

**42<sup>nd</sup>**

**ANNUAL ADMINISTRATIVE REPORT**

**OF**

**THE DEPARTMENT OF**

**SOIL AND WATER CONSERVATION**

**PUNJAB**

**FOR THE YEAR 2010-11**

**(1-4-2010 TO 31-3-2011)**

## Annexure-I

### **REVIEW OF THE WORKING OF THE DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB FOR THE YEAR 2010-11**

The Greed for maximizing economic returns from the two natural resources, Soil & Water, has put these resources under immense pressure and over exploitation, with the result that their degradation and depletion day by day has created an alarming situation. If immediate steps are not taken, these may further deteriorate to a level where it will be very difficult to revive these resources to sustain the agricultural production system. The groundwater is depleting at very fast rate and water table is going down by approximately 50-100 cms. annually and has reached a stage where farmers have to deepen their tubewells and install new submersible pumping system with higher power requirements for Irrigation. The farmers are unaware of the fact that this may lead to a situation where no further deepening and pumping out of water will be economically feasible and even possible unless the groundwater is recharged for keeping up a balance between recharging and pumping out the same.

The over exploitation of soils by continuously following the wheat-paddy rotation has depleted the macro/micro nutrients, minerals and trace elements of the soils. The soil health is deteriorating day by day and the formation of hard crust layers below the plough depth, resulting in impeded local drainage that is harmful for crops growth. Soil structure has also been disturbed and organic contents in the soil have also been reduced to a low level.

In view of the above situation, the role of Department of Soil and Water Conservation, Punjab for conserving, saving and up gradation of the two vital natural resources of Soil & Water is most important in the present scenario of diversified uses and fast pace of development. Over the last few decades the Department is putting in its best efforts to check the further degradation of these resources and develop them for a sustainable, diversified agricultural system. Although the State Government is already seized of the problem of degradation of soil, sharp depletion of underground water in most parts of the State, a lot of efforts and funds are required for the activities for the sustainable development of these resources and check their further degradation.

To carry out soil conservation and water management programme Rs 9865.58 lacs were utilized by the Department during the year 2010-11. Rs.7063.50 lacs were utilized under the Non plan, State plan, and Centrally sponsored schemes, Rs. 2802.08 lacs were utilized under other District level schemes such as Integrated Watershed Management Projects (IWDP/IWMP), Reclamation of Ravenous areas & Wetlands, Punjab Nirman Programme, National Rural Employment Guarantee Scheme (NREGS) & Rashtriya Krishi Vikas Yojna (RKVY) of the Department of the Agriculture. Total 23994 hectare area was covered under various land development and water management works in 2758 villages benefiting 34031 farmers.

Under Watershed management works, 5388 hectares area was covered in 100 villages owned by 7968 farmers. Under land leveling and waste land development works, 6161 hectares area was covered in 257 villages benefiting 7221 farmers. Under water management

works 177.293 km under ground pipeline was laid benefiting 6770 hectares owned by 13120 farmers of 233 villages. 750 Hectares were covered under Water Harvesting Structures, Tapping of perennial flow and Small Lift Irrigation projects benefiting 1145 farmers of 11 villages. 4925 hectares were covered under Drip Irrigation scheme benefiting 4577 farmers of 2157 villages. Thus, the total of 23994 hectares area was covered under Soil Conservation and Water Management works benefiting 34031 farmers of 2758 villages.

Soil survey of detailed and semi detailed nature was conducted in 1,26,000 hectares during the year 2010-11.

**Annexure-II**

**CRITICAL REVIEW OF THE WORKING OF THE DEPARTMENT OF SOIL & WATER CONSERVATION, PUNJAB FOR THE YEAR 2010-11**

The department is putting in a lot of efforts for the sustainable development of soil & water resources according to the need of the day and new trends in agricultural production. Proper soil & water conservation measures and irrigations techniques are being under taken, especially in rainfed areas i.e., the Kandi Area of Punjab. Water Harvesting Technology is being used extensively in Kandi area and has proved to be very effective in the rehabilitation of the degraded Shivaliks by checking soil erosion, providing life saving irrigation, and recharging of ground water in the command areas. Water harvesting from perennial sources for providing irrigation and recharging in command area is most economical and beneficial. An area of 24672 hectares have been brought under life saving irrigation in Kandi area from different types of water management works like water harvesting dams, hill seepage tapping projects, small water harvesting structure, lift irrigation schemes and ground water recharging projects.

Taking in to view the depleting ground water and the stress on canal water availability, especially in the 104 over-exploited blocks, modern conservation irrigation techniques are being deployed for saving the already stressed water resources. Though Conservation irrigation through drip, micro-sprinkler and sprinkler irrigation is being adopted for the last 16 years, About 21889 hectares have been covered under this scheme till date. During the year 2006-07, GOI introduced a new scheme of Micro Irrigation (Drip & Sprinkler irrigation) on 80:20 center state sharing basis, under which 50% subsidy is provided on Drip/Micro Sprinkler Irrigation. This assistance has been increased to 60% for small and marginal farmers from 2010-11. During 2010-11, Rs. 1498.00 lac (it includes Rs. 236.70 lacs unutilized balance of previous year) were released by GOI as 80% share and State Government released Rs. 395.10 lac as 20% share. During 2010-11, Rs. 1543.04 lacs were utilized benefiting 4925 hectares area of 4577 farmers in 2157 villages

In addition to above assistance, State Government also sanctioned funds under NABARD-RIDF project under which 25% additional subsidy is provided on Drip/Micro Sprinkler Irrigation system. During 2010-11, Rs. 824.14 lacs (376.05 under RIDF-XIII+ 448.09 under RIDF-XVI) were utilized under this project. In addition to it 50%subsidy was provided on 56 water storage tanks in south-western Districts during the year under report.

Another 100% Centrally Sponsored Scheme of pilot project for reclamation of ravines and gullied lands was sanctioned during the year 2010-11. Rs. 76.00 Lac was utilized by reclaiming 650 hec. in Amritsar Distt.

