TRANSFORMING THE NAJAFGARH BASIN

A White Paper Based On The Workshop Held On 17th August, 2017 At Gurgaon

Organised By

DLF Foundation, INTACH & IWP

Abstract

Water is the prime requirement for the sustainability of urban regions. Large swathes of Gurugram District and NCT Delhi lie in the Najafgarh Basin which is spread across the states of Rajasthan, Haryana and Delhi. The main water course is the Sahibi Nadi, an ephemeral river passing through the famous Najafgarh Jheel, and its tributaries. With the passage of time the basin areas are becoming water stressed and the vast investments in the area likely to become environmentally unsustainable. Several measures, if taken in a timely manner, can help stabilize and even reverse the situation to bring about water sustainability to the basin. This paper provides the larger context, views of various stakeholders and experts and the way ahead.

Introduction

0.0 The rapid colonization of the natural landscape , first by agriculture and then by urban development and infrastructure, comes at the cost of destruction of life giving natural resources, which provide sustainability to human habitat and insurance to the massive investments. Today, we have reached a crossroads in Gurugram and NCT Delhi, where development has outstripped the eco-system services provided by nature. At this juncture mere cessation of further destruction of natural resources is not enough - the time has come to actively restore our natural resources so as to strike a balance between natural resource conservation and development

1.0 Gurugram and NCT Delhi are mostly situated in the Najafgarh Basin which is a sub-basin of the Yamuna River and is spread over states of Rajasthan, Haryana and Delhi. The approximate catchment area in the constituent states is as follows :

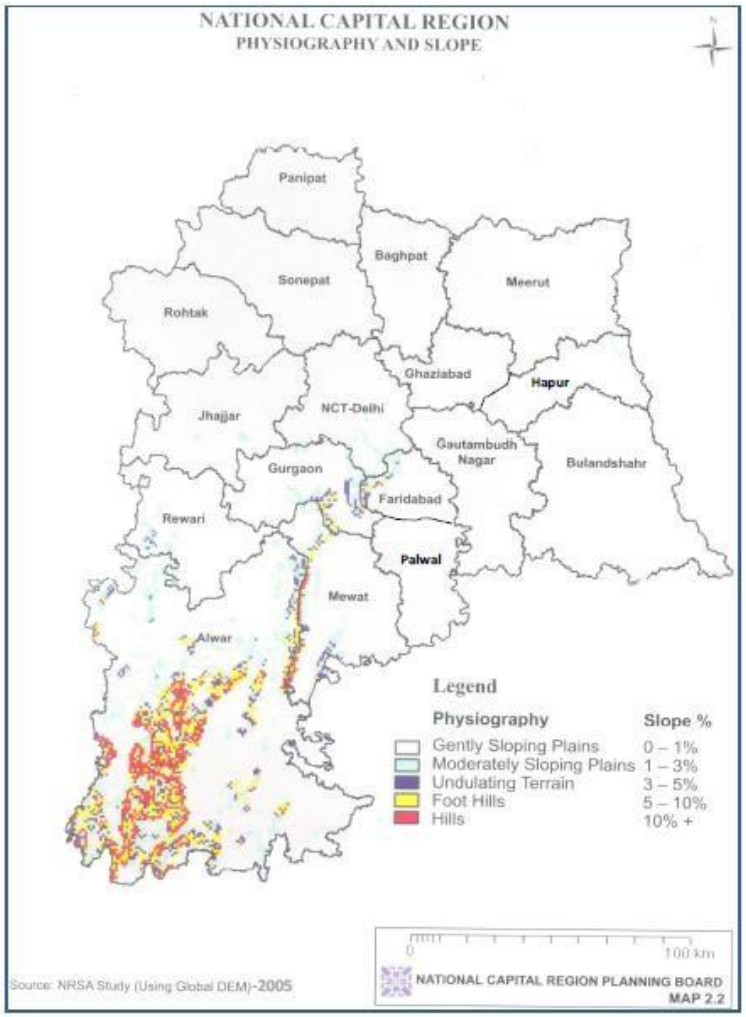
- Catchment in Rajasthan : 6889 sq.km. [Sahibi waters through Outfall Drain No.8 – cumulative catchment upto Dhansa]
- Catchment in Haryana : 3074 sq.km [northern floodwaters through Outfall Drain No.8 – 1016 sq.km. + Manesar and Badshapur Nallahs – 464 sq.km.]
- Catchment in Delhi : 648 sq.km.

2.0 Whilst the basin area in Rajasthan [mainly Alwar district] receives scanty precipitation and in occasional years very intensive rainfall, the surface runoff drains through Sahibi Nadi which is a rainfed ephemeral river originating in Jaipur Distt. In recent years several checkdams in the catchment area have restricted the flow and the diminished flow disappears in the arid soils after the Masani Barrage near Dharuhera.

3.0 The Haryana segment [southern Rewari, northern Gurgaon, eastern part of Jhajjhar Districts], although in semi-arid zone, receives moderate precipitation [550 mm annually] with occasional very intensive rainfall events. In the great floods of 1977 the then miniscule Gurgaon town area was also threatened with floods. Subsequently, Haryana Govt. built the Masani Barrage to impound flood

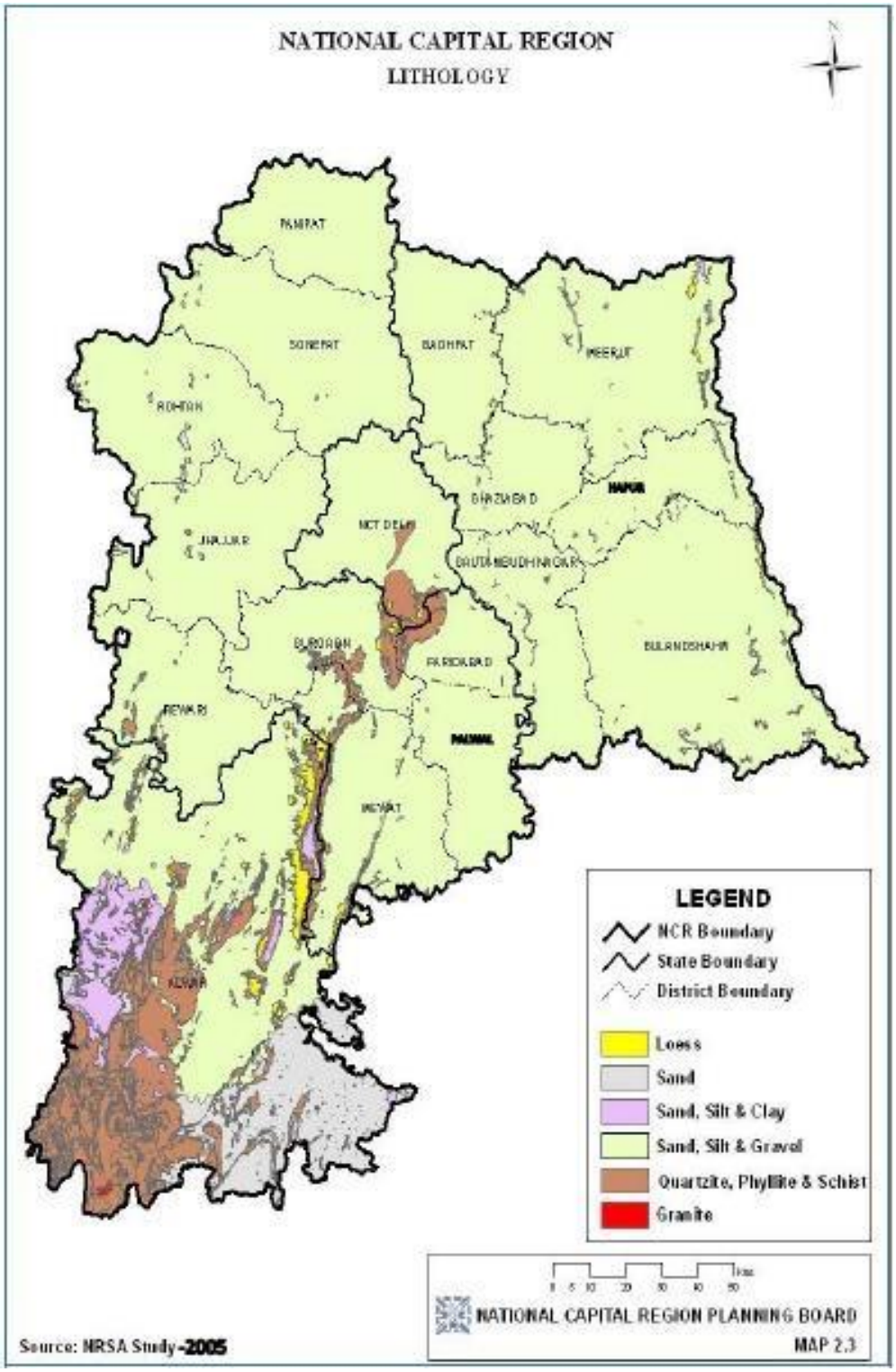
waters on NH8 near Dharuhera. The surface runoff from the presently expanded Gurgaon city reach the Najafgarh Jheel through the Badshahpur Drain and other sheet runoff.

