ਸਲਾਨਾਂ ਪ੍ਰਬੰਧਕੀ ਰਿਪੋਰਟ

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2013-14

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ਭੂਮੀ ਅਤੇ ਜਲ ਸੰਭਾਲ ਵਿਭਾਗ, ਪੰਜਾਬ

Department of Soil & Water Conservation, Punjab

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REVIEW OF THE WORKING OF THE DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB FOR THE YEAR 2013-14

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 cm. annually and has reached a stage where farmers have to deepen their tube wells 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 problems 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 14676.98 lacs were utilized by the Department during the year 2013-14. Rs.10453.75 lacs were utilized under the Non plan, State plan, and Centrally sponsored schemes. Rs.4223.23 lacs were utilized under other District level schemes such as Rashtriya Krishi Vikas Yojna (RKVY) , Integrated Watershed Management Projects (IWDP/IWMP), Reclamation of Ravenous areas & Wetlands,13thFinance Commission, Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS) etc.. Total 33660 hectares area was covered under various land development and water management works in 2946 villages benefiting 105509 farmers.

Under water management works 614.726 km underground pipeline was laid benefiting 17957 hectares owned by 30299 farmers of 690 villages. 2008 hectares were covered under Drip Irrigation scheme benefiting 2000 farmers of 1598 villages.2919 Hectares were covered under Water Harvesting Structures, Tapping of perennial flow and Small Lift Irrigation projects benefiting 12529 farmers of 50 villages. Under Watershed management works, 8572 hectares area was covered in 313 villages owned by 54282 farmers. Under land leveling and waste land development works, 2204 hectares area was covered in 295 villages benefiting 6399 farmers. Thus, the total of 33660 hectares area was covered under Soil Conservation and Water Management works benefiting 105509 farmers of 2946 villages.

Soil survey of detailed and semi detailed nature was conducted in 4, 87,098 hectares during the year 2013-14.

CRITICAL REVIEW OF THE WORKING OF THE DEPARTMENT OF SOIL & WATER CONSERVATION, PUNJAB FOR THE YEAR 2013-14

Taking in to view the depleting ground water and the stress on canal water availability, especially in the 110 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 18 years, About 31596 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 2013-14, Rs. 604.89 lacs were utilized benefiting 2008 hectares area of 2000 farmers in 1598 villages. In addition to it during 2013-14 under State Govt.'s NABARD-RIDF-16 Projects, 25% additional subsidy under Drip/Micro Sprinkler Irrigation System. Rs. 216.16 lac were utilized under this project.

During 2012-13, under NABARD-RIDF-18 "Community Micro Irrigation Project in Kandi-belt of Talwara and Hajipur blocks of District Hoshiarpur" is approved. Under this scheme there is a proposal to cover 658 Hect. of 14 Villages of Hajipur and Talwara blocks falling in Kandi area of Hoshiarpur District. At present, Irrigation water is not available in this area. Under this project the water from nearby kandi canal is to be lifted and carried to farmer's fields through underground pipeline systems and is to be utilized by automate micro irrigation system for agriculture. The Project started by utilizing Rs. 631.58 lac under this Scheme during 2013-14.

A 3-year "Project for Judicious use of available water and Harvesting of rainwater for enhancing irrigation potential in Punjab state" was approved by NABARD during FY 2011-12 under RIDF-17 for providing 90% assistance for Community Underground Pipeline System (UGPS) Projects and 100% assistance on Rainwater Harvesting Structures in Kandi area. During 2013-14 Rs. 3020.59 lac were utilized benefiting 9771 hectares under this scheme.

A new 3-Year "Project for laying of Underground Pipeline for irrigation from Sewage Treatment Plants of various Towns/ Cities (NABARD-RIDF-18)" of Rs. 3157.80 Lac is approved by NABARD during 2012-13. Under this project, treated water from completed/ running savage treatment plants will be provided to nearby fields of the farmers. Under this Scheme there is a proposal to cover 33 cities/ towns falling 14 Districts. During 2013-14, Rs.587.58 lac were utilized under this scheme benefitting 1635 hectares.

A new scheme for assistance on UGPS for promotion of on-farm water conservation was introduced in 2010-11. 50% subsidy is provided to farmers on lying of underground pipe line system (UGPS) from individual tube wells and canal outlets During 2013-14, Rs. 603.07 lac were utilized benefiting 3052 hectares

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 28975 hectares have been brought under life saving irrigation in Kandi area from different types of water management works like water harvesting dams, hill seepage taping projects, small water harvesting structure, lift irrigation schemes and ground water recharging projects.

ANNUAL ADMINISTRATIVE REPORT ON THE WORKING OF THE DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB FOR THE YEAR 2013-14 (1/4/2013-31/3/2014)

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CHAPTER 1

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 . As per need of time, during 2000 the name of the department was changed as “DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB” This is the 45th Annual Report on the working of this department. Dr. Balwinder Singh Sidhu held the charge of Chief Conservator of Soils, Punjab during the year 2013-14.

The Annual Report highlights activities & achievements of the department during the year 2013-14 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 , Gurdaspur and Pathankot districts. Soil erosion due to flash floods and droughts are common features of this zone.

