DISTRICT AS A GLANCE

1. LOCATION AND GEOGRAPHICAL UNITS

The study area lies between latitudes 29° 54’ 15.95” and 30° 40’ 9.57” N and longitudes 74° 14’ 56.00” and 74° 49’ 22.34” E, having an aerial extent of 263121ha. It is located in south-western part of Punjab. It is bounded by the state boundaries of Rajasthan and Haryana in the south whereas; it is bordered by the district boundaries of Faridkot in the north, Ferozpur in the west and by Bathinda in the east (Figure1). There are 234 villages constituting three tehsils (Muktsar, Malout and Gidderbaha) and four blocks (Muktsar, Malout, Lambi and Kot Bhai at Gidderbaha).

Physigraphically, the area is nearly level with a very gentle slope in NESW direction. Lithologically, the area is a part of the vast Indo-Gangetic alluvial plain, comprising of alternate bands of sands, silt and clay with pebbles. Sandy plains, sand dunes and topographic depressions are the common landforms. The general relief of the area varies between 185m to 219m above sea level (msl). Climatically, the western Himalayas in the north and the Thar Desert in the south and south-west mainly influence the climatic conditions.

The area is intensively cultivated (except for high dunes) and mostly irrigated. Wheat and cotton are the main crops in rabi and kharif season.

However, the area under paddy is increasing replacing cotton crop. The area is mainly irrigated through the Sirhind and the Rajasthan Feeder canals and its distributaries. and other ancillary information, was carried out for delineation of the pre and post monsoon waterlogged

area and pre monsoon salt affected soils. Based on the differential manifestations in the form of tone, texture, pattern, shape, size

2. TOPOGRAPHY AND AGRO CLIMATIC CHARACTERISTICS

A systematic visual interpretation of the IRS-ID, PAN and LISS-III (11, March) merged satellite data and IRS-ID, LISS-III (2, September) satellite data (Figure2a&b) for the year 2001 on 1:50,000 scale, by overlaying the base mapociation the waterlogged area and salt affected soils were characterized and classified under different categories.

The waterlogged area (Figure3&4) was classified under two categories one where there was clear surface ponding as “waterlogged area” and other where there was high moisture content as “area sensitive to water logging”. The waterlogged area was very clear in dark blue to bluish black tone during pre monsoon and in bluish black to light bluish tone during post monsoon, whereas the area sensitive to water logging appeared in light gray to dark grayish tone during pre monsoon and light to dark brownish gray tone during post monsoon season.

The area under salinity (Figure5) was also classified under two categories one where the salt efflorescence was clearly visible on the image as “salt affected” land and the other where there was saline land having a little crop cover as “saline soils with patchy crop”. The salt affected area appeared in white to yellowish white tones whereas the saline soils with patchy crop appeared in dull white to grayish red tone with red mottling. The merged data used for pre monsoon due to high spatial and a better spectral resolution allowed mapping of scattered small

patches of waterlogged and salt affected areas and also in a better delineation of sensitive areas of water logging.

Field survey was undertaken to check the interpreted units and find out the causes for the land degradation by water logging and salinity. The local farmers were interviewed about water table depths, salinity problems, villages under water logging, cropping pattern, crop productivity, canal seepage and other possible reasons for water logging and salinity in the area. Tehsil boundary maps were overlaid over the water logging and salinity maps for the area estimation tehsilwise in GIS (ARC GIS software Version 8.2) environment. Based on the satellite interpretation, field survey and area statistics major causes responsible for the problem and remedial measures to be taken up to alleviate the problem were suggested.

Climate

The district lies in the South-western region of the State and is far away from the Shivalik ranges in the North of the state, it is the nearest to the Thar Desert of Rajasthan and also far away from the Major river lines that run through the state. Therefore, climatically the district Muktsar experiences extremes of climate situations. Summers are extremely hot and winter was very cold. The average minimum and maximum temperature recorded was 5.7°C and 40.8°C in 2000, 3.7°C and 41.9°C in 2005 and 4.5°C and 39.9°C in 2007 respectively. The minimum temperature touches the freezing point occasionally and maximum temperature sometimes reaches up to 46.5°C. The corresponding relative humidity varied from 47-71%, 34-73% and 42-76% in the year 2000, 2005 & 2007 respectively. The year may be divided into three seasons. The cold winter (November to February) the hot dry summer (March to June) and the mild rainy season

(July to September). Dust storms are a regular feature in summer season. The month wwase data of maximum and minimum rainfall of different years and days of rain fall are presented in table no.

Rainfall

The monsoon generally starts in the first fortnight of the July the mean annual rainfall fluctuate around 425 mm.Most of the rainfall occurs in the month of July. August and September with few showers of rain during winter months. The rainfall data shows that there was maximum rainfall 607 mm in the 2005 and minimum 188 mm in the 2002 was recorded during the year 2002. Thus we can say there is no regularity and certainty in the weather condition in this district.

Soil

The district falls in south western alluvial plain zone. The soil of Muktsar district varies from sandy to loam in texture with occasional presence of sand dunes in block Lambi. Pure sandy texture soils are predominant in lambi block where as heavy textured are present in AES and AES comprising of village Abul khurana, Takhat Mulana, Babania. The soils are low in organic carbon, low in phosphorus, high in potassium, low in zinc and other micro nutrients.

3. LAND USE PATTERN AND LAND HOLDINGS

The geographical area of district Muktsar 264533 hectare out of which 242989 hectare is under cultivation. Of the net area sown 95% is irrigated. Net gross area sown is 413702 in 2005

and crop density is 175 % the maximum number of farm holding fall under the medium category which comprises 4-10 hectare of land cotton, wheat, paddy and oil seeds are the major crop of the district

Land use information District Muktsar (In Hectare)

Sr. No.	Particulars	Muktsar	Malout	Gidderbaha	Lambi	Total
1	Number of village	90	52	44	50	236
2	Total Geographical Area	82967	56941	63094	60931	263933
3	Cultivated area	73893	52982	59335	56779	242989
4	Total sown area	126584	91192	101086	94840	413702
5	Crop Density	171	172	170	167	170
6	Net Irrigated area	65944	47655	54530	50647	218786
7	Canal Irrigated	61504	45045	52500	49630	208679
8	Tubewell Irrigated	4440	2620	2030	1017	10107
Net Total Irrigated area		120344	90405	99285	92285	402319

Due to high dependence on cotton wheat, paddy wheat rotation the excessive use of chemicals fertilizer coupled with flood irrigation with poor quality underground water the soil fertility has been affected calling for measures for improvement in soil health. The main problems which hinder development of farming is the district are lack of education low soil fertility small to medium land holding and over exploration of natural resources.