4.0 In Gurugram Distt the drainage is mainly to the north where the flood waters used to be trapped in the Najafgarh Jheel. The Jheel would drain out to the Yamuna through an irregular channel known as the Sahibi Nala. [It is claimed that in ancient times this was the ancient river Dhrishtadvati]. The Delhi Gazetteer [1884] records that the jheel was 88 sq.miles./220sq.km.). In 1865 the Govt. of the North-West Province [later United Provinces] started draining the Jheel by excavating the irregular channel from the eastern end of the Jheel to the Yamuna through a gap between Delhi's Northern Ridge and Central Ridge. This channel then came to be known as the Najafgarh Nala or Najafgarh Drain having a length of 51 km in NCT Delhi. In the floods of 1958 the Najafgarh Jheel attained a spread of 145 sq.km. Subsequently, after the floods of 1964 the Najafgarh Drain was widened to accommodate the flood discharge. The Union Territory of Delhi built an embankment on its side of the Jheel to prevent flooding of its areas. [Haryana could not similarly do so as this is the only route for escape of flood waters from Gurugram to Yamuna River.] Again after the massive floods of 1978 Delhi constructed a Supplementary Drain to carry the excessive flood discharge to the Yamuna.

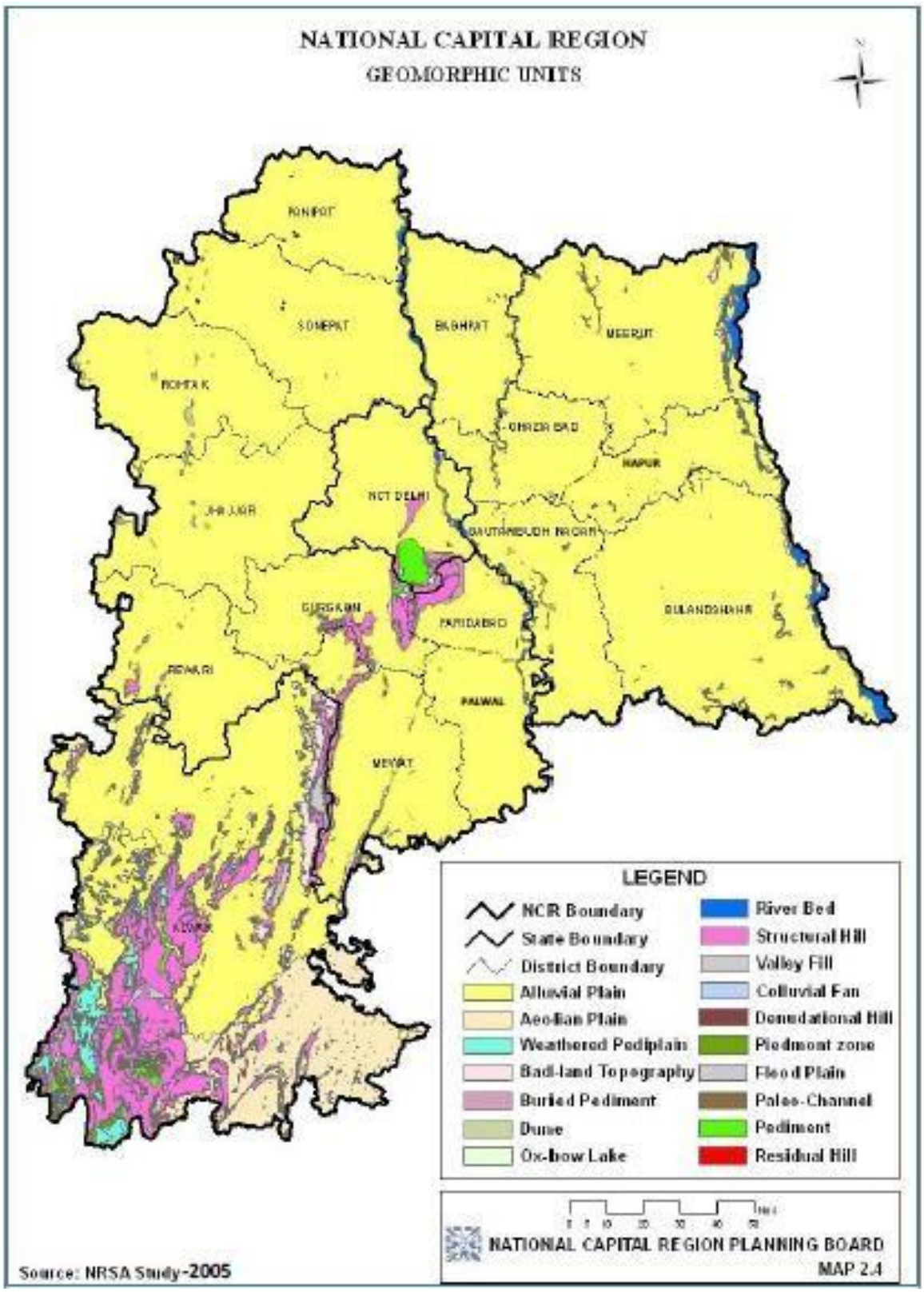


Map No. 1 : The Catchment Areas In The National Capital Region

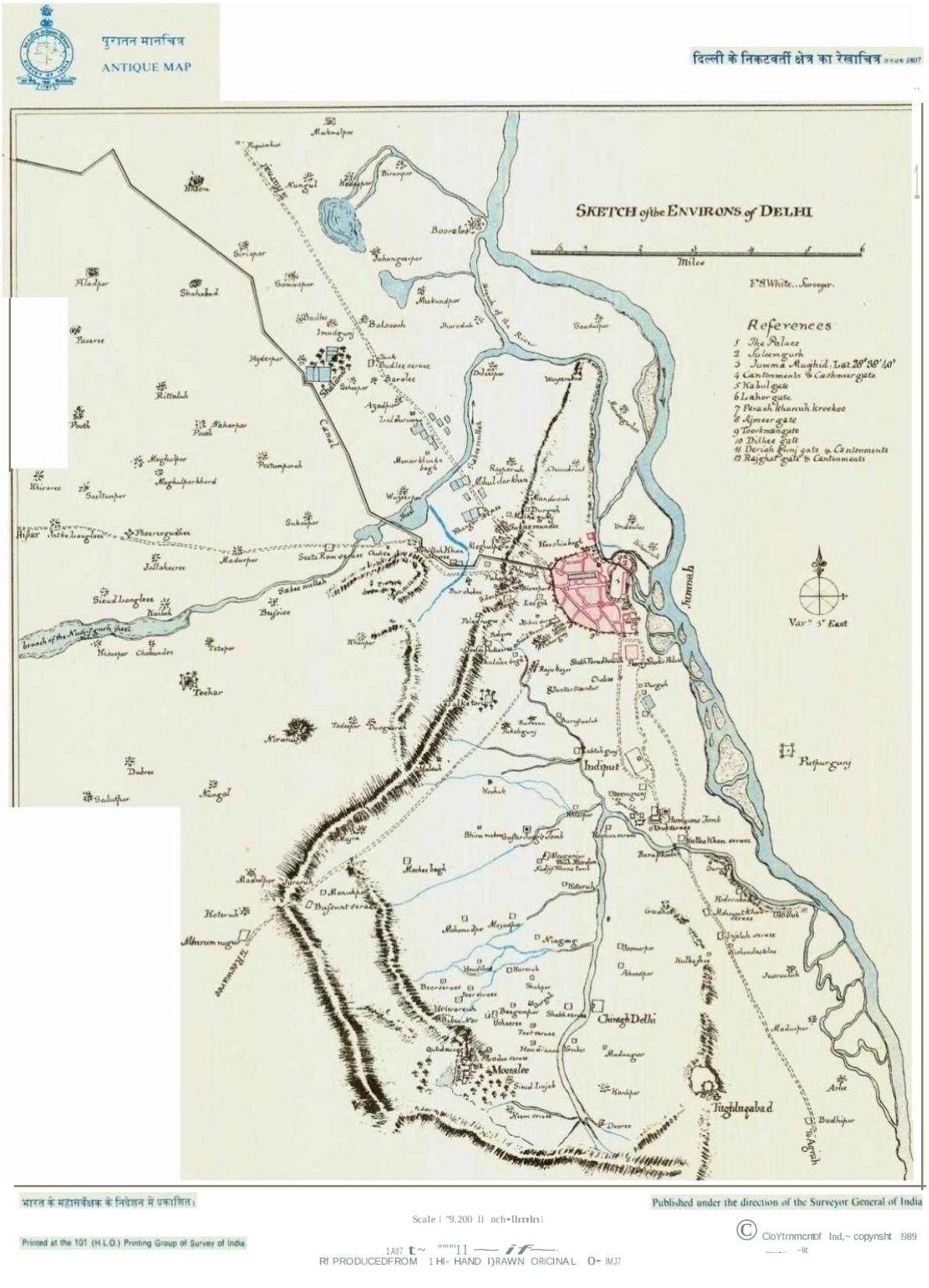
5.0 The Delhi segment of the basin is also a semi-arid zone with annual precipitation of 611 mm which generates surface runoff reaching into the Najafgarh Jheel and Najafgarh Drain [51 km. length in NCT Delhi].



Map No. 2 : Lithology In The Catchment Areas In The National Capital Region



Map No.3 : Geomorphology In The Catchment Areas In The National Capital Region



Map No. 4 : Antique Map [SoI, 1807] - Sahibi Nadi, Najafgarh Jheel, Yamuna

6.0 **Kakraula Regulator :** At village Karaula in NCT Delhi a twin regulator system exists with gates to control the flow of water to Delhi and also for irrigation purposes. After the floods of 1978 the channel of the Supplementary Drain was excavated to provide additional discharge capacity for flood waters. The Supplementary Drain, 35 km. long, was completed only in 2004. Both Supplementary Drain and Najafgarh Drain outfall into the Yamuna just below Wazirabad Barrage.