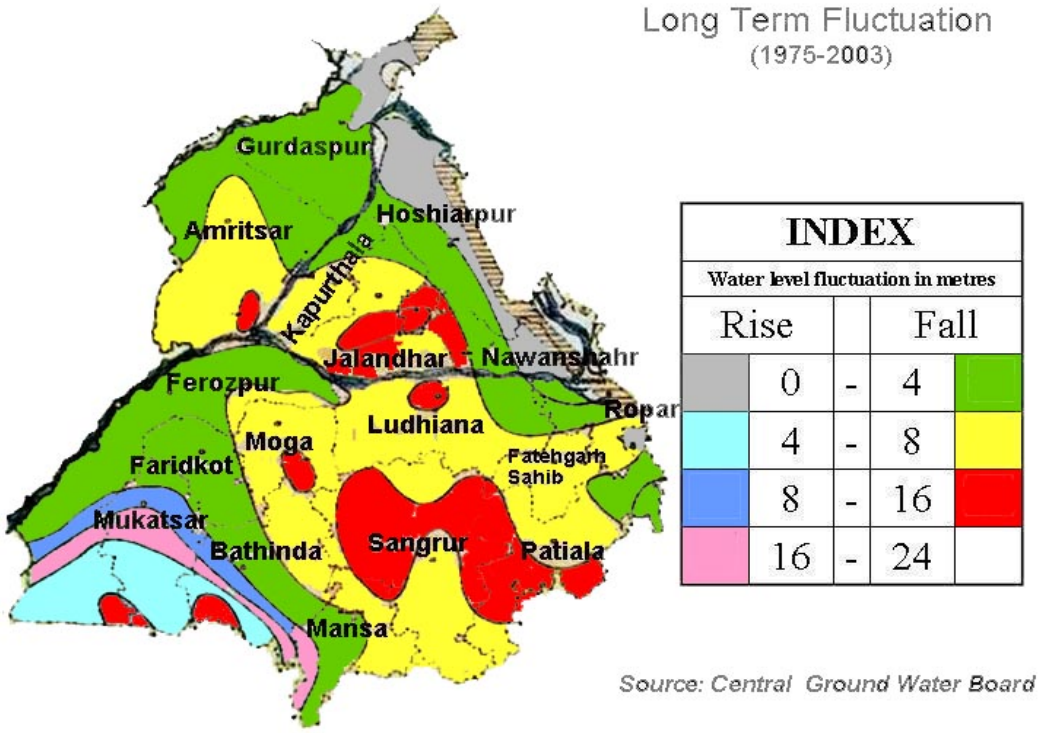
Photograph: Water Scarcity in Kandi area

The following Soil and Water Conservation works are undertaken in this region:

1. In the rainfed areas of Kandi, Centrally Sponsored Watershed management Program scheme of Rural Development Department.
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. Assistance to farmers on laying of Under Ground Pipeline System (UGPS) from Individual tube wells .
6. Water harvesting structures (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, Fathegarh Sahib, Ludhiana, Jalandhar, Nawanshahar, Kapurthala Amritsar and Tarntarn 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.



Photograph: Long Term fluctuation of ground water level in Punjab

In this zone, following works are being undertaken:-

1. Assistance to farmers on laying of Under Ground Pipeline System (UGPS) from Individual tube wells and canal outlets.
2. Micro Irrigation (Drip & Sprinkler Irrigation System).
3. Technical advice to farmers for Modernization of irrigation conveyance system on individual tube wells using underground pipeline system to reduce water losses.
4. To provide treated sewage water of cities for irrigation to farmers through underground pipeline system.

3. **SOUTHERN ZONE**

This comprises Sangrur, Barnala, Bathinda, Mansa, Mukatsar, Moga, Faridkot, Ferozepur and Fazilka districts. In this region, the sub soil water is generally brackish and unfit for irrigation in many pockets. Canal Water is used for Irrigation which was carried to the fields pf the farmers through Under Ground pipeline System because sufficient water is not available at the tail end of the Canals.

Photograph: Salinity problem in South-western districts

In this zone, following works are being undertaken:-

1. To Provide Irrigation Water from Canal Outlet to the fields at tail-ends through community underground pipeline system under Rashtriya Krishi Vikas Yojna (R.K.V.Y.)
2. Assistance to farmers on laying of Under Ground Pipeline System (UGPS) from Individual tube wells and canal outlets
3. Micro Irrigation (Drip & sprinkler).

B Machinery Division:-

The Department has a fleet of 5 bulldozers, 1 Excavator cum Loader, 5 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.

Photograph: A Bulldozer of Machinery division in action

C Soil Survey Division:-

The Soil Survey wing of the Department is engaged in collection of field information of soils, mapping of soils. 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 and also beneficial for other Departments.

