

GOVT. OF HIMACHAL PRADESH
FOREST DEPARTMENT



WORKING PLAN FOR THE FORESTS
OF

RAMPUR FOREST DIVISION

(2013-2014 TO 2027-2028)

VOLUME-I

BY

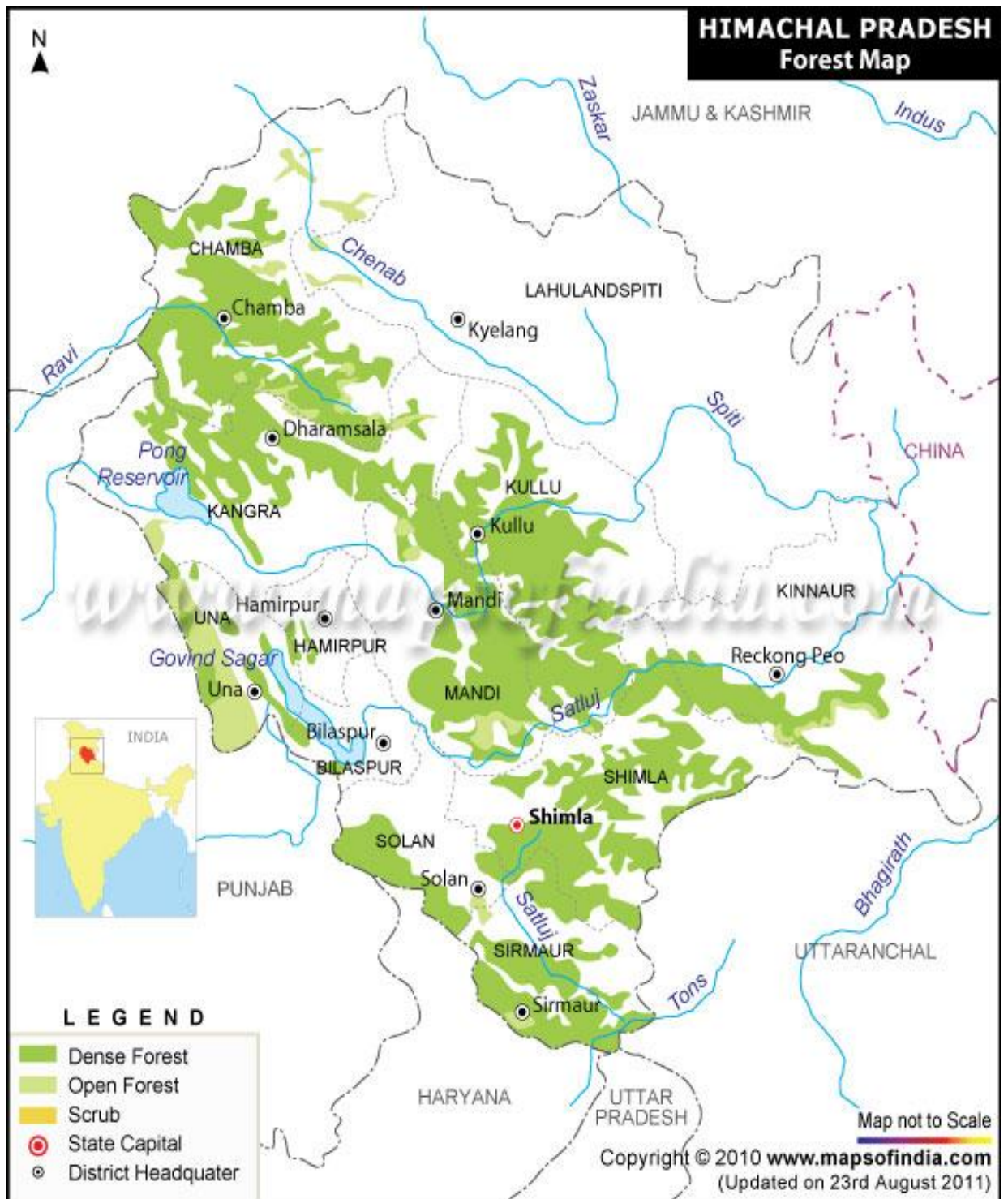
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W.P.O - CUM -D.F.O. RAMPUR

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INTRODUCTION

This working plan is revision of Sh. R.K. Kapoor's Plan (1993-94 to 2007-08) and includes the area covered under the plan except for the forests of Daranghati Wild Life Sanctuary transferred to Wild Life Division Sarahan. Mr. Bansi Lal Negi, IFS was posted as DFO (T) Rampur Forest Division Rampur in the month of January, 2012 and had been assigned with additional work of working plan of Rampur Forest Division. Field works started in April, 2012 and the field work and preparation of working plan was completed in December, 2012.

The preliminary working plan report was written by Sh. Rajesh J. Ekka, IFS, the then Conservator of Forests, Rampur and was approved by the Addl. Pr. CCF (Central) Sh. S.K. Sehrawat, IFS vide letter No. 13-7 (1)/97-ROC/1678 dated 28-2-2012.