7.0 **Biodiversity :** Even as recently as the 1960's this area was a favorite hunting ground for duck shooting and host to several species of migratory birds from northern regions. It is noteworthy that Najafgarh Jheel was a wonderful haven for migratory birds in winters – ducks, geese, snipe and many varieties of fowls – also many resident birds were to be seen around the year. This scenario changed with the draining of the Jheel in the 1960s. It was a far superior wildlife wetland than the neighboring Sultanpur Sanctuary in Haryana. An estimated 2,000 greater flamingos came to Najafgarh this winter (Sinha, 2017). The endangered species like famous Pink-headed Ducks and the Siberian crane are the main visitors in this lake.

8.0 The thick mud embankments constructed on both sides of the lake to prevent floods have been planted with thick forest cover which serve as a much needed habitat for remnant local wildlife occurring in nearby and surrounding farmlands including common foxes, jackals, hares, wild cats, nilgai, porcupines and various reptiles and snakes including the dreaded cobras. Many local birds and the migratory birds as well roost and nest in the urban forestry.

Gurugram

9.0 Post liberalization the Indian economy grew rapidly in an era of globalization. On the back of economic trends Gurgaon, with its advantageous location adjacent NCT Delhi, grew rapidly attracting massive investments, burgeoning population, rising living standards. **These trends resulted in Gurgaon becoming the single largest revenue generating district of Haryana [65% of state revenue with very high returns to real estate]. Those who could not get space in Delhi wanted to be just across the border. These underlying forces have stretched the city masterpan like a sheet of elastic resulting in urban sprawl.**

10.0 **Population of Gurugram City :** According to Census, 2011, Gurgaon Distt. Population was 1.5 million persons. Gurgaon city had recorded :

- 121,486 persons in 1991
- 239,684 persons in 2001
- 886,519 persons in 2011

In 2017 the trend line indicates that the current population of the city would be over 2 million.

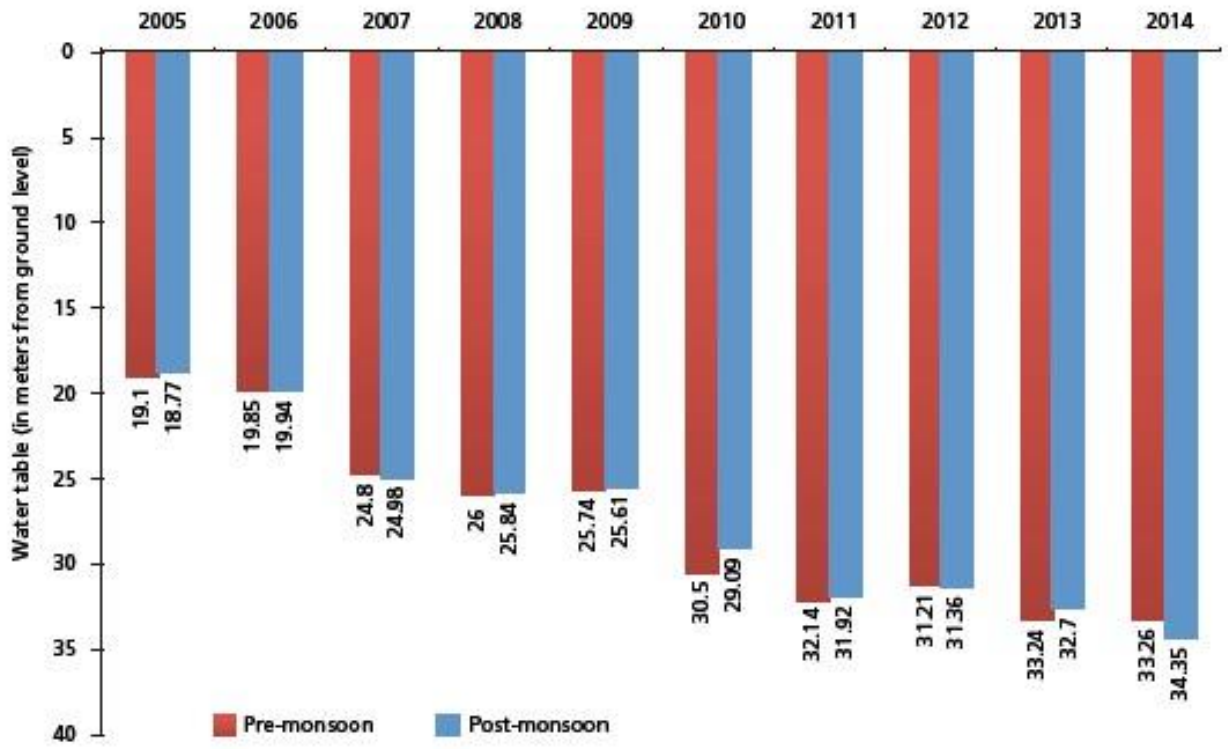
11.0 **Water Demand of Gurugram City :** The growing population with its comparative affluence has to be catered for by adequate water supply. A study done by Resource Optimization Initiative says Gurgaon will be able to provide less than half the per capita water recommended internationally by 2020. The study says that Gurgaon would have only around 48 litres per capita per day (LPCD) of water by 2020. The international standard is 130 LPCD. The population of the city would have increased from 25 lakh to 43 lakh by then. The study also says that in 2010, water available in the city was 83 LPCD.

Year	Population	Water Demand @135 lpcd
2011	886,519	27 MGD
2017	2,000,000	60 MGD
2021	4,500,000	134 MGD
2031	?	

12.0 Presently, Yamuna waters are supplied to the city through the Agra Canal – Gurgaon Canal System from the south and through JLN Feeder from the north. However, it is estimated that 70% of the demand is being met from groundwater sources through an estimated 30,000 tube wells. The fall in the water table is annually about >1m and according to CGWB the fresh water strata may be exhausted by 2020.

13.0 **Ground Water :** The total annual ground water availability of the district is 20215.12 hams. The existing overall stage of ground water development in the block is of the order of 209% which has exceeded the available recharge and thus the district has been categorized as over exploited region or 'Dark Zone' as groundwater table has declined from 6.64 metres below ground level [mbgl] to an average of 27.05 mbgl by October, 2016. The CGWB states that there is a steady decline in the city groundwater table at a rate of 1.5 to 2 metres on an average every year.

Graph 1: Depleting water table in Gurugram (in meters below ground level) -- 2005 to 2014



Source: Groundwater Cell, Agricultural Department, Gurugram

Depleting Water Table in Gurugram [2005-2014]

Source : Gurugram : A Framework For Sustainable Development by CSE, Gurgaon First, MCG

14.0 **Pollution :** Untreated and undertreated wastewater including industrial effluents make their way into the Najafgarh Jheel and Drain through Badshahpur Drain. The NGT, in its order 'Maili se Nirmal Yamuna' [January, 2015] has directed that the Haryana would establish STPs to cater to areas discharging into Najafgarh Drain. Thus, Gurgaon STPs need to upgrade their treatment levels to tertiary as required by CPCB and also discharge from Bahadurgarh reaching Najafgarh Drain through Mungeshpur Drain requires similar level of treatment. Data on sewage generation, industrial effluents in terms of volume and proportion collected and treated is scanty in the absence of metering.

15.0 **Loss of Waterbodies :** According to 'Gurugram : A Framework For Sustainable Development' by CSE, Gurgaon First and MCG "Gurugram has lost around 137 of its water bodies. It is projected that rejuvenation of some of the key water bodies and ponds can help Gurugram meet about 50 per cent of its water needs. The Ghata Jheel alone has the potential of storing 12 billion liters - but only if its catchment is treated and encroachment is prevented. Village ponds can hold another 90 million liters. If a part of Aravali is protected as a water sanctuary. It can harness yet another 21.6 billion liters. Such measures can contribute significantly to local water security in Gurugram."