D Training Institute

There is Training Institute (with Hostel) at Mohali to impart training to farmers and Technical staff up to the level of Soil Conservation Officers. The courses cover all the practical aspects of Soil & Water Conservation works such as land leveling, Construction of open channels, laying of Under Ground Pipelines, contour bounding, bench terracing, gully reclamation, water harvesting structures, lift irrigation, Field drainage, Drip/Sprinlker Irrigation System and preparation of plan & estimates etc. Approximately 200-300 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. This Board discharge the responsibility 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 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 3 Sub Divisional Soil Conservation Officers(Soil Survey) 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.

Photograph: Building of Soil Conservation Complex Phase-6 Mohali.

Organization chart of the Department for the year 2013-14 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. Laying of underground pipe line for irrigation on tube wells/canal outlet.
2. Promotion of Sprinkler/Drip irrigation system.
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. Tapping of treated sullage water for irrigation.
8. To contribute in Departmental and Farmer's works through departmental Machinery.
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

Centrally Sponsored Schemes

(1) 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% extra Subsidy has been allowed by GOI for small and marginal farmers from 2011-12. The subsidy is provided by the GOI & State Govt. in 80:20 ratio. During 2013-14 Rs. 604.89 lacs(GOI Rs. 591.15lac+State Rs. 13.74 lac) were utilized for providing assistance on an area of 2008 hectares in all districts of the state.

Photograph: Drip irrigation system

(2) 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.100% assistance is given for community works by GOI . At present such Project is ongoing in Gurdaspur district only. During 2013-14 GOI released Rs. 99.00 lac under this scheme but Treasury passed bills of T.A and Offices expenses amounting Rs. 6.60 lac only.

Photograph: Reclamation of Ravine area under TDET

State Plan Schemes

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

RIDF (NABARD) Project of 3 *years* duration for Promotion of Micro Irrigation (Drip & Sprinkler) in Punjab was sanctioned during 2011-12. 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 with a ceiling of Rs. 1.00 lakh on Water Storage Tanks is also provided in canal command areas.. During 2013-14 Rs 216.16 Lac were utilized under this Scheme.

Photograph: Mini Sprinkler Irrigation System

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

This is new scheme. 50% subsidy, with maximum limit of Rs. 22000 per hectare, 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. During 2013-14, Rs 603.07Lac was utilized benefiting 3052 Hect.

Photograph: A UGPS in operation on farmer's fields

(5) Project for judicious use of available water and harvesting of rain water for enhancing irrigation potential in Punjab state (NABARD-RIDF-17)

A new 3-year "Project for Judicious use of available water and Harvesting of rainwater for enhancing irrigation potential in Punjab state" has been approved by NABARD during 2011-12 under RIDF-17 for 90% assistance for Community Underground Pipeline System (UGPS) Projects in 10 districts and 100% assistance on Rainwater Harvesting Structures in Kandi area. During 2013-14, Rs 3020.59 Lac was utilized benefiting 9771 Hect.

(6) Community Micro Irrigation Project in Kandi-belt of Talwara and Hajipur blocks of District Hoshiarpur (NABARD-RIDF-18)

This is a new plan Scheme. During 2012-13, under NABARD approved project, there is a proposal to cover 658 Hect. of 14 Villages of Hajipur and Talwara blocks falling in Kandi area of Hoshiarpur District. At present, Irrigation water is not available in this area. Under this project the water from nearby kandi canal is to be lifted and carried to farmer's fields through underground pipeline systems and is to be utilized by automation micro irrigation system for agriculture. During 2013-14, the project started by utilizing Rs. 631.58 lac.

(7) Project for laying of Underground Pipeline for irrigation from Sewage Treatment Plants of various Towns/ Cities (NABARD-RIDF-18)

This is a new scheme. During 2012-13,Project of Rs. 3157.80 Lac is approved by NABARD under which 95% is loan from NABARD to State Govt. & 5% is State Share. Under this project, treated water from completed/ running savage treatment plants will be provided to nearby fields of the farmers. Under this Scheme there is a proposal to cover 33 cities/ towns falling in 14 districts. During 2013-14, Rs 587.58 Lac was utilized benefiting 1635 Hect.

(8) Provision for Machinery Division at Head Quarter

This scheme was started in the year 1990-91.At present this division has 5 Bulldozers, 1 Excavator-cum-loader, 5 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.This Machinery division works under control of a Divisional Soil Conservation Officer. During 2013-14 only Rs. 0.73 Lac was released by the Treasury. However Machinery division earned Rs. 15.18 lac as revenue and deposited in the State Revenue head. During 2013-14 about 5127 hectares area is developed with this machinery.

Photograph: A Laser Leveler of Machinery division

(9) 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 2013-14, only Rs.0.14 lac was utilized under this Scheme.

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. Under this scheme for community under ground pipeline system GOI assistance is 90% and balance 10% is borne by the farmers in cash/labor form For reclamation of degraded soil GOI assistance is 100%. During 2013-14, Rs. 1816.44 lacs were utilized under this scheme benefiting 6566 hectares.

In addition to it, a scheme of 50% subsidy on individual pipe line system is started during 2013-14 under Crop diversification Plan. During 2013-14, Rs. 500.00 lac was released by Agriculture department under this Scheme out of which Rs. 460.00 lac was utilized benefitting 1027 hect.