I have gone through the present working plan prepared/written by Mr. Negi. The working plan contains few new chapters in terms of the National Working Plan Code, Govt. of India, MOEF, June, 2004. Mr. Negi has emphasized in the present plan on sustainable conservation of forests and many changes have been made in this plan based on silvicultural requirement and betterment of forest & wild life in terms of the Hon'ble Supreme Court's order dated 12-12-1996 and 8-1-2001. The present working plan has been revised thoroughly notwithstanding the present moratorium on green felling, the revised working plan includes all regular working circles, prescribing yield and felling cycle/felling series depending on the condition of forests in each working circles. This green felling in any forest or in public forest will be allowed/carried out strictly in accordance with the approved prescription of working plan subject to the decision of the Hon'ble Supreme Court against the H.P. Govt. affidavit filed in the Apex Court on 21-2-1997 and an affidavit filed in pursuant to the order dated 14-2-2000 which is pending adjudication before the Hon'ble court. The Hon'ble High court held that there shall be no felling of any tree in any forest area in the State of Himachal Pradesh whether private or State Forest except in accordance with the orders passed by the Apex Court. However in respect of felling of trees in private forests in State of H.P, the Apex Court order dated 8-5-2009 held that felling of trees from the forest area approved for non-forestry use under Section 2 of the Forest (Conservation) Act, 1980 may continue to be permissible. Felling of trees in non-forest area should be strictly regulated as per the provisions of the H.P. Land Preservation Act, 1978. Accordingly felling of trees in private forest areas is being allowed strictly in compliance of the Apex Court's order dated 8-5-2009 and vide H.P. Govt. Notification dated 19-2-2011.

Even though no felling have been prescribed in Ban Oak forest areas, in accordance with the State Government policy, a separate working circle has been constituted to focus on the need of special attention to the management and conservation aspects of the species. A separate mandatory working circles i.e. Plantation, NTFP, Forest Protection (Fire, illicit felling, encroachment, illegal mining and poaching etc.), and Joint Forest Management & Wild Life Management overlapping working circles have also been constituted in first time and discussed in length with prescription of legal control mechanism which would be very useful as reference. The chapter on NTFP gives an exhaustive list of the useful medicinal plants along with their uses, which would be very useful as reference. Similarly the new chapter on Five Year Plans & Activities of Forest Development Corporation in harvesting and marketing of forest produce, result of socio-economic survey too are in detailed form. Special mention is to be made of the noteworthy work done to legal control mechanism in the present working plan, which is the first study of its kind in Himachal Pradesh.

The survey sheet number, forest type, density etc. of every forest/compartment has been mentioned in the Appendix on Area statement to facilitate their location and provide easy access to information. Great efforts has gone into collection of data on human & cattle population, T.D. distribution, NTFP as well as land use classification i.e. recognized sub-division of forest area data.

The working plan officer and his staff deserve all appreciation for completing the revision of the plan in shortest time, despite many constraints. The revised working plan has been prepared for a period of 15 years commencing from 1-4-2013 to 31-3-2028. The working plan under revision expired on 31-3-2008. As there were practically no silvicultural fellings done during the last plan period and other prescriptions too were not particularly followed, there is no problem in making the plan operative prospectively.

Mr. Negi & his staff worked very hard on the preparation of this working plan in shortest time without support of additional working plan staff and other resources and deserve all appreciation for the same.

It is expected that the information provided and the prescriptions suggested in the plan would be very useful in deciding the management of forest practices in future.

Dated:-

(Tejinder Singh), IFS

Addl. Pr. CCF Working Plan &
Settlement, Mandi, H.P.

PREFACE

This Working Plan is revision of Sh. R.K. Kapoor's Plan (1993-94 to 2007-08) as per the National Working Plan Code, GOI, June, 2004 and includes the area covered under the plan except for the forests of Daranghati Wild Life Sanctuary transferred to Wild Life Division, Sarahan. I was assigned additional work of working plan of Rampur Forest Division when I was posted DFO (T) Rampur Forest Division again in January, 2012. However, field work and preparation of working plan was started during January, 2012 and completed in December, 2012.

The Preliminary Working Plan report was written by Sh. Rajesh J. Ekka, IFS, the then Conservator of Forests, Rampur and was approved by the Addl. Pr. C.C.F. (Central) Sh. S.K. Sehrawat, IFS vide letter No. 13-7 (1)/97-ROC/1678 dated 28-2-2012.

The preparation of the revised working plan for Rampur Forest Division has been a great learning experience for the undersigned. It has been a great team effort, labourious and difficult nature which was impossible to be completed without sincere efforts made by the staff in the field as well as in the office as mandate given by the Pr. CCF H.P. Shimla. I owe my indebtedness to the my field staff who extended a whole hearted co-operation and help during field works, valuable suggestions for the preparation & final completion of this working plan.

Special thanks are due to the Pr. CCF H.P. Sh. R.K. Gupta, IFS, Sh. S.B. Islam, IFS Pr. CCF Wild Life H.P and Addl. Pr. CCF, Working Plan & Settlement, H.P. Sh. Tejinder Singh, IFS, for their constant guidance, encouragement and help during the preparation of this working plan.

The revised working plan has been prepared for a period of 15 years, commencing from 1-4-2013 to 31-3-2028. The working plan under revision expired on 31-3-2008. As there was practically no silviculture fellings during the last plan period in terms of the Hon'ble Supreme Court order dated 12-12-1996, there is no problem in making the plan operative prospectively. In my recommendation I have kept one axiom contently in view _____ the long term survival and betterment of forest and wild life and at the same time the safeguarding of the interests of the forest dependent populace. Unless the forest service's become more specialized and professional and receive political infrastructural and financial support, they will neither be able to meet the need of the forests nor of the civil society.

The working plan had the benefit of being supervised by many superior officers of the rank of CF/CCF and Addl. Pr. CCF, owing to the frequent changes at these levels in the working plan set up. I am highly indebted to Sh. C.B. Pandey, IFS, CCF (T) Rampur, Sh.

O.P. Solanki, IFS, Sh. V.P. Gupta, IFS, C.F. (Working Plan) and Sh. C.M. Sharma (Retd. DFO) who were instrumental in providing the necessary guidance to the undersigned. The plan owes its present form due to the generous technical support provided by Sh. S.S. Negi, IFS, Sh. C.M. Sharma (Retd. DFO) and Sh. O.P. Solanki, IFS, the then C.F. Working Plan, Solan also who enriched us with their valuable advise and help, especially during field work etc.