Under the Centrally sponsored Macro Management Works Plan, two sub schemes namely, National Watershed Development Programme for Rainfed Area (NWDPR) and Treatment of Catchment area of river Ghaggar (FPR), innovative technologies have been introduced to check soil erosion and for water harvesting and conservation in Kandi area districts of Mohali, Ropar, Nawanshahar, Hoshiarpur & Gurdaspur. Such technologies can easily be replicated through people's participation and this aspect has been given the main thrust by involving the people in the planning and implementation of the programme under these schemes. During 2010-11, Rs. 559.32 lacs have been utilized by covering 4919 hectares under this programme.

A new scheme for Rain Water Harvesting in the state was introduced in the year 2008-09 and continued in the year 2010-11. It is being operated in Kandi areas of the state. For the efficient use of water, Rain Water Harvesting structures, Makkowal type structures and

small lift irrigation projects are constructed under this scheme for ground water storage, supplementary irrigation and erosion control. During 2010-11, Rs. 150.00 lacs were utilized under this scheme benefiting 750 hectares.

**ANNUAL ADMINISTRATIVE REPORT ON THE WORKING OF THE DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB FOR THE YEAR 2010-11 (1/4/2010-31/3/2011)**

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## INTRODUCTION

Prior to the year 1969, Soil Conservation works in the state were carried out by the Soil Conservation Wing of the Agriculture Department. Then its status was raised and was made an independent Department by the Punjab Government. It was named as "SOIL CONSERVATION AND ENGINEERING DEPARTMENT" and the head of the department was designated as "Chief Conservator of Soils Punjab. The name of the department was changed as "DEPARTMENT OF SOIL AND WATER CONSERVATION AND WASTE LAND DEVELOPMENT, PUNJAB" by the government in February 1993. During 2000 the name of the department was again changed as "DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB" This is the 42<sup>nd</sup> Annual Report on the working of this department. **Sh. Anil Kumar Sondhi** held the charge of Chief Conservator of Soils, Punjab during the year 2010-11.

The Annual Report highlights activities & achievements of the department during the year 2010-11 which are summarized as follows:-

### **A. Field Divisions**

Soil and Water are two natural resources and the successful crop production depends upon the way, how best we utilize these two resources. The main objective of the Department is to conserve Soil and Water resources for their judicious use to obtain optimum returns agricultural land on sustained basis. On the basis of Soil and Water management programme, the State can be divided in to 3 Agro-climatic zones.

#### **1. NORTHERN ZONE:**

This is located in the foothills of Shivaliks and extends from Derabassi block of Mohali district to Dhar block of Gurdaspur district falling in Roopnagar, S.A.S. Nagar, S.B.S. Nagar, Hoshiarpur and Gurdaspur districts. Soil erosion due to flash floods and droughts are common features of this zone. The following Soil and Water Conservation works are undertaken in this region:

1. In the rainfed areas of Kandi, Centrally Sponsored Scheme of National Watershed Development Program for Rainfed Area (NWDPR) is being executed.
2. Treatment of Catchment area of Flood Prone River (FPR) Ghaggar in S.A.S. Nagar District.
3. Ground Water Recharge through Rain Water Harvesting structure/low dams.
4. Micro Irrigation (Drip & Sprinkler Irrigation System).
5. Water harvesting structures are constructed to control flash flood and supplementary irrigation is provided to command area.
6. Tapping of perennial flow (Makkowal Type) and lift irrigation for expanding Irrigational potential.
7. Undulating lands are being leveled for enhancing cultivated area
8. Drainage line treatment works.
9. Reclamation of degraded land in affected pockets of ecologically handicapped areas.

#### **2. CENTRAL ZONE:**

It comprises of Patiala, Ludhiana, Jalandhar, Nawanshahar, Kapurthala and Amritsar districts. This zone is the most developed area of the State. The lands are leveled and under ground water are available for irrigation. Moreover the over exploitation of sub-soil water is causing ground water depletion in this zone at the most alarming rate. In this zone, following works are being undertaken:-

1. Micro Irrigation (Drip & Sprinkler Irrigation System).
2. Technical advice to farmers for Modernization of irrigation conveyance system on individual tube wells using underground pipeline system to reduce water losses.
3. Reclamation of degraded land and Ravine reclamation works are being carried out in area affected by river Beas, Ravi, Sutlej and many other tributaries which join these rivers.
4. Budha Nullah and Kali Bein projects of utilizing treated sewage water for irrigation through under ground pipeline system.

### 3. **SOUTHERN ZONE**

This comprises Sangrur, Barnala, Bathinda, Mansa, Mukatsar, Moga, Faridkot and Ferozepur districts. In this region, the sub soil water is generally brackish and unfit for irrigation in many pockets. Though Irrigation water is available from a network of canal system which has been carried to the fields by constructing lined water courses but not sufficiently available at tail end Sand dunes in this region have been reclaimed by scrapping of sand to bring out the good soil below it for agricultural purposes. In this zone, following works are being undertaken:-

1. community underground pipeline system under Rashtriya Krishi Vikas Yojna (R.K.V.Y.)
2. Micro Irrigation (Drip & sprinkler).
3. Reclamation of degraded and ecologically handicapped area.
4. Technical advice to individual farmers on U.G.P.S.

**B Soil Survey Division:-** The Soil Survey wing of the Department is engaged in collection of field information of soils, mapping of soils and in preparing the recourse inventory in the state. Different type of Soil Survey i.e Detailed soil survey, semi-detailed survey, reconnaissance survey etc. are conducted. The reports of these surveys are used as bench marks for planning of Soil & Water Conservation Works.

**C Machinery Division:-** The Department has a fleet of 7 bulldozers, 1 Excavator cum Loader, 8 Tractors, 1 Trencher and 6 Laser levelers for undertaking various soil and water conservation works in the state. There is separate division for running & maintenance of machinery working under Divisional Soil Conservation Officer with its head quarter at Mohali. This machinery is not only used for Departmental works but also provided to farmers on subsidized rates and the income deposited in state treasury.

**D Training Institute:-** There is Training Institute (with Hostel) at Mohali to impart training to farmers and Technical staff upto the level of Soil Conservation Officers. The courses cover all the practical aspects of Soil & Water Conservation works such as land leveling, bench terracing, contour bounding, gully reclamation, water harvesting dams and drainage etc and also give lessons of practice in preparation of plan & estimates etc. Approximately 150-200 trainees are imparted training every year.