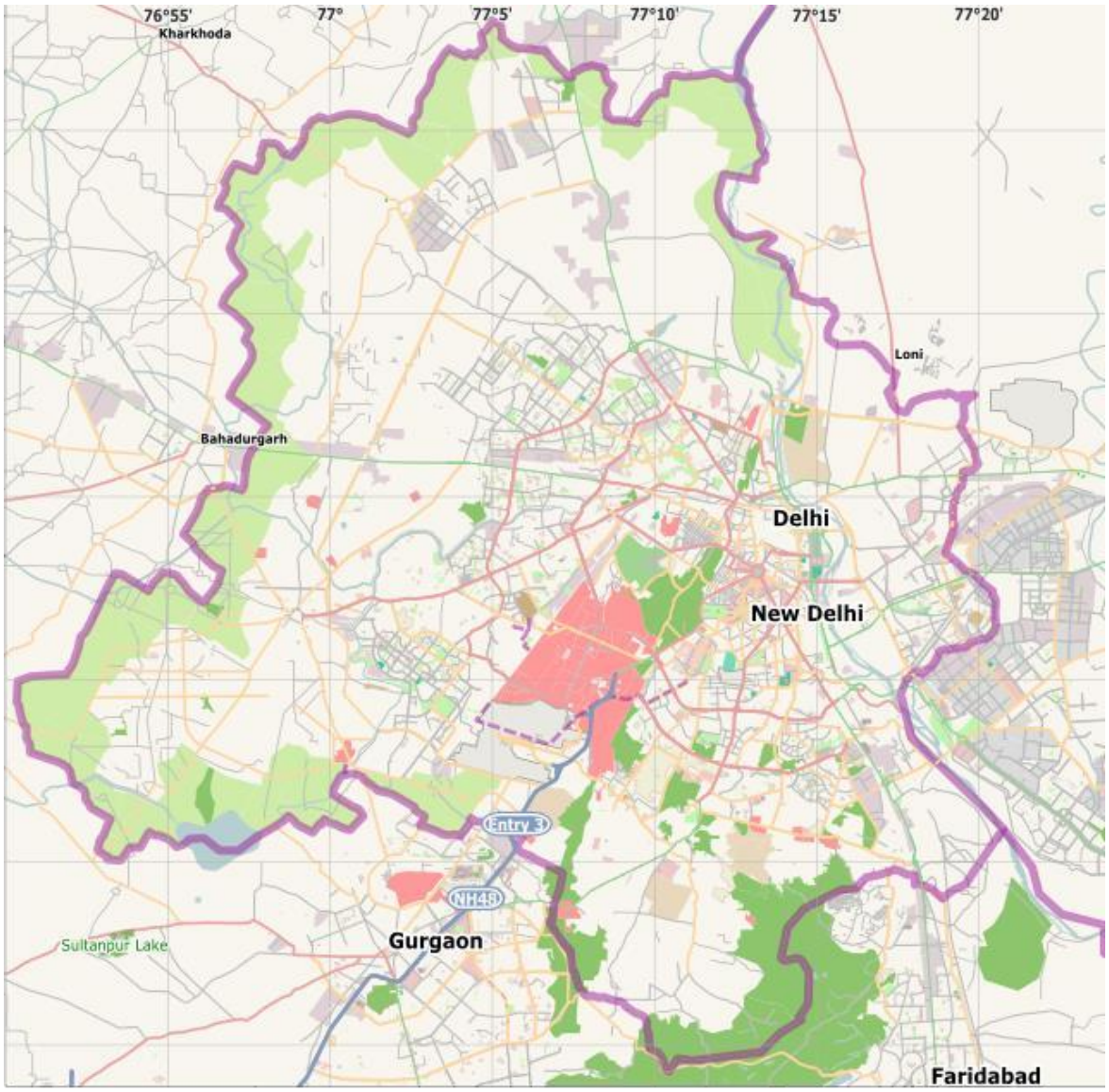
16.0 **Waterlogging :** While waterbodies have been lost to reclamation thereby reducing flood moderation capacity, the intense nature of brief rainfall events combined with poor drainage and expansion of on-porous hard surface cover results in major waterlogging events which bring the city to a standstill. The logged water is actually a resource if it can be directed into the aquifers through waterbodies and macro water harvesting schemes.

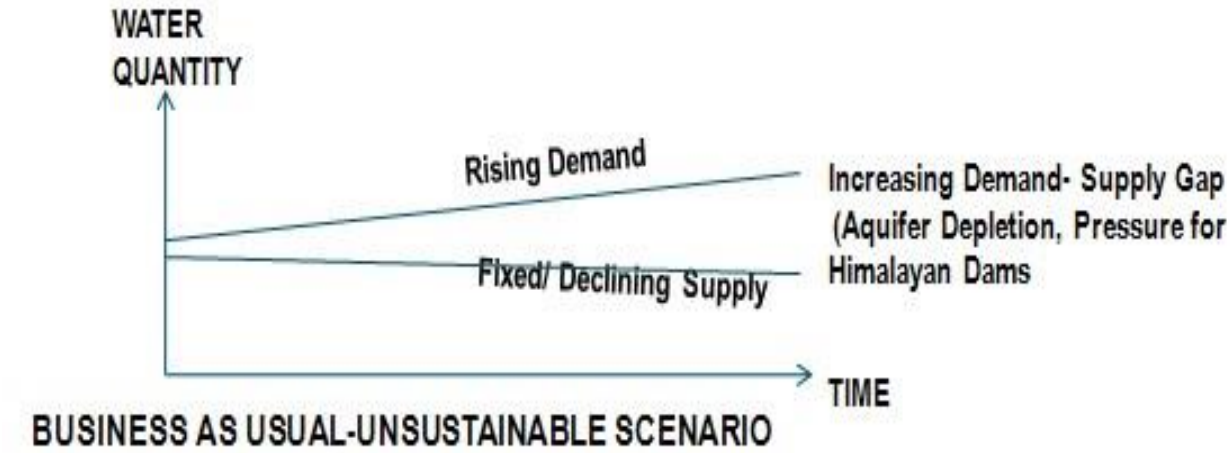
NCT Delhi

17.0 NCT Delhi covers an area of 1485 sq.km. of which 50% is already urbanized. It is not only the seat of the vast paraphernalia of the Central Govt. but also houses several institutions of higher learning and medcal treatment. Moreover it is an economic engine of north India with wholesale and distributive trade networks as also an entrepot. As such the opportunities offered by NCT Delhi have attracted migrants as well as investment capital. The water resources of the capital city are finite while the population is burgeoning all the time.

Year	Population (persons)	Decadal Growth rate %	Annual Growth Rate (%)
1951	1,744,072	90.00	6.63
1961	2,658,612	52.44	4.31
1971	4,065,698	52.93	4.34
1981	6,220,406	53.00	4.34
1991	9,420,644	51.45	4.24
2001	13,850,507	47.02	3.93
2011	16,750,000	20.96	2.10

18.0 The latest estimates of population show that population may reach 21 million by 2021 and attain a figure of 27 million by 2051. The water demand posed by these numbers has imposed increasing stress upon the surface water resources [Yamuna, Bhakra, Ganga] but also upon the thin freshwater strata of the aquifer.





BUSINESS AS USUAL-UNSUSTAINABLE SCENARIO

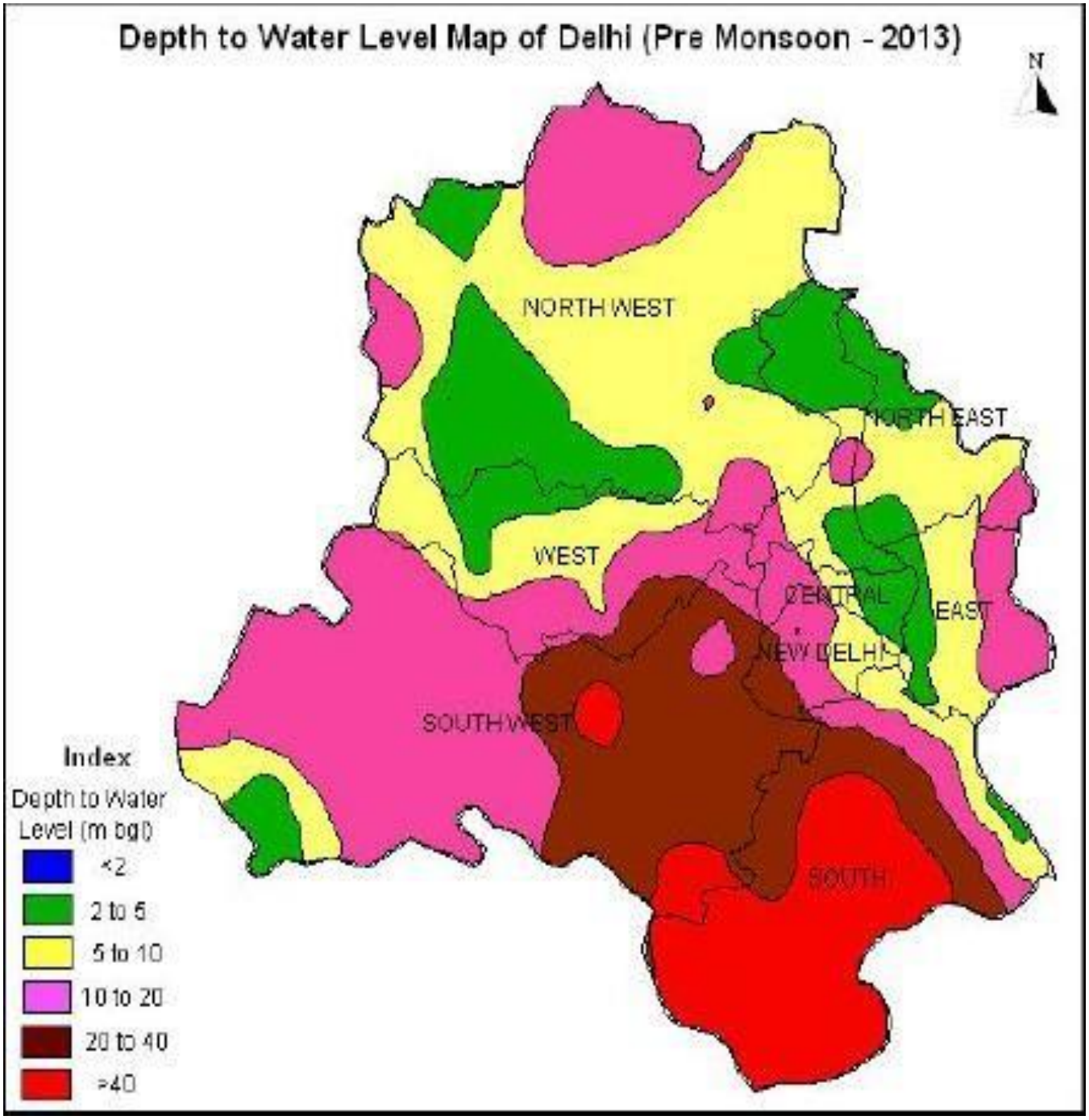
19.0 NCT Delhi is currently having adequate water. However, the water table is over-exploited and the river waters may face some decline in view of climate change induced glacier recession and precipitation changes. Hence the need to nurture its local resource base.

20.0 **Groundwater :** As can be seen from the Table below all districts of Delhi are over-exploited except for Central which is the lightly populated NDMC area. Delhi has the highest per capita income in the country and many of its citizens are profligate in their use of water. Delhi Jal Board supplies 920 MGD of water of which 100 MGD is sourced from groundwater. However, as a result of substantial conveyance losses [>30%] and uneven distribution residents, businesses, industries, institutions operate thousands of tubewells drawing upto an estimated additional 100 MGD. Thus, against a natural recharge of 271 MCM annually the withdrawal is 400 MCM which is clearly unsustainable.