I would like to acknowledge the valuable contribution rendered by all the staff of the Rampur Forest Division, ably led first by Sh. D.R. Kashyap, DFO (Hqr.) Rampur, Sh. L.R. Harnot, ACF Rampur, Sh. Hardev Negi, F.R., Sh. Ved Prakash Gautam, FR, Sh. Devi Dass, Deputy Ranger, Sh. Roshan Lal, Deputy Ranger and Sh. Ranbir Singh, Kanungo. Thanks are due to all the field staff and ministerial staff of Rampur Forest Division, Rampur for their sincere and unqualified support in the preparation of the working plan.

Finally, I am thankful to Sh. Ashok Kumar and Miss Sangita Kumari who have co-operated in typing this working plan in a nice manner in the shortest possible time. Once again I acknowledge my debt to Sh. Tejinder Singh, IFS for bestowing on me the sheer honour of working under his able guidance.

Place: - Rampur

Dated 5th February, 2013.

Bansi Lal Negi, IFS
Divisional Forest Officer,
Rampur Forest Division,
Rampur Bushahr.

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CHAPTER-I

THE TRACT DEALT WITH

1.1 Name and Situation

This Working Plan deals with all the protected forest i.e. Demarcated and Listed Undemarcated Protected Forests including other land of Rampur Forest Division. The forests which have been covered are in Nankhari, Bahli, Rampur and Sarahan Ranges of Rampur Forest Division. The total Geographical area of the tract is 1,00,318.1962 hac. The whole tract drains into river Satluj. The tract lies between latitude 31° 15' 0'' to 31° 43' 0'' North and longitude 77° 30' 0'' to 77° 57' 30'' East. The Head quarter of Rampur Forest Division is located at Rampur Bushahr which is about 130 KM from Shimla.

1.2 Boundaries

North East: - The boundary starts from the latitude 31° 43' 0'' of main peak Gushi Pishu Dhar which is situated at the height of 5672 mtrs. connecting Ghara Kanda peak at height of 5194 mtrs. which further descends to the height 3373 mtrs. of Bari Path Dhar. Finally connecting into River Satluj near village Phagi and Suru.

North West: - The boundary starts from the point at latitude 31° 43' 0'' of Gushi Pishu main peak towards point at Chakri situated at the height of 5159 mtrs. which further connects with ridge/peak of Shri Khand Mahdev at the height of 5227 mtrs. the boundaries further descend along with Shri Khand Dhar at the height of 4689 mtrs. down stream of Suga Chow, Sechi PF along with Maber Khad which finally connects with River Satluj near village Kandhar situated at the height of 1858 mtrs.

South East: - The boundary starts at a place Hans basin situated at longitude 77° 58' 0'' with height 5240 mtrs. extending towards Kurunshikring peak at the height 5088 mtr. along with Paldhar at height 4308 mtrs. which further connects with Marol Danda at the height of 4035 mtrs. along with Bhera Gad/Khad and descends at the point situated at Hatudhar near Narkanda at the height of 3203 mtrs.

South West:- The boundary starts from the point with Hatudhar near Narkanda at the height of 3203 mtrs., latitude 31° 15' 0'' and connecting Nun PF along with ridge of Nun PF and Katha Gad near village Salech situated

at the height of 1960 mtrs. Further connecting with Bhera Khad which meets in Satluj River near village Ropri & Narola. Then the boundary runs alongwith Satluj River connecting to Duttnagar village further extending towards Rampur Town alongiwth River Satluj upto a place Jhakri village situated at the height of 990 mtrs.

1.3 Configuration of the Ground

The tract is hilly with altitude varying from 820 mtrs at Bhara Khad to 5690 mtrs at Gushu Pushu ridge. The slopes vary from moderate to steep and very steep to precipitous. Rugged and sharp edged cliffs are very common in the upper catchment of Nogli. The whole area drains into river Sutlej. The principle tributaries of the river Sutlej are Browni Khud, Nogli Khud and Machhada Khud on the left bank and on the right bank, the main tributaries are Kut and Ganvi etc. Geological survey of India, H.P. Circle Chandigarh has carried out detailed survey of this area.

1.4 Geology and Rock

The tract lies in Western Himalayas. The main rock types are Mica, Schist and Quartzite Schist with Gneiss, Granite, Phyleites, Slates, Shale and Quartzite. The rock types of Nogli valley is quartzite between Bahli and Surad, rock is Gneiss with large white roombooid, Crytals of feldspar. The geology and rock effect the vegetation of a place by influencing the moisture regime, texture and drainage of the soil. The known geological formation in the area is as follows:-

- (i) Pre-cambrain-Schist's geneiss's, grains and quartzizets.
- (ii) Late pre-cambrain Himanta system- phylities, quartzizites, contomerates, shales and slates.
- (iii) Silurian, Karol limestone quartzite.
- (iv) Carboniferous-quartzite's state dolomite limestome.

1.5 Soils

Soil types found in the area are:-

I. Forest Soil

This is mainly of two types (a) Acidic Soil with low base status and (b) Neutral Soil with high base status.

Forest soils are by and large rich in humus.

II. Alluvium Soil

At very few places in this tract, this type of soil is found mostly along the river. In areas having adequate forest cover especially of Deodar, Kail, Fir and Spruce the soils are generally deep to very deep. In deodar and kail forest the soil has adequate organic matter

whereas in Fir and Spruce forests humus layer is thick. However, soil, in Chil forest is poor in organic matter due to repeated fire and thus vulnerable to erosion. Oak forests are generally accompanied by mature soils of good depth and possess high water holding capacity and acidic in reaction.