Photograph: A Community UGPS Canal Lift Project

Integrated Wasteland Development Project (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 1070.87 lacs were utilized under this scheme benefiting 6680 hectares during 2013-14.

Photograph: Entry Point Activity under IWMP

Scheme for utilizing treated Sullage Water of cities/ 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. 38.26 lacs were utilized on laying under ground pipe line from STP Anandpur Sahib and Nangal project benefiting 652 hect.during 2013-14.

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 8 projects during financial year 2013-14.

Photograph: Utilizing SewageTreated water for Irrigation

Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS)

This Central Government scheme is implemented on district level for which Funds are provided by concerned Deputy Commissioner. During 2013-14, it is being implemented in Gurdaspur, Jalandhar & Hoshiarpur districts. The major works carried out under this scheme are renovation of ponds, repair of water harvesting structures, land protection works, underground pipeline system & other soil moisture conservation activities. Rs.31.56 lacs were utilized benefiting 100 Hect. under this scheme during 2012-13.

Photograph:Development works under MNREGS

MAJOR ACHIEVEMENTS DURING 2013-14

During the year under report a sum of Rs. 14676.98 lac has been utilized on covering an area of 33660 hectares under various soil conservation and water management works. Rs. 4782.41 lacs were utilized under Non Plan, Rs.5671.34 lacs were utilized under State Plan and Centrally Sponsored Schemes. Rs.4223.23 lacs were utilized under other district level schemes i.e. Rashtriya Krishi Vikas Yojna (RKVY), Integrated Waste Land Development Projects (IWDP/IWMP), Reclamation of Ravenous & Wetland,13thFinance commission & MNREGS etc..

Under Water management works, laying of underground pipe line was carried out to a length of 614.726 kms benefiting an area of 17957 hectares owned by 30299 farmers of 690 villages. 2008 hectares were covered under Micro Irrigation Scheme benefiting 2000 farmers of 1598 villages. 2919 hectares were covered under water harvesting structures, tapping of perennial flow and small lift irrigation projects benefiting 12529 farmers of 50 villages. 8572 hect. were covered under Water management works benefiting 54282 farmers of 313 villages. 2204 hectares were covered under land leveling and wasteland development works benefiting 6399 farmers of 295 villages . Thus, total 33660 hectares area was covered under various Soil Conservation and water management works in 2946 villages benefiting 105509 farmers.

In addition to it, an area of 4,87,098 hectares in different districts of state was covered under detailed/ semi-detailed survey.

A fleet of 5 bulldozers, 1 excavator-cum-loader, 5 tractors, 1 trencher & 6 laser leveler are engaged in land development works for 4610 hours during this period. During 2013-14, Rs.0.73 lac was utilized under the scheme “SWC-6 Machinery Division at Head Quarter” Machinery division earned Rs. 15.18 lacs from different soil conservation works which were deposited in the treasury. About 5127 hectares area was covered under land development works during 2013-14.

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, Construction of open channels, laying of Underground pipe line, contour bounding, bench terracing, gully reclamation, water harvesting structures, Lift Irrigation, Field drainage, Drip/ Sprinkler Irrigation & preparation of plan & estimates etc. 256 officers/officials and 59 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,
- √ Conservation of irrigation water.
- √ Increase in yield / production
- √ Farm land saving.
- √ Saving of Labor;
- √ Power Saving.
- √ Increase in Land value.
- √ Rain Water storage.
- √ Ground water recharge.
- √ Control of salt-accumulation and Erosion Control.
- √ 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

WATER MANAGEMENT WORKS

The prosperity of the State depends upon the development of Agriculture through extension of irrigation facilities. At present 70%area is affected by depleting water table and water level is declining @50cm. Out of 141Blocks110Blocks have been declared Dark Blocks due to extraction of more water than recharging. 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 2013-14 an area of 22884 hectares was covered under water management works by benefiting 44828 farmers of 2338 villages of the state. During the year under report, laying of underground pipe line was carried out to a length of 614.726 kms benefiting an area of 17957 hectares owned by 30299 farmers of 690 villages of the State. On individual UGPS projects 50% and on community UGPS projects 90% subsidy is provided. In addition, 2008 hectares was covered under Micro Irrigation (Drip & Sprinkler) benefiting 2000 farmers of 1598 villages. 2919 hectares were brought under additional irrigation by constructing/renovating water harvesting structures, tapping of perennial flow and small lift irrigation projects by benefiting 12529 farmers of 50 villages

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

Table 3.1: District wise area covered under water management works in Punjab State up to 2013-14

(Area in hectares)