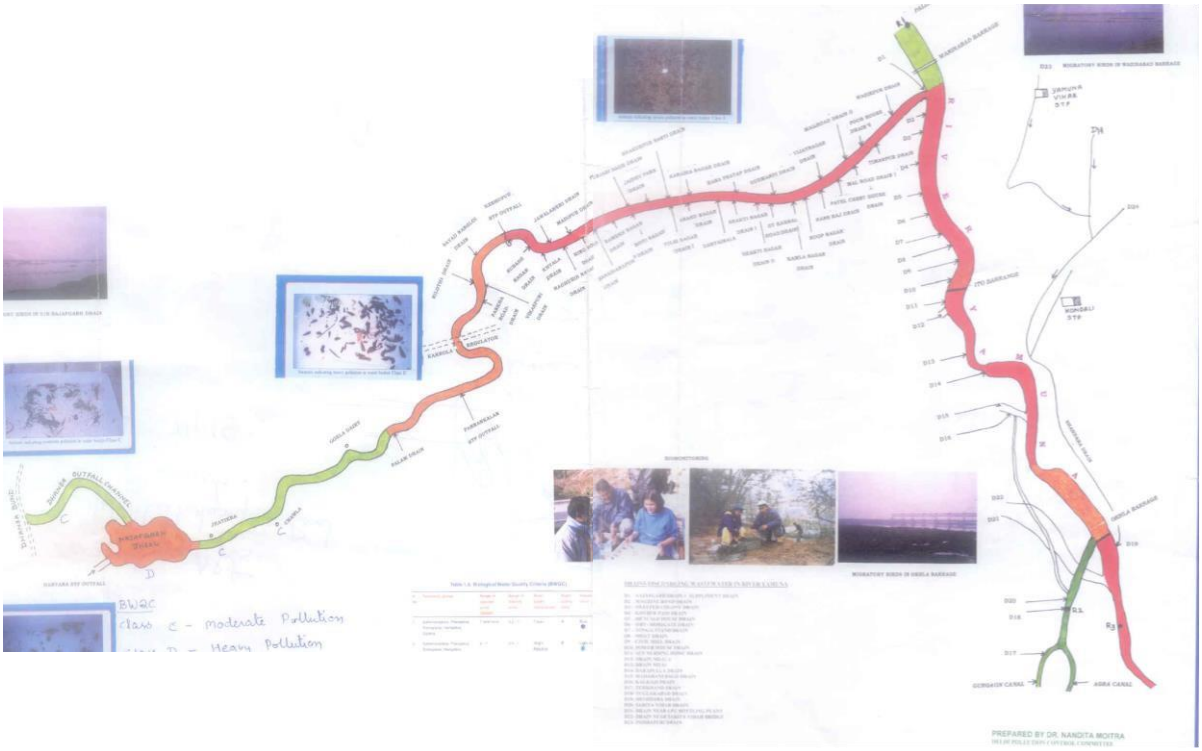
Table No. 4: Groundwater Development of the NCT Delhi [2013]

	Assessment Unit	Stage of Groundwater Development %	Categorisation Of Future Groundwater Development
1.	Central	88.08	Safe
2.	East	130.27	Over-exploited
3.	North	34.61	Safe
4.	New Delhi	170.82	Over-exploited
5.	North East	129.15	Over-exploited
6.	North West	136.31	Over-exploited
7.	South	243.00	Over-exploited
8.	South West	214.41	Over-exploited
9.	West	111.56	Over-exploited
	TOTAL	**170.28**	

Source: CGWB



Map 4.3: Depth to Water Level : May, 2013 [Source : CGWB]



21.0 **Pollution :** The Delhi segment of Najafgarh Basin contributes a staggering figure of 55-60% (50% of hydraulic load and over 25% of organic load) of the total pollution in Yamuna with a combined discharge of approximately 2000 MLD. This flow is constituted of inflows from Haryana as well as untreated wastewaters in several tributary drains of Najafgarh Drain.

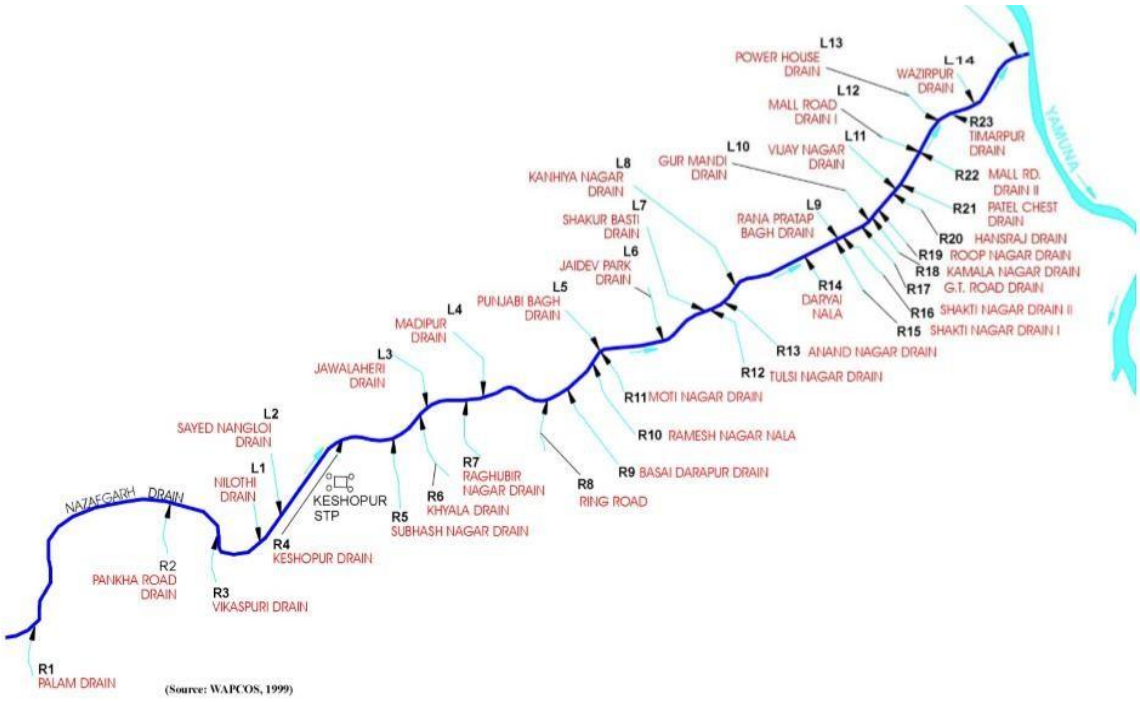
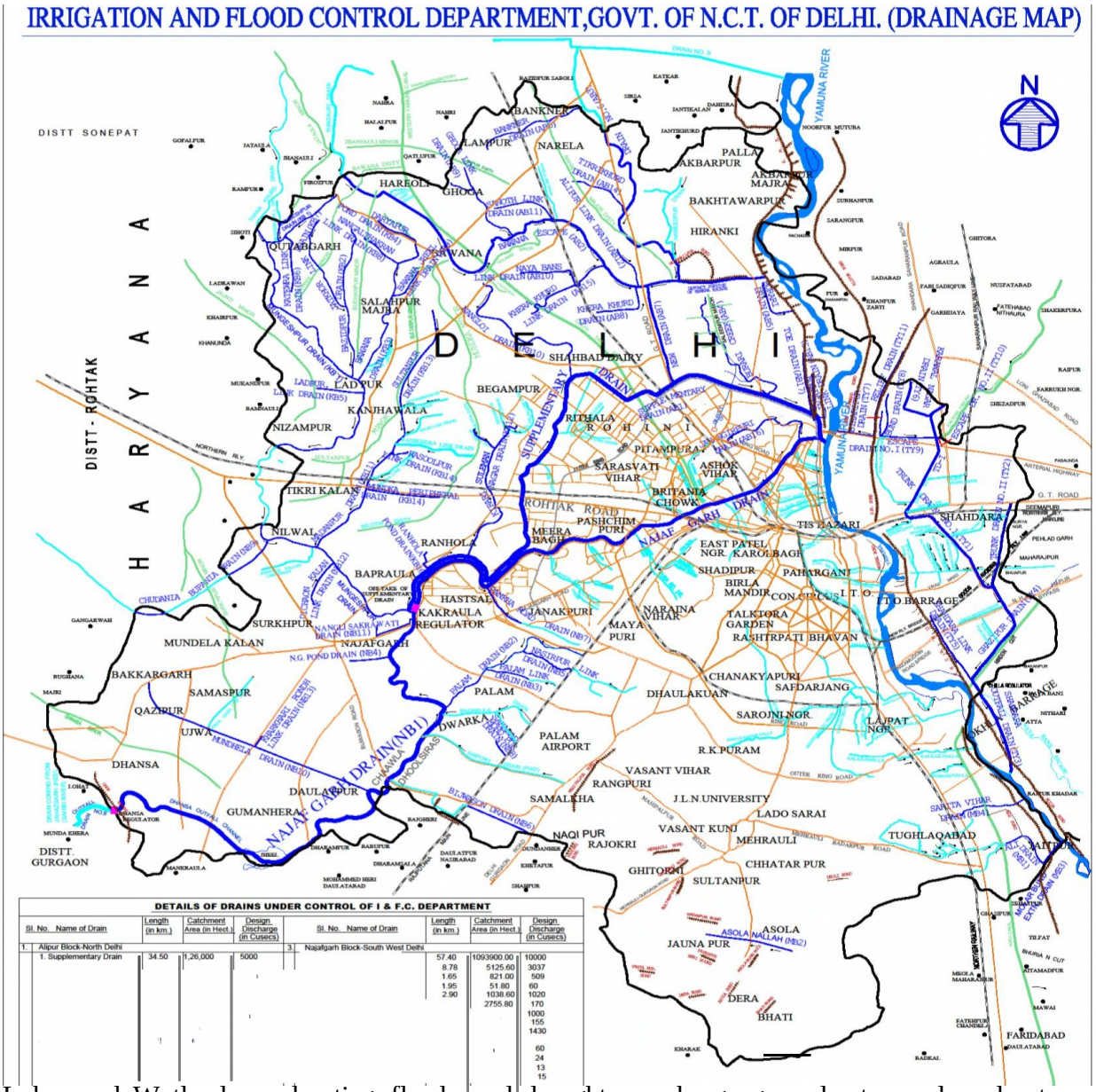