1.6 Climate

The climate is temperate but due to variation in altitude, the tropical climate is found in sub-mountainous areas at the base of the Satluj valley to alpine in the upper reaches. Semi-arctic conditions prevail in some portions. March to April and October to November are cool and bright. This tract is endowed with four distinct seasons: Spring, Summer, Rains and Winter. The spring season lasts from February to April in the lower valleys along the river where as on the higher altitudes it is in the month of April to June.

The rains come during the summer in the last week of June and extend up to September. Snow fall starts from November and last by the end of March on higher altitudes.

1.7 Rain fall

The rain fall data of Nogli, Bahli, Nankhari and Sarahan are not available with the office of Director Land Records. Rain fall data for Rampur for the year 1999 to 2004 is tabulated on Table No. 1.1.

Table-1.1
Monthly Rainfall Data of Rampur
Rainfall (in mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1999	78.9	19.9	5.4	0	31.4	19.6	185	60.9	18.5	0	0	5.2	424.8
2000	0	0	0	0	0	244.9	337.9	21.3	12.1	0	0	0	616.2
2001	20	40	105	34	103	113.9	60	123.1	60	0	16	41	716
2002	61.5	142	93	104	13	45	10	152	104	0	0	1	725.5
2003	55	110	60	61	11	41.5	264	132	107	0	4	41	886.5
2004	67	4	0	69	57	114	93	244.5	24	81	2	6	761.5

(Source: Deptt. of Meteorology, Shimla)

Table-1.2
Total rainy days in Rampur Division

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1999	7	2	1	0	7	3	11	9	4	0	0	2	46
2000	0	0	0	0	0	7	17	4	2	0	0	0	30
2001	1	5	6	5	9	10	12	11	2	0	1	4	66
2002	7	10	5	5	4	5	5	12	7	0	0	1	61
2003	4	6	5	3	3	7	16	14	12	0	1	3	74
2004	6	1	0	4	2	6	9	14	4	4	1	2	53

(Source: Deptt. of Meteorology, Shimla)

1.8 Temperature

Due to great variation in altitude, the temperature also varies considerably. Minimum temperature goes down up to 2°C during winter and maximum temperature exceeds 40-42°C in the lower areas during the summer. The data of Rampur Station is available and is tabulated in Table No. 1.3:-

Table-1.3
Temperature data from 1989 to 1994 of Rampur Division (in C⁰)

Year	Temp.	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
1989	max	16.84	19.32	23.56	30.01	33.18	33.31	32.19	31.39	31.97	29.48	23.48	17.75
	min	3.58	6.2	8.99	12.47	17.38	20.16	22.59	20.98	18.96	13.85	8.53	5.5
1990	max	20	17.46	30.08	28.24	31.97	34.66	30.53	31.72	30.68	28.56	25.51	19.58
	min	6.21	6.52	7.52	12.38	18.13	21.33	N.A.	21.72	19.81	12.84	8.81	5.75
1991	max	19.26	10.04	23.4	27.07	33.1	34.18	35.34	31.39	31.68	29.73	23.74	19.26
	min	2.47	6.42	9.28	11.87	16.73	20.62	23.67	22.02	20.48	13.9	8.42	5.44
1992	max	17.25	18.96	21.39	28.94	32.11	35.11	31.61	30.98	30.75	28.24	23.77	0.66
	min	5.66	5.42	9.87	14.18	16.05	20.31	21.45	21.98	19.59	13.65	9.68	5.39
1993	max	15.82	20.77	21.39	29.4	34.46	33.85	34.64	28.01	31.63	24.03	22.68	18.45
	min	4.64	7.36	8.13	13.01	17.77	22.88	22.5	17.31	14.62	7.49	8.11	5.5
1994	max	18.27	18.86	27.74	26.35	32.65	35.96	32.29	31.16	30.68	28.96	25.2	18.96
	min	5.5	5.21	9.36	11.87	16.81	21.7	22.24	21.89	18.27	13.18	8.46	5.86

(Source: www.wds.worldbank.org)

1.9 Effects of Climate on Forest Growth

- a) Heavy rains in monsoon or pre- monsoon sometimes cause havoc to tree growth which result in soil erosion, landslides and floods.
- b) From April to June when temperature is high, the probability of forest fires is very high in Chil areas. Young plants in the nurseries and plantations suffer from persistent drought and large scale mortality is noticed in areas with sandy and dry soils. The natural springs run dry, thus causing a problem of water for raising nurseries.
- c) Autumn (September –October) are relatively dry months.
- d) All the areas above 1000 m experience severe frost especially in the depressions during winter.
- e) High hill areas experience snow during November to February; many plants are uprooted or broken. In young regeneration areas, root lifting due to frost is also

noticed. However, snow is very helpful for augmenting ground water and is also utilized by the plants.

1.10 Water Supply

The whole tract is covered with swelling Khads. The main perennial Khads are Sukachho Khad, Ganwi, Browni, Manglad, Nogli, Machhada and Bhaira khad in the tract which are tributaries to Sutlej River.