**E State Land Use Board:-** A nucleus cell i.e. State Land Use Board has been created to carryout studies to assess the land resources like soil, water & vegetation and for generating awareness for optimum & judicious use of soil & water resources in the State. This Board under the control of a Director (technical) SLUB has been carrying out the activities under a new state plan scheme.



## CHAPTER-II

### ORGANISATION AND ACTIVITIES

The Soil and Water Conservation Department, Punjab is headed by the Chief Conservator of Soils, Punjab. During the year, 3 Circles and 14 works Divisions were covering the entire State. The 14 works divisions have 43 works Sub Divisions with supporting staff. For the in-service training of the subordinate staff, there is Training Institute at Mohali under the charge of a Divisional Soil Conservation Officer(T.I). Besides this, there is one Soil Survey Division for Soil Survey work in the State under the charge of Divisional Soil Conservation Officer (Soil Survey) with headquarters at Mohali. Under Divisional Soil Conservation Officer (Soil Survey), there are three Soil Survey Officers with head quarters at Ludhiana, Hoshiarpur and Mohali. There is a separate Division for running & maintenance of machinery like Bulldozers, Tractors and Laser Levelers under the charge of a Divisional Soil Conservation Officer (Machinery) with head quarter at Mohali. One Conservator works as Director (Technical) SLUB (State Land Use Board) at Mohali.

Organization chart of the Department for the year 2010-11 is given at Annexure `A`.

#### ACTIVITIES OF THE DEPARTMENT:

As explained earlier, the alarmingly depleting ground water in the Central Punjab, the soil degradation due to soil erosion in shivalik foothills, water logging and salt affected soils in the south-western Punjab and micro-nutrient imbalance in most parts are the important focused areas in Punjab state. This implies that there is great need for soil and water conservation & management works. Water management works conserve water by checking seepage evaporation losses, thus creating more irrigation potential by which further area can be brought under irrigation. There is impetus on providing assistance on laying of under ground pipe line in fields for irrigation in the Southern and Central Districts. For efficient use of irrigation water, the Micro Irrigation (Drip/Sprinkler) system is being promoted in all districts. In addition to it Rain Water Harvesting structures, Makowal type structures and small lift irrigation projects are constructed for ground water storage, supplementary irrigation and erosion control in kandi area.

The following types of works are executed by the department under various schemes of Soil Conservation and Water Management works:-

1. Promotion of Sprinkler/Drip irrigation system.
2. Laying of underground pipe line for irrigation on tube wells/canal outlet.
3. Gully reclamation and soil erosion control works on watershed basis.
4. Rain Water Harvesting & Ground Water Recharging through dams.
5. Lift irrigation/Perennial Flow tapping Structure.
6. Improvement of ecological & degraded lands.
7. Land leveling/land grading/Chisling of soil.
8. Tapping of treated sullage water for irrigation.
9. Soil survey works.

Land Development & water management works are being executed by the department under the State Plan Schemes and centrally sponsored schemes mentioned below.

## Detail Of Scheme/Projects

### **(A) Centrally Sponsored Schemes**

#### **1. Macro-Management Work Plan for Soil Conservation**

This scheme is mainly implemented in the Kandi area of the state in which there is a sharing of GOI & State Govt. on 90:10 basis. During 2010-11, an amount of Rs. 559.32 Lac was utilized to benefit an area of 4919 hectares. Following 2 sub-schemes were implemented during 2010-11

##### **(a) National Watershed Development programme for rainfed area (NWDPRA)**

The Kandi area of the state covers 10% of the geographical area and battles with problems like High Runoff, Flash floods, Soil Erosion, minimum yield levels, deeper aquifers, small land holdings etc. For 11<sup>th</sup> Plan period, a Strategic Plan of 36.00 Crores is being implemented in 26 watersheds falling in the districts of Mohali, Ropar, Nawanshaher, Hoshiarpur & Gurdaspur districts. This programme is implemented by the village level Watershed Committees involving the beneficiaries and has played a major role in improving the socio-economic condition of the villagers in kandi area. During the year 2010-11 an area of 4344 hectares has been treated by utilizing Rs. 496.25 Lacs.

##### **(b) Treatment of Catchment of Flood Prone River (FPR)- Ghaggar**

Under the programme, Soil Conservation works are done in the catchment area of river Ghaggar falling in Punjab state to check Soil erosion in the sensitive identified watersheds of very high & high priority. This scheme is being implemented in Ropar & Mohali districts. An amount of Rs. 63.07 Lacs has been utilized on treatment of 575 hectares.

#### **(2) Centrally Sponsored Scheme for Micro Irrigation**

Under this scheme, 50% subsidy is given to the farmers on Drip/ Micro sprinkler & Sprinkler irrigation systems for Horticulture as well as Non-horticulture crops. 10% ect. Subsidy has been allowed by GOI for small and marginal farmers from 2010-11. The subsidy is provided by the GOI & State Govt. in 80:20 ratio. GOI released Rs. 1498.00 Lac as 80% share & state Govt. sanctioned Rs. 395.10 lac as corresponding 20% share. Thus total Rs.1893.10 lac was available during the year under report. During 2010-11, an amount of Rs 1543.04 Lac has been utilized for providing assistance on an area of 4925 hectares in all districts of the state.

#### **(3) Scheme for Special problematic & degraded soils under Technology Development, Extension and Training (TDET)**

Under the GOI TDET programme for treatment of special problematic areas on Project basis, 60% funds are provided by GOI and the balance 40% by Beneficiaries. 2 Projects are ongoing in Amritsar & Gurdaspur districts. An amount of Rs. 211.97 Lac was sanctioned during 2010-11, out of which Rs. 76.00 lakh has been utilized by treating 650 hectares in Amritsar. Finance Department sanctioned Rs. 135.97 Lakh for Gurdaspur on 28-03-2011. Bills were submitted but not passed by the treasuries.

### **State Plan Schemes**

#### **(4) Project for Promotion of Micro Irrigation in Punjab (RIDF-XIII)**

An RIDF (NABARD) Project, of 3 years duration for Promotion of Micro Irrigation (Drip & Sprinkler) in Punjab is being implemented since 2007-08. Under the Project, the Beneficiaries are given additional 25% subsidy on Micro Irrigation (Drip & Sprinklers), over &

above the 50% subsidy under ongoing GOI Micro Irrigation Scheme. Apart from this, 50% subsidy to a ceiling of Rs. 1.00 lakh on Water Storage Tanks is also provided in Canal Command areas. During 2010-11, an amount of Rs. 376.05 Lac was utilized.