Fig 1- (WAPCOS, 1999)

22.0 Najafgarh basin ranks 11th in a list of critically polluted industrial clusters released by CPCB in consultation with MoEF in 2009. The Basin—which includes Wazirpur, Naraina, Anand Parbat and Okhla industrial areas—in the NCT passes through important industrial complexes such as Najafgarh Road, Lawrence Road, Wazirpur Industrial Area, Mayapuri, Kirti Nagar, Naraina and Anand Parbat. These areas are chiefly clusters of SSIs which generate significant quantities of effluent discharges. There are more than 3,000 industrial units in this industrial cluster mainly comprising of dyeing, pickling, polishing, plastic moulding and extrusion, electroplating, metal work, etc. The Najafgarh drain basin tops the list of thirty-three "critically" polluted industrial hubs, scoring in between 70-80 in the 'Comprehensive Environmental Pollution Index' (CEPI). The Index captures the various health dimensions of environment including air, water and land. And the drain has scored 79.54 points, which is attributed to huge effluents and sewage in its drainage basin.

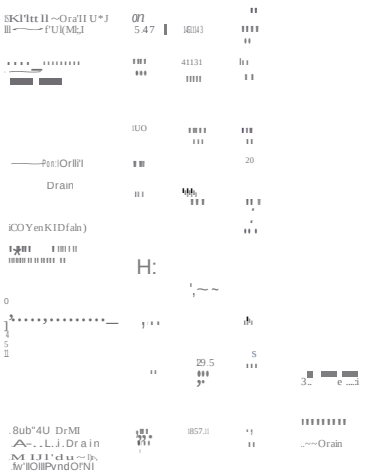
23.0 **Waterbodies :** According to National Wetland Inventory Assessment [2011] Delhi would have lost 25% of its waterbodies since the previous assessment of 1998 [actual surface area reduction of 176 ha]. In actuality out of 1000+ waterbodies [listed by Delhi Parks and Gardens Society] about 450 are extant. Many of these waterbodies are dry or polluted or encroached upon.

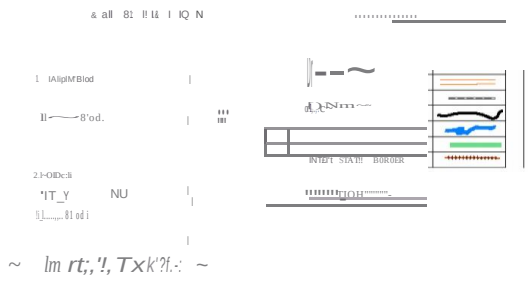


2.0 Lakes and Wetlands moderating floods and droughts, recharge groundwater and moderate climate. Colonization of wetlands has resulted in immense losses as shown by Chennai and Nagar. Two years continuous drought has shown up the need to conserve our lakes as several rivers have reported decline in flow or drying courses.

3.0 Gurgaon and SW Delhi face severe water shortages, with several waterbodies reclaimed, falling groundwater tables, rising population and demand. The CGWB has declared both areas as dark zones or critically over-exploited. As per reports Gurgaon fresh groundwater may be exhausted by 2018. It is therefore critical to the sustainability of these areas that waterbodies be protected and conserved. INTACH had written several times to both the Delhi and Haryana authorities [on record] alongwith a plan for conserving the

24.0 Najafgarh Jheel and has come to Court after exhausting these avenues.





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1. Najafgarh Jheel
    - History
    - Biodiversity
    - Spread and sources
    - Current issues of land ownership
    - Landuse changes in the 100 year HFL
    - Ruling of NGT in Feb, 2017
    - Potential benefits of Jheel revival
2. Stakeholders
3. Proposals
    - Both cities to adopt urban water policy focused on recycling, efficiency, aquifer management
    - Revival of ponds in the watershed
    - Cleaning of tributary drains to reduce pollution
    - Jheel revival plan
    - Addressing the land ownership issues
    - Making the Najafgarh Basin Committee

0.0 Article 51A [g] of CoI states "It shall be the duty of every citizen of India to protect the natural environment including forests, **lakes**, **rivers** and wildlife, and to have compassion for living creatures"

1.0 Thus, the National Wetland Atlas [ISRO] notes a precipitious decline in numbers as well as size of lake spread between 1999 and 2011. The NCR as a whole lost 14.65 sq.km. of wetlands during this period [as per NCR Regional Plan 2021 based on ISRO].

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24.0

4.0 Moreover, the said Najafgarh Jheel, which is part of the course of the Sahibi Nadi, is an important bird habitat still hosting Greater Flamingos, Pelicans [as reported in ToI of 25th Nov., 2016 under 6th Bird Survey of Delhi NCR] and other species, having hosted Siberian cranes in the past as per Imperial Gazetteer.

5.0 The protection and conservation of the Najafgarh Jheel will endow these water scarce towns with substantial water resources, flood moderation capacity as well as natural habitats.

6.0 The Wetland [Conservation and Management] Rules, 2010 [framed under EPA, 1986] define wetlands : "wetland" means an area of marsh, fen, peatland or water, natural or artificial, **permanent or temporary-**"

Positive Arguments

7.0 The Najafgarh Jheel is recorded in several govt. maps, departmental records, documents from 1807 onwards to the present day. [SoI, DDA, State Gazetteers, Flood Control Departments, NCR Regional Plans, ISRO Wetland Atlases, MoEF, etc.]

8.0 The Expert Appraisal Committee (EAC) of the MoEF, in its 108th meeting in January, 2012 held as follows [on record] :-

"The historic NajafgarhJheel in Gurgaon District on Delhi-Haryana Border not only has regional and local significance from stormwater management but also is important source of groundwater recharge as well as supports rich biodiversity and attracts bird nesting. Any further developments need to protect this environmentally sensitive water body from further degradation. **In order to map the boundary of this Jheel, HUDA should recheck and confirm from the revenue records the contours of Jheel at Najafgarh**."

The above minutes were subsequently confirmed at the 110th meeting of the EAC on 05 March 2012, with the following additions :

"**HUDA should submit the details of historical Najafgarh Jheel area along with contours demarcated on a topo sheet to SEIAA/**SEAC Haryana for consideration of projects from the Zone VIII area of water supply master plan of HUDA (Particularly Sectors 104, 107 and 110)"

9.0 The Draft NCR Regional Plan 2021 also writes :

Chapter 8 Water "Some new lakes/ ponds could also be developed if the need arises. --- Increase in the area under water bodies would help environmental improvement and also contribute to increase in water supply. It is recommended that at least 2-5% area should be preserved/ maintained as water bodies. It is proposed that a provision of at least 2-5% of total area under water bodies be kept in the Sub-Regional Plan and Master Plans."

Chapter 14 Environment - Explicitly tabulates Najafgarh Jheel in NCT Delhi and specifies its area as 15.4 ha in Delhi

Chapter 15 Disaster Management - This problems of local floods is expected to aggravate in NCR because, almost the entire area is likely to get urbanized leaving very little scope for open and soft landscape surfaces, which help in absorbing runoffs and soften the impact of floods. In the flood prone areas/river beds/banks, no construction or habitation activities be permitted. Flood Protection Plan be prepared by the concerned State Governments/agencies.

Chapter 17 Regional Landuse - The areas under water bodies i.e. rivers, ox-bow lakes, paleo-channels, lakes and ponds and their surrounding areas be kept free from any encroachment/development to allow free flow of water. Construction activities for human habitation or for any other related purpose not be permitted. Suitable measures be taken to maintain the water bodies with the minimal flow/water level. The areas under water bodies i.e. rivers, ox-bow lakes, paleo-channels, lakes and ponds and their surrounding areas be kept free from any encroachment/development to allow free flow of water.

In the meeting of NCR Planning Board in December, 2016 it has been laid out that all major rivers and their tributaries are to be maintained as natural conservation zones and their flood plains maintained free of construction.

10.0 0 The SEIAA, Haryana, has been granting permissions for construction of high rise buildings in the area around the Jheel, with the caveat that the
"**The project proponent shall keep the plinth level of the building above the HFL [High Flood Level] of the said Najafgarh Jheel/drain attained in the last 100 years.". However, the SEIAA has not specified what the HFL is enabling project proponents to state that they have observed the condition without actually having done so.**
[It is in fact downright dangerous to locate buildings in areas of prolonged inundation as foundations tend to subside in soggy soil and criminal to play with human lives and investments and ignore possibilities of submergence and marooning by inundation]

11.0 As per the website of the Delhi Govt. [Dept. of Irrigation and Flood Control] The highest known flood in Najafgarh Jheel was in 1977 when even Janakpuri was threatened and a flood level of 213 mamsl was attained.