1.11 Distribution of Area

The forests are interspersed throughout the tract and are honeycombed by patches of cultivation. There has been valuation in the area figures provided by revenue department vis-à-vis survey sheet from the past Working Plan. In the plan under revision revenue record figures of area have been taken on the record as is maintained by the Revenue authority under the HP Land Revenue Act, 1954. The extent of the area as dealt in the plan under revision has under gone change due to creation of Daranghati Wild Life Sanctuary vide H.P. Govt. Notification No. FFE-B (F) 6-22/99 dated 23-10-1999 and creation of pheasantry at Sarahan and Gopalpur. Thus total 4842.4303 hac. area transferred to Wild Life Division Sarahan have been excluded in the present plan (See Appendix No-I). 83 UPF have converted/notified into new DPFs during the period of Working Plan under revision are included in the plan. (See *Appendix No. II*). Out of 83 newly notified DPFs, 82 forests have been entered in the revenue record and the remaining one forest namely Khanotu is being entered. And Govt. waste land i.e. other land as defined by the Supreme Court which includes Charagah Drakhtan, Charagah Bila Drakhtan, Ghasnies, Pasture land except Gair Mumkin Land etc. are included in the plan in compliance of the *Hon'ble Supreme Court's order dated 12-12-1996* for application of Forest (Conservation) Act, 1980 only as these Govt. waste land were declared in general as 'Protected Forests' by the Govt. notification dated 25th February, 1952 which were out of the scope of the previous Working Plan. Only Culturable waste land which includes Charagah Drakhtan and Charagah bila Drakhtan land (except Gair mumkin land including refractory area)) are included in the Plantation (over lapping) Working circle for afforestation including Compensatory Afforestation in lieu of the forest land for non forestry purpose.

Similarly, in the plan under revision the area of private forest which falls within the definition of forest land as defined by the Apex Court have been taken on the record as maintained by the revenue department for application of Forest (Conservation) Act, 1980.

At present these forest land i.e. Govt. waste land, throughout the tract, have not been defined boundaries on the ground. Similarly record of rights admitted in these forests is to be

prepared and notified under Section 29 (3) of the Act and also to be notified in the official gazette. The Range wise statement of the forest area is tabulated in table No:-1.4.

Table No. 1.4

Sr. No.	Name of Range	Reserve Forest (RF)	Protected Forests			Private Land		Others land as defined by the Supreme Court	G. Total
			Old DPF's	New DPFs	Listed UPFs	Private Forests	Non-Private Forest		
1	Nankhari	N/A	5444.27	0	1252.63	737.462	3837.0535	2988.0447	14259.4602
2	Bahli	N/A	7162.36	2418.3401	746.39	12.9212	2554.0767	3474.8948	16368.9828
3	Rampur	N/A	2106.36	8400.4573	850.09	15.1796	4215.5445	10626.3678	26213.9992
4	Sarahan	N/A	5234.90	5527.7031	277.42	589.6280	4419.2762	27426.8267	43475.7540
G. Total		N/A	19947.89	16346.5005	3126.53	1355.1908	15025.9509	44516.1340	100318.1962

The name of the forests remains the same as given in the notification of Protected Forests and Bushahr State Forest Settlement Report of H.M. Glover. The demarcated protected forests have been divided into 265 compartments/ sub-compartments. Similarly there are 60 numbers of undemarcated protected forests. The range wise statement of forests is given in *Appendix No-III*. And the details of Range wise allotment of forest areas to periodic blocks and in various Working circle along with compartments and sub-compartments are given in *Appendix No-IV*. The boundaries and areas of these forests have been taken from old maps/record and also from the H.P. Govt. notification etc.

1.11.1 Numbering of Compartments

Kapoor's Working Plan was plan for Kotgarh and Rampur Forest Division. Now separate Working Plans has prepared for Rampur Forest Division which necessitated re-numbering of compartments after excluding Kotgarh Forest Division. The re-numbering of compartments for Rampur Forest Division in ascending order has started from Nankhari Range and end in Sarahan Forest Range in clock wise orientation. The detail of compartments and sub-compartment numbers both old and new are given in *Appendix No-V and Appendix No.-VI*. General abstract showing the allotment of forests to various working circle is given in *Appendix No- VII*.

1.12 State of Boundaries

The first attempt to demarcate forest was done in deodar forests of erstwhile Bushahr State in 1868. However, permanent demarcation of forests commenced during the year 1884. Thereafter measurement and demarcation of forests have taken place and recorded in the Forest Settlement of Sutlej Valley Forest of Bushahr State, 1921. All the boundaries of demarcated protected forests were fixed and maintained during Glover's Forest Settlement in 1921 but no notification of DPFs are available on record except name of forest and area given

in Forest Settlement Report, 1921. The un-demarcated protected forests have not so far been demarcated and surveyed. As a result many of UPFs have either completely vanished on the ground or has been reduced or are in the process of reduction in size and shape by way of encroachment. There are no DPF in erstwhile State of Delath in Nankhari Range and these forests do not come under the purview of Indian Forest Act, 1927.

The listed UPFs are roughly demarcated and mapped. The position is still worse in respect of un-demarcated protected forests where boundaries are simply indicated by the cultivation of particular village.

It is pertinent to mention here that erstwhile State of Bushahr Forests were demarcated during 1884-1887. This demarcation was revised by H.M. Glover, during 1916-20 at the time of revision of Forest Settlement of Sutlej Valley forests of Bushahr State. After that no revision of Forest Settlement has been carried out or done and boundaries are still not properly defined. Secondly, no magnetic bearing (Forward & Backward) are recorded for avoiding encroachments etc. Thirdly, no boundary register are still prepared and recorded after the fire incident of Kotgarh Forest Division as the record of Rampur & Kotgarh Forest Division was fire burnt during February, 1999. The boundary pillars in most of the cases were found damaged or missing; it should be reconstructed after getting proper demarcation. Annual programme for checking and repair of B.Ps was proposed in the Working Plan under revision. All the B.Ps could not be checked/ maintained as per annual programme prescribed in the expired Working Plan due to paucity of funds. However B.Ps checked/maintained during the plan period of expired Working Plan is tabulated in the Table No:-1.5