**(5) Project for Promotion of Micro Irrigation in Punjab (RIDF-XVI)**

A new RIDF (NABARD) Project, of 3 years (2010-11 to 2012-13) duration for Promotion of Micro Irrigation (Drip & Sprinkler) in Punjab was sanctioned during 2010-11. Under the Project, the Beneficiaries are given additional 25% subsidy on Micro Irrigation (Drip & Sprinklers), over & above the 50% subsidy under ongoing GOI Micro Irrigation Scheme. Apart from this, 50% subsidy to a ceiling of Rs. 1.00 lakh on Water Storage Tanks is also provided in a few Districts. During 2010-11 Rs. 448.09 Lac was utilized. In addition to it, 50% subsidy was provided on 56 water storage tanks in south-western Districts during the year under report

**(6) Soil & Water Conservation on watershed basis in Kandi Non-project Area**

This scheme is being implemented in those areas of kandi zone where the GOI watershed development project is not implemented. The major interventions include Water harvesting Structures, Micro-lift irrigation schemes with the objectives of soil & water conservation, erosion control and livelihood support. An area of 469 hectares was benefited by utilizing an amount of Rs. 50.00 Lac during 2010-11.

**(7) Scheme for Rainwater harvesting in the state**

Punjab receives a good rainfall but in the absence of adequate rainwater harvesting structures, most of it goes waste as runoff, especially in northern belt. Construction of Rainwater Harvesting structures, Perennial Flow Harvesting structures etc. help not only in harvesting of rainwater to be used for irrigation but also in ground water recharge. These structures are handed over to the local User Groups who in turn utilize the harvested water for irrigation in lean season. Since 2008-09, a separate scheme has been proposed for Rainwater Harvesting in the state. An amount of Rs. 150.00 Lac was utilized to benefit an area of 750 hectares during 2010-11.

**(8) Provision for Machinery Division at Head Quarter**

The Department has a Machinery Division at Mohali having 7 Bulldozers, 1 Excavator-cum-loader, 8 Tractors, 1 Trencher and 6 Laser Levelers which are not only used for departmental works but are also provided to the farmers on hire basis at rates lower than the market. During 2010-11 Rs. 25 Lac was utilized on developing about 6000 hectares. In addition to it, Rs. 55.00 Lac was earned as revenue and deposited in the State Revenue head.

**(9) Scheme for assistance on UGPS for promotion of on-farm water conservation.**

This is new scheme. 50% subsidy is proposed to be provided to farmers on laying of underground pipe line system (UGPS) from individual tube wells and canal outlets. This is Additional Central Assistance (ACA) scheme with 70% grant and 30% loan. During 2010-11, this scheme was not sanctioned by state Government due to late release of funds by GOI.

**(10) Scheme for Strengthening of State Land use Board.**

The main objective of the scheme is to create awareness among farmers and other land user for optimum use of soil & water resources through Awareness Campaigns, Seminars, Publications, and Studies etc. During 2010-11, Rs. 2.43 Lac was utilized.

## **OTHER SCHEMES**

### **Rashtrya Krishi Vikas Yojna (RKVY)**

This is scheme of Agriculture Department. The objective of the scheme is to enhance agricultural production in rainfed area by efficient use of surface and sub-surface water. This scheme is implemented almost in all Districts especially in south-western districts. The main activities under the scheme are conservation of irrigation water through laying of community under ground pipeline system & reclamation of degraded soil. Under this scheme for community under ground pipeline system GOI assistance is 90% and balance 10% is borne by the farmers in cash/labour form For reclamation of degraded soil GOI assistance is 100%. During 2010-11, Rs. 1787.50 lacs were utilized under this scheme benefiting 6741 hectares.

### **Integrated Wasteland Development Project (IWDP/IWMP)**

This scheme is implemented on District level funded by Rural Development Department. Under this programme, schemes for Soil & Water Conservation works in special problematic areas of different districts are proposed to GOI through the respective Deputy Commissioners & implemented in the field. The field Officers of this Department are the Project implementing Agencies (PIAs) for these Projects. Rs. 430.57 lacs were utilized under this scheme benefiting 4580 hectares during 2010-11.

### **Scheme for Improvement of Wet Land**

To control the soil erosion, water harvesting & other land development works are executed in Ropar and Nangal wet land and Harike wet land of Tarntaran district. Funds are provided by Punjab State council for Science & Technology (PSCST). Rs. 178.60 lacs were utilized by benefiting 130 hectares during 2010-11.

### **Scheme for utilizing treated Sullage Water of city /towns for Irrigation**

To improve environment and to control pollution, Individual projects for using treated sullage water of city/towns for irrigation are formulated and implemented. Funds are provided by other Departments and agencies like Punjab State council for Science & Technology (PSCST) & Local Bodies Department Rs. 10.60 lacs were utilized on laying under ground pipe line from STP Bhatian under Budha Nalah project and Rs.69.10 lacs were utilized on laying under ground pipe line from STP Anandpur Sahib benefiting 300 hect.during 2010-11

Under GOI National River Cleaning Programme (NRCP), the Department has submitted the projects of laying of UGPL for irrigation from STPs for 35 towns/cities of Punjab draining in to river Sutlej, Beas, Ghaggar and Sirhind Canal etc. to Punjab Pollution Control Board. Work has been started on 2 projects during financial year 2010-11

### **National Rural Employment Guarantee Scheme (NREGS)**

This Central Government scheme is implemented on district level. During 2010-11, it is being implemented in Nawanshahar, Gurdaspur, Mohali & Hoshiarpur district. The major works carried out under this scheme are renovation of ponds, repair of water harvesting structures, and land protection works, Flood protection works, underground pipeline system & other soil moisture conservation activities. Rs. 105.05 lacs were utilized benefiting 210 hect. under this scheme during 2010-11.