12.0 **Ganga Notification** [7 Oct, 2016] of Ministry of Water Resources [**applies to Sahibi Nadi too**]
Applicability : This Order shall apply to the States comprising River Ganga Basin, including Haryana and NCT Delhi
Definitions :
"**River Ganga**" means the entire length of six head-streams in the State of Uttarakhand namely, Rivers Alakananda, Dhauli Ganga, Nandakini, Pinder, Mandakini and Bhagirathi starting from their originating glaciers up to their respective confluences at Vishnu Prayag, Nand Prayag, Karn Prayag, Rudra Prayag, and Dev Prayag as also the main stem of the river thereafter up to Ganga Sagar including Prayag **Raj and includes all its tributaries;**
"**flood plain**" means such area of River Ganga or its tributaries which comes under water on either side of it due to floods corresponding to its greatest flow or with a flood of frequency once in hundred years;
"tributaries of River Ganga" means those rivers or streams which flow into River Ganga and includes Yamuna River, Son River, Mahananda River, Kosi River, Gandak River, Ghaghara

River and Mahakali River **and their tributaries** or such other rivers which National Council for Rejuvenation Protection and Management of River Ganga may, by notification, specify for the purposes of this Order.
Principles to be followed for rejuvenation, protection and management of River Ganga. –

- the River Ganga shall be managed as a single system;

- the aquatic and riparian biodiversity in River Ganga Basin shall be regenerated and conserved;
- the bank of River Ganga and its flood plain shall be construction free Zone to reduce pollution sources, pressures and maintain its natural groundwater recharge functions
- No person shall construct any structure, whether permanent or temporary for residential or commercial or industrial or any other purposes in the River Ganga, Bank of River Ganga or its tributaries or active flood plain area of River Ganga or its tributaries:

13.0 Haryana authorities have placed on record a SoI map showing **almost 4 sq.km. of the Jheel [Gurgaon side] under water as in August, 2015**. This was the situation when the rain deficit as per IMD was 50% in this region. **Haryana has also admitted that the area from RD 5.8 km to RD 11.734 km [almost 6 km] faces regular inundation**.

14.0 The Najafgarh Jheel forms a flood moderating bowl in the absence of which, in a severe flood situation, there could be severe damage to life and property.

15.0 **Haryana admits that it is a natural depression in which water accumulates.** Haryana has also submitted affidavit saying that ISRO has identified a depression in the said area based on which they concede an area of 250 acres as lake area in 1999. [However, the 1999 Landsat imagery shows a vast area under water- moreover ISRO 1999 survey indicates the total wetland spread in Haryana and not lake-wise.]

16.0 The DDA, which has refused to file an affidavit states clearly in its Zone L Plan as follows :

> "Low lying area in the revenue village of Raota, Gumanhera, Jainpur, Shikarpur, & Jhatikara measuring about 356 Ha. (890 acres) adjoining Najafgarh Drain has potentially for the developing it as a lake which is to be utilized for the recreational activities as well as water recharging area. The development of the lake shall be taken up in a comprehensive manner by Govt. of Delhi, MCD, DDA along with the Haryana Urban Development Authority as part of the area of the proposed lake is falling in the Haryana. Tourist infrastructure would be permitted on the banks of lake / artificial islands."

17.0 **There are solutions by which the Jheel can be revived and protected with benefit to all stakeholders.**

Counter Arguments

18.0 The Haryana authorities have been adamant in denying the existence of the Jheel as the Gurgaon Masterplan proposes several sectors situated within this HFL [an approximate overlay of the HFL on the Masterplan is submitted]. **In fact land acquired for Reliance SEZ was located well within the HFL and is now replaced by residential sectors inviting greater trouble in the future.**

19.0 Both Haryana and Delhi have assiduously denied the existence of the Jheel by taking the stand that there is no Jheel in revenue records and that the concerned land is privately owned. However, the Wetland Rules [2010] in force specify that a "wetland means an area of marsh, fen, peat land or water, natural or artificial, **permanent or temporary-**"

20.0 Another plea taken by Haryana is that less water now flows down the Sahibi Nadi from Rajasthan. However, a paper by an Engineer-in-Chief [Haryana Irrigation, available on net] states clearly that the floods of 1976, 77, 78, 83,88,93,95 and 1998, which affected Gurgaon Distt. were caused due to excessive rainfall in the Upper Yamuna catchment.

21.0 Haryana is actually keen to colonize the Jheel bed as real estate as the Gurgaon Masterplan [2031] proposes several sectors within the 100 year High Flood Level of the Jheel and Sahibi Nadi]

22.0 In recent survey maps it is noted that Delhi has constructed 4 roads across the Jheel area under the protection of embankment. This can only be with an intent to colonize the Jheel bed.

23.0 Thus, both Govt.s seem intent to colonize the Jheel bed while ignoring the need for water sustainability [the CGWB has reported to this court that it is an excellent recharge zone].

The Proposed Solution

24.0 Instead of an adversarial approach the **parties can sit down together and work out a solution jointly** along the following lines :

A. That the Jheel area upto HFL may be declared a natural conservation zone as per policy of NCRPB 2021 and notified as a wetland as per Wetland Rules , 2010 by both states
B. That no building or infrastructure construction be permitted within the HFL which may clearly be recorded as 212.5 mamsl based on the flood of 1977.
C. That Ganga Notification of 7 October, 2016, which disallows any construction on any tributary floodplain may be implemented in this case as well [Sahibi Nadi] and requires the restoration of biodiversity, habitats and riparian vegetation.
D. That ample gram sabha lands on Delhi side, currently scattered, may be consolidated along the embankment, and exchanged with pvt. lands in the depression area
E. That area within contour 209 be declared an area of permanent water spread
F. That farmers may be compensated for use of their lands for water submergence as proposed by Haryana Govt in 'Functional Plan For Water Recharge in the NCR' and also possibly North India Canal and Drainage Act
G. That openings in the Delhi side embankment remain unplugged to enable the water spread to occupy its normal space in Delhi side depression
H. That the polluting discharge of Badshahpur Drain be treated adequately [to tertiary level] before discharge to the Jheel [and Yamuna] in order to prevent groundwater contamination as well as Yamuna pollution
I. That both states be allowed to draw groundwater from adjacent the Jheel, develop various permissible revenue streams
J. That a regulator be created just upstream of the Jhatikra Bridge to maintain the water level between 208-9mamsl
K. That the Jheel area be developed as a natural bird habitat in the main and a Jheel Conservation & Management Board may be instituted under NCR Planning Board

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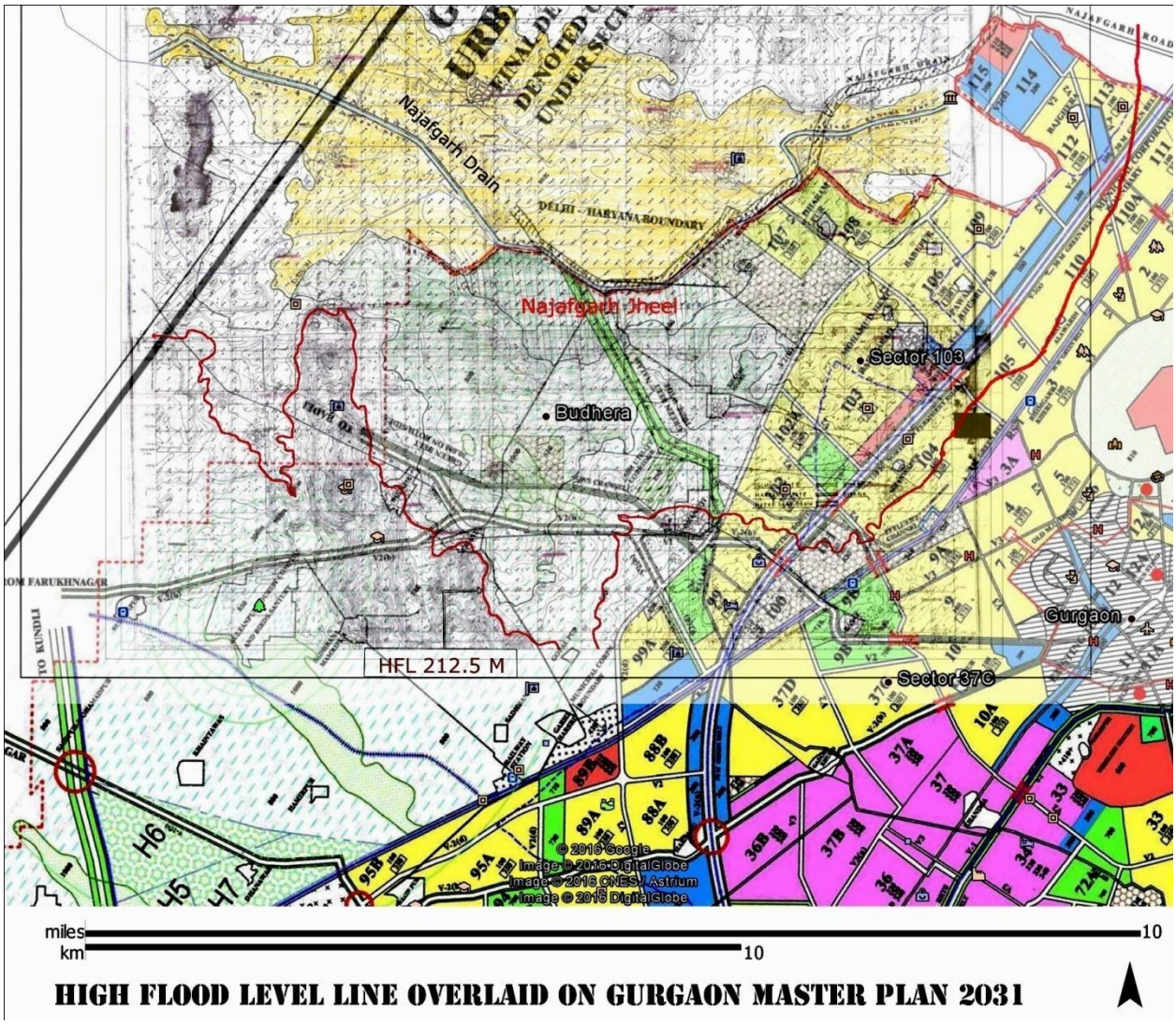
Water Issues

- **Water Quality**
  TheBOD load varies between 80 t/d to 195t/d, which represents 50% of hydraulic load and over 25% of organic load from NCT Delhi flowing into the river Yamuna (Nema).The domestic/residential sector is the largest contributor to the waste water load in the drain (70% of BOD load).