Table No.-1.5
Construction of New Boundary Pillars

Year	Rampur Range		Sarahan Range		Bahli Range		Nankhari Range		Total	
	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps
1	2	3	4	5	6	7	8	9	10	11
1993-94	-	-	-	-	-	-	-	-	-	-
1994-95	-	-	-	-	-	-	-	-	-	-
1995-96	-	-	-	-	-	-	-	-	-	-
1996-97	64		112	-	-	-	-	-	176	0
1997-98	-	-	203						203	0
1998-99	-	-	-	-	-	-	-	-	-	-
1999-2000	-	-	-	-	-	-	-	-	-	-
2000-01	-	-	-	-	-	-	-	-	-	-
2001-02	-	-	-	-	-	-	-	-	-	-

2002-03	-	-	-	-	-	-	-	-	-	-
2003-04	-	-	-	-	27	22		-	27	22
2004-05	-	-	-	-	-	-	-	-	-	-
2005-06	-	-	-	-	-	-	-	-	-	-

1	2	3	4	5	6	7	8	9	10	11
2006-07	-	-	-	-	-	-	-	-	-	-
2007-08	100	-	-	-	10	-	-	-	110	0
2008-09	27	-	-	-	40	-	-	-	67	0
2009-10	-	-	-	-	-	-	-	-	-	-
2010-11	25	-	-	-	-	-	-	-	25	0
2011-12	122	-	-	-	-	-	-	-	122	0
Total	338	0	315	0	77	22	0	0	730	22

Table No. 1.6
Repair of Boundary Pillars

Year	Rampur Range		Sarahan Range		Bahli Range		Nankhari Range		Total	
	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps	No. of B.Ps	No. of C.Ps
1993-94	-	-	25	-	-	-	67	-	92	-
1994-95	28	-	160	-	110	-	27	-	325	-
1995-96	-	-	125	-	-	-	-	-	125	-
1996-97	-	-	-	-	-	-	48	-	48	-
1997-98	-	-	-	-	80	50	-	-	80	50
1998-99	-	-	-	-	-	-	40	-	40	-
1999-2000	56	-	-	-	-	-	30	-	86	-
2000-01	-	-	-	-	326	21	-	-	326	21
2001-02	-	-	-	-	-	-	-	-	-	-
2002-03	-	-	-	-	-	-	-	-	-	-
2003-04	-	-	-	-	27	22	-	-	27	22
2004-05	-	-	-	-	-	-	-	-	-	-
2005-06	-	-	-	-	-	-	-	-	-	-
2006-07	49	15	-	-	20	-	-	-	69	15
2007-08	-	-	-	-	-	-	-	-	-	-
2008-09	-	-	-	-	-	-	-	-	-	-
2009-10	-	-	50	-	-	-	-	-	50	-
2010-11	-	-	20	-	-	-	-	-	20	-
2011-12	36	-	-	-	40	-	-	-	76	-
Total	169	15	380	0	603	93	212	0	1364	108

1.13 Maps Survey sheets on 1:50000 scales are available in this division. However, the entire area of Rampur Forest Division is covered in the survey sheets given below:

Sr. No.	Survey Sheet No.
1	53/E/10
2	53/E/11
3	53/E/12
4	53/E/14
5	53/E/15

1.14 Legal Position

Prior to the integration of princely States in Himachal Pradesh on 15th April, 1948, rulers of erstwhile Bushahr, Kumarsain, Khaneti, Sangri and Delath States were the owners of all types of land including demarcated as well as un-demarcated protected forests. After formation of Himachal Pradesh, the ownership of all demarcated as well as un-demarcated areas including pastures and ghasnies not assessed to land revenue vested in the Himachal Pradesh Government subject to the rights of users.

Bushahr forests were leased to the Punjab Government as early as in 1864. This lease was revised from time to time during 1877, 1928 and 1942. The last lease which was for a period of 50 years with effect from April 1, 1941 automatically lapsed after the transfer of Bushahr forest to the Govt. of Himachal Pradesh, when the lesser and lessee became the same. The control of Bushahr forests was transferred to Himachal Pradesh Government with effect from April 1, 1949.

After the re-organization of Forest Department in the newly formed State of Himachal Pradesh, Indian Forest Act of 1927 was made applicable; vide Govt. of India, Ministry of States, Notification No. 146-J dated December 6, 1950 and 25th February, 1952. Thereafter the provisions of Chapter-IV of Indian Forest Act, 1927 have been made applicable to all forest lands and wastelands in Himachal Pradesh, which are the property of Government or over which the Government have proprietary rights or to the whole or any part of the produce of the which the government is entitled as recorded in the forest settlements or land revenue settlements or land revenue records of the intergraded States.

The two distinct types of protected forests came to be recognized in the erstwhile Bushahr State. The Demarcated Protected Forest, called the first class and second class protected forests by H.M. Glover, Forest Settlement Report, 1921 carried no meaning and are not governed by any law and thus it is not sustainable in the eyes of law for application of the Chapter-IV of the Indian Forest Act, 1927. Subsequently the Government through rules under Section 32 of Indian Forest Act, 1927 the forests of erstwhile Bushahr State were notified as 'Demarcated Protected Forest' vide Govt. Notification No. 43-241-A/49-2 dated February 25, 1952 as first class protected forests and second class protected forests. The **second class protected forests means** the un-demarcated forests or areas other than the demarcated forests and include all tracts of land bearing tree growth or from which the trees have been felled which pay no land revenue as cultivated land (*See Appendix No-XXII*).