## **MAJOR ACHIEVEMENTS DURING 2010-11**

During the year under report a sum of Rs. 9865.58 lacs has been utilized on covering an area of 23994 hectares under various soil conservation and water management works. Rs. 3833.57lacs were utilized under Non Plan, Rs. 3229.93 lacs were utilized under State Plan and Centrally Sponsored Schemes. Rs. 2802.08 lacs were utilized under other district level schemes i.e. Integrated Waste Land Development Projects (IWDP/IWMP), Reclamation of Ravenous & Wetland, Punjab Nirman Programme, Rashtriya Krishi Vikas Yojna (RKVY). 5388 hectares were covered under Watershed Management works benefiting 7968 farmers of 100 villages. 6161 hectares were covered under land leveling and wasteland development works benefiting 7221 farmers of 257 villages and 4925 hectares were covered under Micro Irrigation Scheme benefiting 4577 farmers of 2157 villages. 6770 hect. were covered under Water management works benefiting 13120 farmers of 233 villages and 750 hectares were covered under water harvesting structures, tapping of perennial flow and small lift irrigation projects benefiting 1145 farmers of 11 villages. Thus, total 23994 hectares area was covered under various Soil Conservation and water management works in 2758 villages benefiting 34031 farmers.

In addition to it, an area of 1,26,000 hectares in different districts of state was covered under detailed and semi-detailed survey.

A fleet of 7 bulldozers, 1 excavator-cum-loader, 8 tractors, 1 trencher & 6 laser leveler were engaged in land development works for 9911 hours during the year 2010-11. During 2010-11 Rs.35.00 lac was sanctioned under the scheme "SWC-6 Machinery Division at Head Quarter" out of which Rs. 25.00 lac was utilized. Machinery division earned Rs. 67.00 lacs from different soil conservation works out of which Rs, 55.00 lacs were deposited in the treasury and balance Rs. 12.00 lacs were utilized on running/repair of machinery. About 6000 hectares area was covered under land development works.

There is Training Institute at Mohali to impart training to farmers and Technical staff upto the level of Soil Conservation Officers. The courses cover all the practical aspects of Soil & Water Conservation works such as land leveling, bench terracing, contour bounding, gully reclamation, water harvesting dams and drainage etc and also give lessons of practice in preparation of plan & estimates etc. 139 officers/officials and 702 farmers were trained under different courses at various GOI training institutes and the Departmental Institute at Mohali.

## **Benefits**

The likely direct and indirect benefits from different Soil & Water Conservation Works are as under:-

- √ Assured/ Life-saving irrigation,
- √ Increase in yield / production
- √ Conservation of irrigation water.
- √ Increase in Land value.
- √ Farm land saving.
- √ Power Saving.
- √ Rain Water storage.
- √ Ground water recharge.
- √ Control of salt-accumulation and Erosion Control;
- √ Saving of Labour;
- √ Improvement of physical condition & structure of soil;
- √ Seasonal as well as permanent Water-logged area shall be reclaimed
- √ Ravinous and marshy land along the rivers shall be reclaimed
- √ Productive land having hard impervious pan shall be improved.
- √ Help in diversification to vegetable & horticulture crops.
- √ Training of Technical Officers/ Officials and Progressive farmers;
- √ Extension & Awareness generation among farmers & rural masses;
- √ Promotion & development of innovative field technologies through field demonstrations;
- √ Farm Production system shall be strengthened by assisting small/ marginal farmers.
- √ Livelihood of the landless families shall be improved through various income generating activities.
- √ Socio-economic upliftment of small/ marginal farmers and the landless;
- √ Environment shall be rehabilitated.

## CHAPTER-III

### LAND DEVELOPMENT WORKS

Soil and water are two natural resources. Agricultural production depends upon the optimum utilization of these two resources. The top soil, (usually of 7" to 8" thickness) is the principal feeding zone for the growth of most agricultural crops. The loss of this valuable top soil by water and wind results in deterioration in the quality of land which if allowed, ultimately results in its turning out of cultivation completely. It can be replenished only with the appropriate soil conservation measures and can be improved further by suitable follow up practices.

The Punjab State in its northern region comprising of mountainous area is blessed with a good rainfall, but due to sloppy and undulating topography of land, there is a large scale soil erosion problem. To check this erosion, control measures are required to be taken in order to obtain sustained higher level of production. The area which suffers from soil erosion lies mostly in the district of Hoshiarpur, Gurdaspur, Ropar, Mohali and S.B.S. Nagar district. In order to protect this land against erosion and for making it more productive, soil conservation works such as gully reclamation and land development are being carried out.

Under watershed management works 5388 hectare were covered benefiting 7968 cultivators of 100 villages and under land development works 6161 hectares were covered benefiting 7221 cultivators of 257 villages.

District-wise progress of the soil erosion control works executed by the department in the Punjab state during 2010-11 has been given in the following tables:-

**TABLE 3.1 - District wise progress of watershed management works on agricultural land upto 2010-11 (Area in hectares).**

<b>Sr. No.</b>	<b>District</b>	<b>Upto 2008-09</b>	<b>During 2009-10</b>	<b>During 2010-11</b>	<b>Total upto 2010-11</b>
1	Fatehgarh Sahib	0	0	0	<b>0</b>
2	Hoshiarpur	40706	1020	1818	<b>43544</b>
3	Gurdaspur	11824	260	1045	<b>13129</b>
4	Jalandhar	97	0	0	<b>97</b>
5	Nawanshahar	2042	152	0	<b>2194</b>
6	Kapurthala	191	0	0	<b>191</b>
7	Amritsar	2	0	0	<b>2</b>
8	Tarantaran	0	0	0	<b>0</b>
9	Ludhiana	0	0	0	<b>0</b>
10	Ropar	21026	656	1200	<b>22882</b>
11	Mohali	4247	90	1325	<b>5662</b>
12	Patiala	4060	0	0	<b>4060</b>
13	Ferozepur	0	0	0	<b>0</b>
14	Sangrur	0	0	0	<b>0</b>
15	Barnala	0	0	0	<b>0</b>
16	Bathinda	0	0	0	<b>0</b>
17	Mukatsar	0	0	0	<b>0</b>
18	Faridkot	0	0	0	<b>0</b>
19	Moga	0	0	0	<b>0</b>
20	Mansa	0	0	0	<b>0</b>
	<b>Total:</b>	<b>84195</b>	<b>2178</b>	<b>5388</b>	<b>91761</b>

Amount utilized during 2010-11 was Rs. 609.32 lacs.



