli	17	22	20	26	33	20
E Coli	8	8	9	9	7	6

Note: All values are in mg/l except pH.

There are more than 18numbers of major nallahs which discharge polluted water in creek area. MPCB routinely monitors quality of effluent from nallas. Nalla samples were collected and analysed during May 2006 (Table 6.2.2). The major

environmental problem in NMMC area is pollution due to disposal of partially-treated/untreated wastewater and also due to unhygienic activities of washing clothes, utensils. It is necessary to divert nallas flow to nearest STP for treatment of raw sewage during dry season. The drains in industrial area are polluted. The existing sewage treatment plants treat sewage to the levels stipulated in MPCB standards. However creek water quality is not better than treated sewage Only NMMC's efforts are not going solve pollution problems.

**Table 6.2.2: Water Quality in Nallahs**

Location	pH	SS	DO	BOD	COD	SULPHIDE	Nitrates	Nitrites	Chloride
Khairane nalla	6.5	55	Nil	80	276	12.4	0.02	1.50	269
Turbhe nalla	6.7	336	Nil	50	292	13.3	0.06	0.06	157
Pawane nalla	6.5	457	1.6	60	204	14.8	0.04	0.04	361
Hardillia Chemicals nalla	6.5	728	Nil	50	532	48.5	0.05	0.05	370
Nocil nalla	6.7	533	Nil	45	170	12.9	0.08	0.17	385
Mhape nalla	6.8	119	4.3	32	180	28	N.D	0.05	137

Note: 1) N. D. - Non Detectable

2) All concentrations in mg/l except pH, sample collected during September 2003

### **6.3 PRIORITY ENVIRONMENTAL ACTIONS**

Hydraulic Modelling Study of drainage system to stop inflow and outflow of creek water in NMMC area.

Sampling & testing of creek water along boundary of NMMC / holding pond water/nallahs on regular monthly basis.

Identification of original gaathan/slums generating the raw sewage and scheme for treatment of the same.

Disposal of treated sewage deep inside the creek or disinfections of the same before discharge.

NMMC has taken over Trans-Thane Creek Industrial area of MIDC area that consists of several nallahs. The flood of 26 th July 2005 caused heavy damages to various industries of this area. It is necessary to train these nallahs including de-silting of storm water ponds It is necessary to isolate Navi Mumbai by installing auto-controlled flood gate on every outlet to creek to improve overall water quality of water in NMMC area.

To bring to notice of MPCB for identification of industries those discharging untreated effluent.

Long term planning for monitoring water pollution from industries in MIDC area.