All the forests and waste land were declared as protected forests by the Himachal Pradesh Government vide Notification No. Ft. 29-241/49 dated Shimla-4, the 25th February, 1952 (*See Appendix No-XXIII*). Subsequently the Government through notification No. Ft.

774-1/63 (M) dated 24-2-1964 ordered that these forests be demarcated, and surveyed, and rights be determined. At present, un-demarcated protected forests, throughout the tract, have not defined boundaries on the grounds.

Thus the Himachal Pradesh Government declared in general all such lands as 'Protected Forests' vide notification dated 25th February, 1952. All trees are declared to be reserved in these forests under Section 30 (a) of IFA, 1927 w.e.f. 1st January, 1964, vide Himachal Pradesh Govt. notification No. Ft. 29-24-BB/49 dated 13-11-1963 copy endorsed to all Deputy Commissioners/CFs and all DFOs in H.P. (See Appendix No-XXIV). This general notification of the protected forests is of great legal significance for the authorities engaged in the task of forest management. The individual forests under this category have, however, got to be defined and notified under the provision of chapter-IV of Indian Forest Act, 1927. The rules for these forests are also to be prepared and notified under the said chapter for the Act. Record of rights admitted in these forests is to be prepared and notified under the Act and also to be notified in the official gazette. The State of affairs being as it is at present, any system of scientific management applied to these forests is deemed to be confronted with legal complications of a serious nature.

Vide Pr. CCF, HP Memo No. Ft. 48-66/83 (FCA) dated 20.4.2010 (See Appendix No-XXV). and the Supreme Court's order dated 12-12-1996, Forest (Conservation) Act, 1980 is applicable on all such lands in State of Himachal Pradesh except on vested land under the H.P. Village Common Lands (Vesting and Utilization Act, 1974 and H.P. Ceiling on Land Holding Act, 1972) as per H.P. Govt. Notification dated 21-4-2006 (See Appendix No-XXVI). In ***T.N. Godavarman V/s Union of India, WP(C) No. 202/95 dated 12-12-1996***, the Hon'ble Supreme Court held that the Forest (Conservation) Act, 1980 must apply to all forests irrespective of the nature of ownership and classification of land thereof and it was further held that the word "Forest" must be understood according to its dictionary meaning. This description covers all statutory recognized forests whether designated as reserved, protected forests or otherwise for the purpose of Section 2 (i) of the Forest (Conservation) Act, 1980. The terms of "Forest" shall not be applicable to the plantation raised on private lands, except notified private forest. (See Appendix No-XLIX) However, felling of trees in these private plantations shall be governed by the HP Land Preservation Act, 1978. Cases of illicit felling, illegal mining and encroachment etc. have to be dealt under the provision of the Indian Forest Act, 1927. Similarly, in ***T.N. Godavarman Thirumulpad V. Union of India (1997) 2 SCC 267***, the Supreme Court held that no eviction may be made from any land or building containing machinery and equipment or any other facilities for housing, school or dispensary etc. in the meantime on the basis of the Apex Court order dated 12-12-1996. Till

date as far concerned of 'Protected Forests' declared by the Govt. Notification dated 25th February, 1952, no efforts has made for ascertaining and determining the nature and extent of the rights and setting them in a through manner as in the case of constitution of a Reserved Forests, Chapter-II of the Act. Therefore, it needs to be done under Sub Section (3) of Section 29 read with Section 30 to 32 of the Act other wise it carries no meaning in the eyes of law. By mere declaration of such land will not be treated as forest land until and unless waste land which declared by the State Govt. by notification dated 25th February, 1952 as "Protected Forests" is recorded as forest land in land revenue record under the H.P. Land Revenue Act, 1954 read with Sub-Section (3) of Section 29 of the Indian Forest Act, 1927. If no such record is maintained, it is reasonable to presume that land in dispute is not recorded as, 'Protected Forests or Forest Land' in the revenue record. Thus it is clear that provision of the Indian Forest Act is not applicable on un-demarcated protected forests as the same is not a notified forest under Act. It is very unfortunate part of the H.P. Forest Department that this fact has never been noticed since the induction of scientific forest management through approved Working Plan. As a result status of management of forests affairs is alarming situation and in absence of any proof with regard to the compliance of the mandatory provision of Section 29 to 32 of the Indian Forest Act, 1927, the conviction is bad under Section 33 of the Act as held by the Hon'ble H.P. High Court in ***State of H.P. V. Om Prakash in Criminal Appeal No. 516/2000 dated 14-11-2007*** (See Appendix No-L).

Similarly it is also mention here that the forest department has raised plantation over these land (i.e. waste land and Shamlat Deh lands) over the period of time but these areas do not come under the purview of Indian Forest Act, 1927. Similarly, 60 nos of existing listed un-demarcated protected forests (UPFs) area are required to be notified as 'Protected Forest' under the Act so that anomalies could be legally rectified for the same as the Indian Forest Act, 1927 use the word 'Protected Forest' only instead of Demarcated Protected Forests and Un-demarcated protected forests. It is pertinent to mention here that 46 nos of cases out of 60 nos of existing listed UPFs and other Govt. land are pending with Revenue Settlement Officer Shimla-9 for settlement of rights.

After the Forest (Conservation) Act, 1980, coming into force, no forest land can be diverted for non-forestry purpose without the prior approval of the Central Government. Due to this enactment the distinction amongst the demarcated or un-demarcated forest or un-classed forests and common lands regarding breaking up of land or use land has disappeared for application of Forest (Conservation) Act, 1980 only.

Thus no forest/forest land or part thereof shall be leased or transferred to any other Govt. Department or organization or institution or agency or grant nautor or land to land less

person etc. without prior approval of Govt. of India and forest land will not be diverted/used for non-forestry purpose without obtaining prior approval of Govt. of India under Forest (Conservation) Act, 1980.