Sr. No.	District	Up to 2011-12	During 2012-13	During 2013-14	Total up to 2013-14
1	**Ropar**	25059	2139	422	**27620**
2	**Mohali**	127	109	118	**354**
3	**Nawanshahar**	7417	438	177	**8032**
4	**Patiala**	34066	1004	921	**35991**
5	**Fatehgarh Sahib**	3269	215	112	**3596**
6	**Hoshiarpur**	39325	812	1136	**41273**
7	**Sangrur**	38961	4504	2755	**46220**
8	**Barnala**	1641	1375	643	**3659**
9	**Gurdaspur**	23665	243	249	**24157**
10	**Pathankot**	137	366	144	**647**
11	**Jalandhar**	32327	227	330	**32884**
12	**Kapurthala**	12959	226	797	**13982**
13	**Amritsar**	25906	158	178	**26242**
14	**Taran Taran**	2056	175	138	**2369**
15	**Ludhiana**	30345	290	528	**31163**
16	**Ferozepur**	42999	249	226	**43474**
17	**Fazilka**	330	895	666	**1891**
18	**Faridkot**	97445	993	2868	**101306**
19	**Moga**	6010	1008	536	**7554**
20	**Mukatsar**	18637	3295	2791	**24723**
21	**Bathinda**	61124	389	724	**62237**
22	**Mansa**	8567	1752	1498	**11817**
	Total	**512372**	**20862**	**17957**	**551191**

Table 3.2: District wise progress of underground pipe line laid in the Punjab State upto 2013-14

(Length kilometres)

Sr. No.	District	Upto 2011-12	During 2012-13	During 2013-14	Total up to 2013-14
1	**Ropar**	1111.163	26.724	11.63	**1149.517**
2	**Mohali**	10.67	13.319	1.099	**25.088**
3	**Nawanshahar**	347.567	28.7	10.673	**386.94**
4	**Patiala**	1703.157	47.937	41.03	**1792.124**
5	**Fatehgarh Sahib**	239.093	14.183	1.71	**254.986**
6	**Hoshiarpur**	1831.002	46.32	31.117	**1908.439**
7	**Sangrur**	1366.321	96.51	33.26	**1496.091**
8	**Barnala**	55.871	29.74	12.64	**98.251**
9	**Gurdaspur**	995.675	6.33	9.82	**1011.825**
10	**Pathankot**	0	5.3	5.965	**11.265**
11	**Jalandhar**	1629.486	4.78	15.355	**1649.621**
12	**Kapurthala**	577.015	5.08	84.87	**666.965**
13	**Amritsar**	1280.821	3	17.156	**1300.977**
14	**Taran Taran**	124.94	2.14	19.028	**146.108**
15	**Ludhiana**	1597.052	28.51	64.298	**1689.86**
16	**Ferozepur**	1218.772	16.699	5.495	**1240.966**
17	**Fazilka**	0	76.434	37.392	**113.826**
18	**Faridkot**	467.051	24.03	46.102	**537.183**
19	**Moga**	264.836	28.472	11.37	**304.678**
20	**Mukatsar**	881.801	166.456	117.184	**1165.441**
21	**Bathinda**	632.78	15.808	24.345	**672.933**
22	**Mansa**	725.469	16.155	13.187	**754.811**
	Total	**17060.542**	**702.627**	**614.726**	**18377.895**

Table 3.3 : District wise progress under Drip and Sprinkler irrigation System up to 2013-14

(Area In hectares.)

Sr. No.	District	Up to 2011-12	During 2012-13	During 2013-14	Total up to 2013-14
1	**Ropar**	1047	89	47	**1183**
2	**Mohali**	592	107	40	**739**
3	**Nawanshahar**	533	38	46	**617**
4	**Patiala**	1476	222	105	**1803**
5	**Fatehgarh Sahib**	473	46	30	**549**
6	**Hoshiarpur**	3389	238	324	**3951**
7	**Sangrur**	841	164	105	**1110**
8	**Barnala**	385	56	79	**520**
9	**Gurdaspur**	2193	144	108	**2445**
10	**Pathankot**	71	96	71	**238**
11	**Jalandhar**	1585	219	134	**1938**
12	**Kapurthala**	565	63	30	**658**
13	**Amritsar**	1142	149	141	**1432**
14	**Taran Taran**	687	157	127	**971**
15	**Ludhiana**	1130	163	133	**1426**
16	**Ferozepur**	4934	60	11	**5005**
17	**Fazilka**	455	249	110	**814**
18	**Faridkot**	975	44	25	**1044**
19	**Moga**	505	52	41	**598**
20	**Mukatsar**	1111	40	36	**1187**
21	**Bathinda**	1886	212	175	**2273**
22	**Mansa**	823	182	90	**1095**
	Total	**26798**	**2790**	**2008**	**31596**

Table 3.4: District wise Area covered, villages covered and cultivators benefited under Micro Drip & Sprinkler irrigation system during 2013-14.

Sr. No.	District	Area covered (Hectares.)	Cultivators benefited (Nos.)	Villages covered (Nos.)
1	**Ropar**	47	43	43
2	**Mohali**	40	40	40
3	**Nawanshahar**	46	41	34
4	**Patiala**	105	145	95
5	**Fatehgarh Sahib**	30	27	18
6	**Hoshiarpur**	324	287	240
7	**Sangrur**	105	100	79
8	**Barnala**	79	76	55
9	**Gurdaspur**	108	108	92
10	**Pathankot**	71	71	60
11	**Jalandhar**	134	128	113
12	**Kapurthala**	30	28	22
13	**Amritsar**	141	135	140
14	**Taran Taran**	127	127	127
15	**Ludhiana**	133	128	103
16	**Ferozepur**	11	13	9
17	**Fazilka**	110	118	45
18	**Faridkot**	25	19	14
19	**Moga**	41	39	35
20	**Mukatsar**	36	27	10
21	**Bathinda**	175	205	149
22	**Mansa**	90	95	75
	Total	**2008**	**2000**	**1598**

Table 3.5: District wise progress of Water Harvesting/ Makowal type/Lift Irrigation works up to 2013-14

(Area in Hectares).