**TABLE 3.2: District wise progress of Land leveling/Ravine reclamation/Wasteland Development works done upto 2010-11(Area in Hectares)**

<b>Sr. No.</b>	<b>District</b>	<b>Upto 2008-09</b>	<b>During 2009-10</b>	<b>During 2010-11</b>	<b>Total upto 2010-11</b>
1	Fatehgarh Sahib	6	0	0	6
2	Hoshiarpur	12608	2295	1370	16273
3	Gurdaspur	15487	3585	975	20047
4	Jalandhar	5671	121	0	5792
5	Nawanshahar	4660	597	1262	6519
6	Kapurthala	6001	143	491	6635
7	Amritsar	12828	0	172	13000
8	Tarantaran	730	250	30	1010
9	Ludhiana	6592	0	0	6592
10	Ropar	8711	40	205	8956
11	Mohali	1228	526	689	2443
12	Patiala	5780	0	0	5780
13	Ferozepur	24739	331	480	25550
14	Sangrur	5044	168	0	5212
15	Barnala	0	0	0	0
16	Bathinda	7868	0	0	7868
17	Mukatsar	1264	80	0	1344
18	Faridkot	12756	10	487	13253
19	Moga	137	0	0	137
20	Mansa	295	0	0	295
	<b>Total:</b>	<b>132405</b>	<b>8146</b>	<b>6161</b>	<b>146712</b>

Amount utilized during 2010-11 was Rs. 940.71 lacs.

**Table 3.3 : District wise villages covered and cultivators benefited from the land development and watershed management works during 2010-11 (in numbers).**

Sr. No.	District	Land Development		Watershed Management	
		Cultivators benefited	Villages covered	Cultivators benefited	Villages covered
1	Fatehgarh Sahib	0	0	0	0
2	Hoshiarpur	4647	51	5645	53
3	Gurdaspur	906	92	1160	21
4	Jalandhar	0	0	0	0
5	Nawanshahar	68	24	0	0
6	Kapurthala	236	23	0	0
7	Amritsar	0	0	0	0
8	Tarantaran	38	3	0	0
9	Ludhiana	0	0	0	0
10	Ropar	171	29	403	14
11	Mohali	594	30	760	12
12	Patiala	0	0	0	0
13	Ferozepur	561	5	0	0
14	Sangrur	0	0	0	0
15	Barnala	0	0	0	0
16	Bathinda	0	0	0	0
17	Mukatsar	0	0	0	0
18	Faridkot	0	0	0	0
19	Moga	0	0	0	0
20	Mansa	0	0	0	0
	<b>Total:</b>	<b>7221</b>	<b>257</b>	<b>7968</b>	<b>100</b>

## CHAPTER-IV

### WATER MANAGEMENT WORKS

The prosperity of the State depends upon the development of Agriculture through extension of irrigation facilities. About 25% of irrigation water is lost in conveyance channels through seepage and evaporation. In addition, this seepage has created problem of water logging in many areas. This loss can be eliminated and water thus saved can be utilized for more irrigation facilities. In order to ensure the coverage of maximum area with available water, installation of underground Pipeline system (UGPS), Micro Irrigation (Drip & Sprinkler) along with proper land grading are necessary.

During 2010-11 an area of 12445 hectares was covered under water management works by benefiting 18842 farmers of 2401 villages of the state. During the year under report, laying of underground pipe line was carried out to a length of 177.293 kms benefiting an area of 6770 hectares owned by 13120 farmers of 233 villages of the State. Though only technical advice was provided for individual UGPS projects, subsidy was also provided for community UGPS projects. 750 hectares were brought under additional irrigation by constructing/renovating water harvesting structures, tapping of perennial flow and small lift irrigation projects by benefiting 1145 farmers of 11 villages. In addition, 4925 hectares was covered under Micro Irrigation (Drip & Sprinkler) benefiting 4577 farmers of 2157 villages

District wise progress of water management works is given in the following tables :-

**Table 4.1 : District wise progress of underground pipe line laid in the Punjab State upto 2010-11 (Length in meters)**

<b>Sr. No.</b>	<b>District</b>	<b>Upto 2008-09</b>	<b>During 200-10</b>	<b>During 2010-11</b>	<b>Total upto 2010-11</b>
1	Fatehgarh Sahib	239093	0	0	<b>239093</b>
2	Hoshiarpur	1809300	1650	5563	<b>1816513</b>
3	Gurdaspur	982745	10360	2570	<b>995675</b>
4	Jalandhar	1625486	4000	0	<b>1629486</b>
5	Nawanshahar	347210	357	0	<b>347567</b>
6	Kapurthala	572915	970	1930	<b>575815</b>
7	Amritsar	1280821	0	0	<b>1280821</b>
8	Tarantaran	124940	0	0	<b>124940</b>
9	Ludhiana	1597052	0	0	<b>1597052</b>
10	Ropar	1074988	0	10000	<b>1084988</b>
11	Mohali	9350	0	0	<b>9350</b>
12	Patiala	1656204	6257	8280	<b>1670741</b>
13	Ferozepur	1218772	0	0	<b>1218772</b>
14	Sangrur	1251117	18018	10345	<b>1279480</b>
15	Barnala	44143	8293	865	<b>53301</b>
16	Bathinda	613020	0	19760	<b>632780</b>
17	Mukatsar	542697	67905	91224	<b>701826</b>
18	Faridkot	448945	7915	2156	<b>459016</b>
19	Moga	251056	2966	0	<b>254022</b>
20	Mansa	576469	0	24600	<b>601069</b>
	<b>Total:</b>	<b>16266323</b>	<b>128691</b>	<b>177293</b>	<b>16572307</b>

Area Benefited during 2010-11 was 6770 hectares.  
Amount utilized during 2010-11 was Rs. 1937.37 lacs

**Table 4.2 : District wise progress of Water Harvesting/Makowal type/Lift Irrigation work up to 2010-11 (Area in Hectares).**