HIGH FLOOD LEVEL LINE OVERLAID ON GURGAON MASTER PLAN 2031

Issues

The Jheel faces several pressure due to due to illegal encroachments, discharge of untreated domestic and industrial waste and dumping of solid waste. However the jheel remains less examined from ecological perspective (Kaur, 2013). Other issues-

- Severe Reduction of Environmental Assets
- Loss of 50% of water spread in last 5 decades
- Groundwater Depletion
- Water scarcity to persist in both Delhi & Gurgaon
- Current Development Pressures are Resulting in Further Harsh Concretization of

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Land Ownership

MoEF&CC issued a notification on October 7, 2016 which prohibits any construction on the banks of Ganga or its tributaries or active flood plain area. As Najafgarh Lake is an offshoot of Yamuna, which, in turn, is a tributary of the Ganga, it naturally falls in that category. However, despite the notification, construction still continues, wholly or partially, within 100-year flood level of the lake.

Ruling of NGT in Feb, 2017 on Najafgarh Jheel

The Haryana government in February, 2017 informed the National Green Tribunal (NGT) that it has accepted the lake as a water body contrary to its earlier stand on the issue. This re-designation of the lake would empower both Haryana and Delhi to restore its natural beauty by curbing construction and other activities in the dried-up water body (Subhojit Goswami , 2017). NGT directed Delhi government to take "appropriate steps in accordance with law" for revival of the lake

Potential benefits of Jheel revival

The Central Ground Water Board has noted the Najafgarh Jheel as an excellent groundwater recharge zone. The National Capital Region Planning Board has in a major study earmarked the Jheel as a groundwater recharge zone and in fact the Haryana government has a policy whereby waterlogged farmlands are to be compensated with Rs 20,000 per acre.

The groundwater level of Gurugram was 6.64 metres in 1974. By October 2016, the level reached an average of 27.05 metres. This prevailing situation will exhaust the water table in Gurugram within few years. The lake can become a water recharge zone and address the issue of water scarcity.

Stakeholders

Different stakeholders have a unique role to play in the planning, management and implementation of conceivable projects on Najafgarh Drain-

1. Central Water Commission (CWC) and Central Ground Water Board (CGWB)- identification of recharge and discharge zones and proposing an integrated plan to cater to water demand and supply of the two cities.
2. Government of Haryana – Prevent pollution from neighboring towns of Gurgaon, Bahadurgarh, and Sonepat/Kundli.
3. Irrigation and Flood Control Department – Desilting, channelization, and lining of main drains.
4. Municipal Corporation of Delhi – Solid waste collection and disposal management.
5. Delhi Development Authority – Master Plan and Land development.
6. Delhi Small Industrial Infrastructure Development Corporation – Industrial wastewater management.
7. Delhi Pollution and Control Committee – Regulate and control water pollution.
8. Civil Society Organizations (CSOs)- to mobilize communities for rejuvenation of the basin, capacity building of local stakeholders; awareness generation.
9. Corporate(s)- funding the projects through CSR.

Proposals

- ***Sewage plans: the interceptor project***

The interceptor project has been introduced by the Jal Board as a panacea to the pollution problems of the Yamuna. The plan is to tap minor drains discharging sewage into three of Delhi's largest drains (Najafgarh, supplementary drain and Shahdara) at the cost of INR 2,454 crore, which includes expenditure to operate and maintain the interceptors for 10 years.
Laying of interceptor sewers is just one part of the whole project. There are other components including augmentation of existing capacity of sewage treatment plants (STPs) at the mouths of the Delhi Gate and Sen Nursing Home drains, rehabilitation of two major trunk sewers to intercept 13 drains outfalling into the Yamuna and most importantly, construction of new STPs after achieving full utilization of the existing ones. These are parallel and mandatory efforts required to make interceptors work.

- ***Rejuvenation of Najafgarh Waterways*** (Delhi Urban Art Commission, 2015)

The project has been envisaged with the aim to channelize pedestrian movement within the city, using the existing waterways, greens, historic and transit features of the city in order to enhance connectivity within the urban fabric. The endeavour is to create a pedestrian-friendly city. The project re-imagines part of Najafgarh Waterway in West Delhi which starts from Vikaspuri and ends at Mundka. The aim of the design is to provide a continuous pedestrian and cyclable trail system along the waterway that complements the existing context and proposes various activities that supplement the facilities found in the neighbouring communities. These include a monumental park around Hast Minar; Dilli Haat – a shopping hub; a festival ground and sports grounds. The project site will be stitched into city's waterway system. Within the project, by adopting a strategy that accepts and embraces lood levels especially in the middle stretch of Najafgarh Waterway, seasonal activities like urban farms and weekly markets are proposed. Such an approach yields a design enabling a reading of nature that provides ecological education and encourages a healthy respect for water management.

Recommendations

- The abandoned dug wells may be cleaned and should be used for recharging the ground water by utilizing the surface monsoon run off.
- There should be necessity to take up study for revision of tube well draft as well as seepage factor of canal.
- Replacement of centrifugal pumps with submersible pumps in the steep ground water declining zones should be popularized to avoid failure of tube wells.
- More emphasis should be given in the design and quality control of tube wells for getting optimum discharge and to save lot of energy wasted by running inefficient ground water structures in the area.
- Local populace to be educated regarding consequences of mining of ground water and need for its effective and economic use.
- Rain water Harvesting should be made mandatory for new constructions. The old house owner ready to go for harvesting measures shall be given incentives in the form of conferring public honor and sustainable concession in municipal taxes. The surface run off on the roads and open grounds during the monsoon period be diverted to pits (Recharge shafts) judiciously constructed in the colony, parks or play grounds.
- Construction of a new regulator at Jhatikra Bridge (in Najafgarh) to increase the spread of the Najafgarh Jheel.
- Awareness among students and public should be made regarding conservation of water.

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3. Najafgarh Jheel

    - History
    - Biodiversity
    - Spread and sources
    - Current issues of land ownership
    - Landuse changes in the 100 year HFL
    - Ruling of NGT in Feb, 2017
    - Potential benefits of Jheel revival

4. Stakeholders
5. Proposals

    - Both cities to adopt urban water policy focused on recycling, efficiency, aquifer management
    - Revival of ponds in the watershed
    - Cleaning of tributary drains to reduce pollution
    - Jheel revival plan
    - Addressing the land ownership issues
    - Making the Najafgarh Basin Committee

Indian National Trust for Art & Cultural Heritage
Vs.
Govt. of NCT of Delhi & Ors.

CORAM : HON'BLE MR. JUSTICE SWATANTER KUMAR, CHAIRPERSON
HON'BLE MR. JUSTICE RAGHUVENDRA S. RATHORE, JUDICIAL MEMBER
HON'BLE DR. AJAY A DESHPANDE, EXPERT MEMBER

Present:

Applicant:	
Respondent no 1 & 10	**Ms. Purnima Maheswari, Adv.**
Respondent No. 4:	**Ms. Panchajanya Batra Singh, Adv. for MoEF & CC**
	Mr. D.N. Goburdhan and Mr. Vivek Jaiswal, Advs.
Respondent No. 5:	**Mr. B. V. Niren, Adv. with Mr. Varun Bhati, Adv. for CGSC**
Respondent Nos. 9 & 11:	**Mr. Anil Grover, AAG with Mr. Rahul Khurana, and Mr. Mishal Vij, Advs.**
DDA:	**Mr. Rajiv Bansal, Mr. Dhruv Tamta, Advs.**
CGWA:	**Mr. A.K. Prasad and Mr. Jaydip Pati, Advs.**

	Date and Remarks	Orders of the Tribunal
	Item No. 11 **February 20, 2017** **sn**	We have heard the Learned Counsel appearing for the parties. The Learned Counsel appearing for the State of Haryana submits that in Original Application No. 325 of 2015 titled as Lt. Col. Sarvadaman Singh Oberoi Vs. Union of India & Ors., the State Government has taken up the stand that the Najafgarh Jheel has been accepted to be a water body and the Government has decided to identify the said water body and approval in that behalf is under process. He says, however, the matter still has to receive approval from the competent authority in the State Government. In light of that, nothing survives in this Application and the same is disposed of. Thus Original Application No. 153 of 2014 stands disposed of without any order as to cost. The Applicant is at liberty to move the Tribunal, if

	Item No. 11 **February 20, 2017** **sn**	the occasion so arises. In view of this statement, the NCT of Delhi is directed to take appropriate steps in accordance with law. <u>M.A. No. 502 of 2014 and M.A. No. 1238 of 2015</u> These Applications do not survive for consideration as the main Application itself stands disposed of. Thus, M.A. No. 502 of 2014 and M.A. No. 1238 of 2015 stand disposed of without any order as to cost. .....,CP (Swatanter Kumar) .....,JM (Raghuvendra S. Rathore) .....,EM (Dr. Ajay A Deshpande)