Sr. No.	District	Upto 2011-12	During 2012-13	During 2013-14	Total upto 2013-14
1	**Ropar**	8089	1191	694	**9974**
2	**Mohali**	1617	100		**1717**
3	**Nawanshahar**	551			**551**
4	**Patiala**	173			**173**
5	**Fatehgarh Sahib**	0			**0**
6	**Hoshiarpur**	9354	944	355	**10653**
7	**Sangrur**	0			**0**
8	**Barnala**	0			**0**
9	**Gurdaspur**	6443		1200	**7643**
10	**Pathankot**	225	288	670	**1183**
11	**Jalandhar**	0			**0**
12	**Kapurthala**	0			**0**
13	**Amritsar**	0			**0**
14	**Taran Taran**	0			**0**
15	**Ludhiana**	0			**0**
16	**Ferozepur**	0			**0**
17	**Fazilka**	0			**0**
18	**Faridkot**	0			**0**
19	**Moga**	0			**0**
20	**Mukatsar**	0			**0**
21	**Bathinda**	0			**0**
22	**Mansa**	0			**0**
	Total	**26452**	**2523**	**2919**	**31894**

Table 3.6: District wise villages covered and cultivators benefited by Water management works during 2013-14

(in numbers).

Sr. No.	District	Water Management		Water Harvesting/Perennial flow/lift Irrigation	
		Cultivators benefited	Villages covered	Cultivators benefited	Villages covered
1	**Ropar**	462	7	222	4
2	**Mohali**	16	4		
3	**Nawanshahar**	33	19		
4	**Patiala**	631	7		
5	**Fatehgarh Sahib**				
6	**Hoshiarpur**	1375	65	1195	15
7	**Sangrur**	1105	14		
8	**Barnala**	1255	4		
9	**Gurdaspur**	49	45	10832	14
10	**Pathankot**	18	12	280	17
11	**Jalandhar**	127	38		
12	**Kapurthala**	264	27		
13	**Amritsar**	127	65		
14	**Taran Taran**	116	31		
15	**Ludhiana**	81	40		
16	**Ferozepur**	65	19		
17	**Fazilka**	19573	27		
18	**Faridkot**	451	20		
19	**Moga**	34	75		
20	**Mukatsar**	1620	109		
21	**Bathinda**	2115	41		
22	**Mansa**	782	21		
	Total	**30299**	**690**	**12529**	**50**

CHAPTER-IV

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, Pathankot, Ropar, Mohali and Nawanshahr districts. 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 8572 hectares were covered benefiting 54282 cultivators of 313 villages and under land development works 2204 hectares were covered benefiting 6399 cultivators of 295 villages.

District-wise progress of the soil erosion control works executed by the department in the Punjab state during 2013-14 has been given in the following tables:-

TABLE 4.1- District wise progress of soil erosion control and watershed management works on agricultural land upto 2013-14

(Area in hectares).

Sr. No.	District	Upto 2011-12	During 2012-13	During 2013-14	Total upto 2013-14
1	**Ropar**	22882	178	971	**24031**
2	**Mohali**	5762	0	666	**6428**
3	**Nawanshahar**	2394	3	880	**3277**
4	**Patiala**	4060	0		**4060**
5	**Fatehgarh Sahib**	0	0		**0**
6	**Hoshiarpur**	44244	8888	5856	**58988**
7	**Sangrur**	0	0	199	**199**
8	**Barnala**	0	0		**0**
9	**Gurdaspur**	1045	0		**1045**
10	**Pathankot**	12584	190		**12774**
11	**Jalandhar**	97	0		**97**
12	**Kapurthala**	191	0		**191**
13	**Amritsar**	2	0		**2**
14	**Taran Taran**	0	0		**0**
15	**Ludhiana**	0	0		**0**
16	**Ferozepur**	0	0		**0**
17	**Fazilka**	0	0		**0**
18	**Faridkot**	0	0		**0**
19	**Moga**	0	0		**0**
20	**Mukatsar**	0	0		**0**
21	**Bathinda**	0	0		**0**
22	**Mansa**	0	0		**0**
	Total	**93261**	**9259**	**8572**	**111092**

TABLE 4.2: District wise progress of Land leveling/Ravine reclamation/ Wasteland Development works done upto 2013-14

(Area in Hectares)