<b>Sr. No.</b>	<b>District</b>	<b>Upto 2008-09</b>	<b>During 2009-10</b>	<b>During 2010-11</b>	<b>Total upto 2010-11</b>
1	Fatehgarh Sahib	0	0	0	0
2	Hoshiarpur	8073	606	375	9054
3	Gurdaspur	5978	240	225	6443
4	Jalandhar	0	0	0	0
5	Nawanshahar	251	120	0	371
6	Kapurthala	0	0	0	0
7	Amritsar	0	0	0	0
8	Tarantaran	0	0	0	0
9	Ludhiana	0	0	0	0
10	Ropar	7402	597	0	7999
11	Mohali	915	317	150	1382
12	Patiala	173	0	0	173
13	Ferozepur	0	0	0	0
14	Sangrur	0	0	0	0
15	Barnala	0	0	0	0
16	Bathinda	0	0	0	0
17	Mukatsar	0	0	0	0
18	Faridkot	0	0	0	0
19	Moga	0	0	0	0
20	Mansa	0	0	0	0
	<b>Total:</b>	<b>22792</b>	<b>1880</b>	<b>750</b>	<b>25422</b>

Amount utilized during 2010-11 was Rs. 150.00 lacs.

**Table 4.3 : District wise area covered under water management works in Punjab State up to 2010-11 (Area in hectares)**

<b>Sr. No.</b>	<b>District</b>	<b>Upto 2008-09</b>	<b>During 2009-10</b>	<b>During 2010-11</b>	<b>Total upto 2010-11</b>
1	Fatehgarh Sahib	3269	0	0	<b>3269</b>
2	Hoshiarpur	39136	57	82	<b>39275</b>
3	Gurdaspur	20939	272	936	<b>22147</b>
4	Jalandhar	32315	12	0	<b>32327</b>
5	Nawanshahar	7329	0	10	<b>7339</b>
6	Kapurthala	12887	37	23	<b>12947</b>
7	Amritsar	25807	81	18	<b>25906</b>
8	Tarantaran	1956	0	0	<b>1956</b>
9	Ludhiana	30335	3	0	<b>30338</b>
10	Ropar	24759	0	300	<b>25059</b>
11	Mohali	127	0	0	<b>127</b>
12	Patiala	32711	213	201	<b>33125</b>
13	Ferozepur	41857	400	566	<b>42823</b>
14	Sangrur	30015	753	1722	<b>32490</b>
15	Barnala	876	192	31	<b>1099</b>
16	Bathinda	60361	0	603	<b>60964</b>
17	Mukatsar	12468	1375	1880	<b>15723</b>
18	Faridkot	96950	128	91	<b>97169</b>
19	Moga	4908	61	0	<b>4969</b>
20	Mansa	7588	0	307	<b>7895</b>
	<b>Total:</b>	<b>486593</b>	<b>3584</b>	<b>6770</b>	<b>496947</b>

Amount utilized during 2010-11 was Rs. 1937.37 lacs.

**Table 4.4 : District wise villages covered and cultivators benefited by water management work during 2010-11. (no.s)).**

Sr. No.	District	Water Management		Water Harvesting/Perennial flow/lift Irrigation	
		Cultivators benefited	Villages covered	Cultivators benefited	Villages covered
1	Fatehgarh Sahib	0	0	0	0
2	Hoshiarpur	115	2	725	5
3	Gurdaspur	9035	39	300	5
4	Jalandhar	0	0	0	0
5	Nawanshahar	39	3	0	0
6	Kapurthala	20	6	0	0
7	Amritsar	0	0	0	0
8	Tarantaran	0	0	0	0
9	Ludhiana	0	0	0	0
10	Ropar	336	18	0	0
11	Mohali	56	2	120	1
12	Patiala	760	8	0	0
13	Ferozepur	297	14	0	0
14	Sangrur	418	13	0	0
15	Barnala	7	6	0	0
16	Bathinda	708	40	0	0
17	Mukatsar	1055	43	0	0
18	Faridkot	24	4	0	0
19	Moga	0	0	0	0
20	Mansa	250	35	0	0
	<b>Total:</b>	<b>13120</b>	<b>233</b>	<b>1145</b>	<b>11</b>

**Table 4.5 : District wise progress under Micro Irrigation (Drip & Sprinkler) Scheme on agriculture land upto 2010-11 (Area In hectares.)**

<b>Sr. No.</b>	<b>District</b>	<b>Upto 2008-09</b>	<b>During 2009-10</b>	<b>During 2010-11</b>	<b>Total upto 2010-11</b>
1	Fatehgarh Sahib	150	85	130	<b>365</b>
2	Hoshiarpur	2002	520	425	<b>2947</b>
3	Gurdaspur	818	496	444	<b>1758</b>
4	Jalandhar	674	200	309	<b>1183</b>
5	Nawanshahar	230	119	93	<b>442</b>
6	Kapurthala	250	115	116	<b>481</b>
7	Amritsar	331	249	262	<b>842</b>
8	Tarantaran	130	192	228	<b>550</b>
9	Ludhiana	279	195	359	<b>833</b>
10	Ropar	644	89	158	<b>891</b>
11	Mohali	187	110	135	<b>432</b>
12	Patiala	451	482	272	<b>1205</b>
13	Ferozepur	3108	927	700	<b>4735</b>
14	Sangrur	410	98	123	<b>631</b>
15	Barnala	111	64	85	<b>260</b>
16	Bathinda	731	262	505	<b>1498</b>
17	Mukatsar	959	84	44	<b>1087</b>
18	Faridkot	484	66	179	<b>729</b>
19	Moga	218	68	111	<b>397</b>
20	Mansa	269	107	247	<b>623</b>
	<b>Total:</b>	<b>12436</b>	<b>4528</b>	<b>4925</b>	<b>21889</b>



**Table 4.6: District wise Area covered, villages covered and cultivators benefited under Micro Irrigation (Drip & Sprinkler) scheme during 2010-11.**

<b>Sr. No.</b>	<b>District</b>	<b>Area covered (Hectares.)</b>	<b>Cultivators benefited (Nos.)</b>	<b>Villages covered (Nos.)</b>
1	Fatehgarh Sahib	130	112	101
2	Hoshiarpur	425	332	280
3	Gurdaspur	444	378	150
4	Jalandhar	309	267	180
5	Nawanshahar	93	86	69
6	Kapurthala	116	149	86
7	Amritsar	262	257	80
8	Tarantaran	228	227	64
9	Ludhiana	359	320	207
10	Ropar	158	127	97
11	Mohali	135	118	113
12	Patiala	272	237	213
13	Ferozepur	700	588	65
14	Sangrur	123	114	67
15	Barnala	85	75	43
16	Bathinda	505	638	190
17	Mukatsar	44	31	22
18	Faridkot	179	176	55
19	Moga	111	107	30
20	Mansa	247	238	45
	<b>Total:</b>	<b>4925</b>	<b>4577</b>	<b>2157</b>

Subsidy disbursed during 2010-11 was Rs. 2367.18 lacs (GOI 1172.61 + State 370.43 + NABARD 824.14).