Sr. No.	District	Upto 2011-12	During 2012-13	During 2013-14	Total upto 2013-14
1	**Ropar**	12010	360	345	**12715**
2	**Mohali**	3499	6569		**10068**
3	**Nawanshahar**	7224	2359		**9583**
4	**Patiala**	5780	0		**5780**
5	**Fatehgarh Sahib**	6	0		**6**
6	**Hoshiarpur**	20671	0		**20671**
7	**Sangrur**	5212	169		**5381**
8	**Barnala**	0	0		**0**
9	**Gurdaspur**	20962	0	240	**21202**
10	**Pathankot**	2810	34	830	**3674**
11	**Jalandhar**	5792	0	143	**5935**
12	**Kapurthala**	6855	0		**6855**
13	**Amritsar**	13097	0	30	**13127**
14	**Taran Taran**	1022	100		**1122**
15	**Ludhiana**	6592	0	479	**7071**
16	**Ferozepur**	25840	0		**25840**
17	**Fazilka**	190	0		**190**
18	**Faridkot**	13723	0	137	**13860**
19	**Moga**	137	0		**137**
20	**Mukatsar**	1344	0		**1344**
21	**Bathinda**	7868	0		**7868**
22	**Mansa**	295	0		**295**
	Total	**160929**	**9591**	**2204**	**172724**

Table 4.3: District wise villages covered and cultivators benefited from the land development and watershed management works during 2013-14

(in numbers).

Sr. No.	District	Land Development		Watershed Management	
		Cultivators benefited	Villages covered	Cultivators benefited	Villages covered
1	**Ropar**	60	4	5376	33
2	**Mohali**			18644	39
3	**Nawanshahar**			2989	25
4	**Patiala**				
5	**Fatehgarh Sahib**				
6	**Hoshiarpur**			27074	212
7	**Sangrur**			199	4
8	**Barnala**				
9	**Gurdaspur**	406	16		
10	**Pathankot**	5191	60		
11	**Jalandhar**	206	37		
12	**Kapurthala**				
13	**Amritsar**				
14	**Taran Taran**				
15	**Ludhiana**	399	149		
16	**Ferozepur**				
17	**Fazilka**				
18	**Faridkot**	137	29		
19	**Moga**				
20	**Mukatsar**				
21	**Bathinda**				
22	**Mansa**				
	Total	**6399**	**295**	**54282**	**313**

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, Draftsmen, Surveyors, Agricultural Sub Inspectors etc. and farmers are trained at the State Training Institute at Mohali while the gazetted officers,Soil Conservation Officers and Junior Engineers get training at the Govt. of India's training centers. 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 structures, lift irrigation, Field drainage, Drip/sprinkler irrigation and preparation of plan and estimates etc..During the year 2013-14, total 256 officers/officials and 59 farmers were trained under different courses at GOI training institutes and departmental training institute, Mohali.

24 surveyors/ agriculture sub-inspectors were trained under $5^{1/2}$ Months regular sub-assistant course at departmental training Institute Mohali. 59 farmers of villages Tundewal and Pujewal of Nawansher district were trained regarding Self Help groups under IWMP-I & II Schemes.

18 officers got training at Hyderabad on various subjects. 12 officers got training at Jaipur on different subjects. 2 officers got training at Triputi (Andhra Pradesh) regarding e-governess. 4 officers got training at Raipur (Chhattisgarh) regarding Rain water Harvesting and artificial Recharging. 18 officers got training at Central Soil & Water Conservation Research and Training Institute, Sectot-27A,Chandigarh regarding IWMP. 4 officers got training at Central Ground Water Board Sector 27-A Chandigarh regarding Underground Water Management. 1 officer got training at vikas Bhawan Mohali regarding IWMP. 66 officers got training form PAU Ludhiana on different subjects. 107 Officers/officials got training form Mahatma Gandhi State Institute of Public Administration Chandigarh on different Subjects.

Photograph:Training of Staff.

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 2013-14, an area of 4,87,098 hectares was surveyed for planning of different Soil & water Conservation Schemes of the Department. For preparing various Departmental Schemes, Semi detailed survey of 4, 86,363 Hect. in block Patra, Sanour, Samana, Bhunarhari, Nabha & Patiala of Patiala district & detailed Survey of 735 Hect. in Kandi Belt of Talwara & Hajipur blocks of Hoshiarpur district was carried out. With the help of GPS and GIS techniques Maps regarding Type of Soil, Land Use, Land capability classification, Soil Resources, fertility (Macro/Micro) Crop suitability were prepared.

Photograph: Departmental officers/ officials engaged in Soil Survey

CHAPTER-VII

FINANCES OF DEPARTMENT

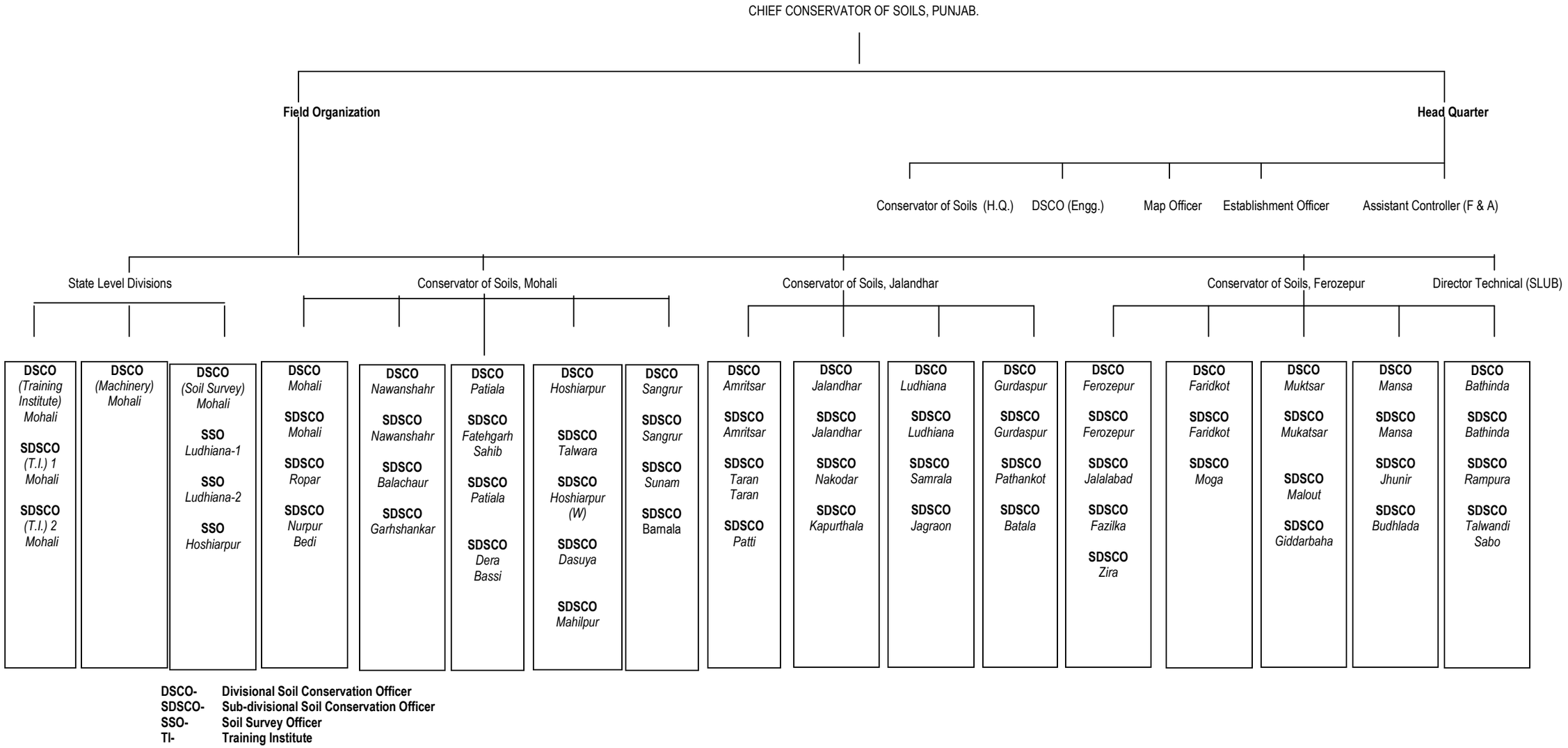
Soil Conservation and Water Management works in the State are mostly funded out of the State Budget and GOI schemes. Funds under non-plan schemes are sanctioned for salary & staff contingent needs and Funds under State plan & centrally sponsored schemes are sanctioned for works. In addition to it, some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

S. No.	Item		2011-12	2012-13	2013-14
A.	Non plan		4594.27	4538.56	4782.41
B.	Plan				
	i)	State plan	402.96	5460.23	5073.59
	ii)	Centrally Sponsored	1597.83	748.16	597.75
	Total plan (i + ii)		2000.79	6208.39	5671.34
C.	Total (A+B)		**6595.06**	**10746.95**	**10453.75**
D.	**Other Department's Schems.** Rural Development Board's, Science and Technology Department, District Rural Development Agencies/IWMP,DC funds Rashtrya Krishi Vikas Yojna (RKVY) & $12^{th/}13^{th}$ Finance Commission etc.		6354.28	4445.16	4223.23
	Grand Total(C+D)		**12949.34**	**15192.11**	**14676.98**

DEPARTMENT's ORGANIZATION STRUCTURE



DSCO- **Divisional Soil Conservation Officer**
SDSCO- **Sub-divisional Soil Conservation Officer**
SSO- **Soil Survey Officer**
TI- **Training Institute**

ANNEXURE `B`

Comparative progress statement of the Annual Administrative Reports for the year 2011-12, 2012-13 & 2013-14

Sr. No.	Item of work	Unit	2011-12	2012-13	2013-14
1	Water use works (UGPL, Water Harvesting structures, tapping of Perennial flow and small lift irrigation schemes.)	Hect.	16455	23385	20876
2	Underground pipe line	Mtr.	488235	702627	614726
3	Micro Irrigation (Drip & sprinkler)	Hect.	4909	2790	2008
4	Watershed Management Works	Hect.	1500	9259	8572
5	Land leveling/Ravine Reclamation/Waste Land Development.	Hect.	14217	9591	2204
6	Working of bulldozers/ Tractors.	Hours	7259	2294	4610
7	Soil Survey Works	Hect.	109300	114200	487098