## CHAPTER-V

### TRAINING OF STAFF

In order to improve the technical skill and efficiency of the field staff, the personnel of Soil and Water Conservation Department, Punjab are sent for training at the various Training Centers of Government of India and also to the State Government Training Institute, Mohali. The State Government training institute was established in the year 1965 at Hoshiarpur and upgraded to Divisional level in 1975. It was shifted to Mohali during the year 1995-96. The official staff i.e. Clerks, Assistants, Draftmen, Surveyors, Agricultural Sub Inspectors etc. and farmers are trained at the State Training Institute at Mohali while the gazetted officers get training at the Govt. of India's training centres. Surveyors and Sub Inspectors are imparted 5½ months training and the course covers all practical aspects of Soil and Water Conservation works such as land leveling, construction of open channels, underground pipe line, contour bunding, bench terracing, gully reclamation, water harvesting dams, drainage etc. and are also given practice in the preparation of plan and estimates.

During the year 2010-11, total 139 officers/officials and 702 farmers were trained under different 22 courses at GOI training institutes and departmental training institute, Mohali. 22 officers got training on concept of watershed management regarding NWDPR & IWDP schemes at Hyderabad and Gujrat. 4 Soil Conservation Officer got 5½ month training at Dehradune. 17 officers got training from Mahatma Gandhi state institute Chandigarh regarding capacity building, soft skills, Service quality management and disaster management etc. 19 No. surveyor/ agriculture sub-inspector got training on micro irrigation. 54 draftsmen/junior draftsmen and surveyor/ agriculture sub-inspector got training under refresher course regarding Engineering survey Design planning and Estimates of different Soil & water conservation works. 20 No. clerks/Junior assistants/ senior assistants got training under Refresher course regarding Punjab Civil Services Rules. 3 No. surveyor/ agriculture sub-inspector got training regarding IWDP Schemes. Farmers awareness camps were organized for awareness on micro Irrigation, National Watershed Development Programme for Rain fed Area (NWDPR) and Integrated Wasteland Development Project (IWDP) schemes in which about 702 farmers participated.

## CHAPTER-VI

### SOIL SURVEY

Different kinds of soil according to their physical and chemical properties need different levels of soil and water management practices and different level of inputs for optimum agriculture production. Soil Survey are thus crucial to suggest proper and optimum use of land according to its capability and also for formulation of suitable cropping pattern, proper soil and water management, land development, land reclamation and other management practices.

The purpose of the scheme is to carry out land use survey in the State. The Soil Survey is carried out, problems are investigated and solutions are suggested. The fertility status of the soil is evaluated so that every piece of land is put to the use for which it is best suited in order to get maximum production. In this context, the emphasis is laid on the detailed soil survey of problematic and command area. Soil survey is carried out using village cadastral maps, Toposheets, Aerial Photographs and Land set Imagery as base map to delineate soil boundaries of uniform groups having the same characteristics for similar management practices to work efficiently and profitably.

During the year 2010-11, an area of 1,26,000 hectares was surveyed for preparation & planning of different Soil & water Conservation Schemes of the Department. Semi detailed soil survey in 44406 hectares falling in Nawansher and Saroya blocks of Distt Shaheed Bhagat Singh Nagar, 23046 hectares in Aur Block. 26077 hectares in Block Banga and 32471 hectares in Balachour Block was carried out for micronutrient/fertility status & sampling. In these Villages recommendations were made for Soil Conservation Works & to increase the yield in Agriculture sector.

## CHAPTER-VII

### FINANCES OF DEPARTMENT

Soil Conservation and Water Management works in the State are mostly funded out of the State Budget and GOI schemes. Funds under non-plan schemes are sanctioned for salary & staff contingent needs and Funds under State plan & centrally sponsored schemes are sanctioned for works. In addition to it, some funds are raised and utilized from other Agencies/Departments like line Departments, District Rural Development Agencies, Science and technology department and DC funds etc.

Comparative figures of expenditure incurred in respect of Non-plan, State plan, centrally sponsored schemes and other district level schemes for the last three years are as under:-

		(Rs.)		
S.No.	Item	2008-09	2009-10	2010-11
A.	Non plan	329330695	354288668	383357457
B.	Plan			
	i) State plan	117652950	93539000	147904000
	ii) Centrally Sponsored	112609006	95130000	175089000
	Total plan ( i + ii )	230261956	188669000	322993000
C.	Total (A+B)	<b>559592651</b>	<b>542957668</b>	<b>706350457</b>
D.	<b><u>Other Department's Schems.</u></b> Rural Development Board's, Science and Technology Department, District Rural Development Agencies/DC funds Rashtrya Krishi Vikas Yojna (RKVY) & 12 <sup>th</sup> Finance Commission etc.	114792000	142689000	280208000
	<b>Grand Total(C+D)</b>	<b>674384651</b>	<b>685646668</b>	<b>986558457</b>

**ANNEXURE**

Comparative progress statement of the Annual Administrative Reports for the year 2008-09, 2009-10 & 2010-11

Sr. No.	Item of work	Unit	2008-09	2009-10	2010-11
1	Micro Irrigation (Drip & sprinkler)	Hect.	3209	4528	4925
2	Water use works (UGPL, Water Harvesting structures, tapping of Perennial flow and small lift irrigation schemes.)	Hect.	10845	5464	7520
3	Underground pipe line	Mtr.	187783	128691	177293
4	Watershed Management Works	Hect.	6554	2178	5388
5	Land leveling/Ravine Reclamation/Waste Land Development.	Hect.	4892	8146	6161
6	Soil Survey Works	Hect.	256222	156778	126000
7	Working of bulldozers/ Tractors.	Hours	7036	5783	9911