1.15 Rights and Concessions

Rights and concessions of local people in various forests have been recorded in the Forest Settlement Report, Sutlej Valley, Bushahr State, 1921. The nature of rights and concessions enjoyed by the villagers in protected forests or un-classed forests are more or less the same all over the division, though they differ in extent from village to village. The right and concessions are appended to the cultivated land and are not personal. For detail rules and regulations of rights in different forests had been regulated and notified by the HP Govt. vide Notification No. 43-241-A/49-2 dated Simla-4, the 25th February, 1952 under Section 32 of the Indian Forest Act, 1927 subject to the provision of Forest Settlement Report, 1921 (See *Appendix No-XXII*). All forests are heavily burdened with rights. The state has permitted certain kind of usages (Bartan) in the forest, to meet the bonafide domestic and agricultural requirements of the people, in the matter of grazing and forest produce and such usages will be maintained so far as they are compatible with the system of forest conservancy suited to the requirement of state and the people. The bartans are appended to cultivated land assessed to land revenue or the land revenue of which has been assigned. All rights are subject to the limitation that the rights will not be exercised to an extent which will endanger the existence of forests. Liberal rights and concessions granted to people of Sutlej Valley more than a century ago are becoming a serious drain on forestry resources and threatening the very existence of forests.

1.15.1 Timber Distribution to Right Holders Rules, 2010

Rights and concessions were recorded in Forest Settlement Report during the year 1916-21 by H.M. Glover and have remained unchanged except Timber Distribution Rights. However, the Sate Govt. has recently notified H.P. Forest (Timber Distribution to Right Holders) Rules, 2010 for the rationalization of grant of timber. The detail rules with regard to quantity, periodicity, rates, priority for grant of timber distribution and various other provisions have been given in the notification notified by the Govt. dated 2nd January, 2010 (See *Appendix No-XXVII*).

These rules cover the Timber Distribution (T.D.) Rights for construction and maintenance of residential house, cowshed that too for bonafide domestic use without affecting the other rights contained in the Forest Settlement Report in operation. Forest centered based on the principle that if the forests will remain intact only people will be able

to exercise rights namely of Timber distribution (TD). Further these rights are people centered more so rural poor centered.

- (i) The rights recorded in settlement other than Timber distribution (TD) like free grant for last rites of the dead, collection of medicinal herbs, grazing etc. have not been touched upon and would remain to be exercised as they were in the past.
- (ii) To have transparency involvement of people in Timber Distribution through their Gram Sabha has been ensured. For rationalization process, the Hon'ble High Court before deliberating and deciding the issue under consideration of PIL with them directed the State Govt. to rationalize the timber distribution process which took into account the following aspects
 - a) As the TD is concerned with Land holding in rural areas that too for construction of house/cowshed for domestic purpose the TD in Urban areas has been done away with.
 - b) If the Right Holders have land holding at more than one place then TD will be granted at only one place of the choice of land holder.
 - c) TD will only be enjoyed by original Right Holder and not by those who have purchased land after taking permission under Section 118 of the HP Tenancy and Land Reforms Act, 1972 from now onwards.
 - d) The ratio of TD rates of Chil, Deodar and Kail at the time of Forest Settlement when their rates of TD were initially fixed was 1:5 to 1:8, which has now gone to 1:8,8700 in case of Deodar, 1:30,000 in Kail, and 1:15,000 in Chil, thus requiring rationalization, which has been affected after about more than 100 years.
 - e) The people would be given converted timber near to their place of residence at rate of 30% and 10% of average commercial rates at which timber is sold by HP State Forest Development Corporation.

The following are some of the important bartans admitted in the Settlement Report.

1.15.2 Grant of Timber

Timber Distribution (T.D.) is a unique policy in the colonial history of forest management. It is a policy that provides every landowner with the right to harvest timber for the construction and repair of their houses. This policy while providing for a basic need of the local population is also the single largest reason for timber harvest in the western Himalayan region. Rates were accordingly fixed for the grant of trees of all the conifer species to bartandars. Though no limit on the number of trees to be sanctioned was fixed, but it was provided in the Settlement Report that trees should be sanctioned only to meet the legitimate domestic and agricultural requirements. It results in the harvest of 60,256.14 cubic meters of prime timber till recently before Hon'ble High Court while disposing a PIL directed the State

Govt. to rationalize the process of timber distribution rights. The trees used for building timber in this division are namely Deodar, Kail, Fir/Spruce and Chil etc. The trees at concessional rates were given from the Demarcated Protected Forests and Un-demarcated Protected Forests to the right holders only. As per current Settlement, the requirements of the right holders is to be met from depot as per H.P. Notification dated 2nd January, 2010 and by this notification now right holders are not entitled to get timber distribution (T.D) for construction & repair of house etc. from the forest directly. The annual quantity of timber given to right holders on right holder rates and free grant during the period 1993-94 to 2010-11 is tabulated in Table No: 1.7

Table No. 1.7

Year	Deodar		Kail		Rai/Fir		Chil		B.L.		Total	
	No	Vol.	No.	Vol.	No	Vol.	No	Vol.	No	Vol	No	Vol
1	2	3	4	5	6	7	8	9	10	11	12	13
1993-94	566	2078.82	1116	3754.80	356	1598.88	16	42.01	1	0.71	2055	7475.22
1994-95	307	1031.15	725	3348.63	181	645.31	32	76.65	3	1.30	1248	5103.02
1995-96	640	2016.82	1484	4544.13	445	1447.39	25	61.28	2	6.40	2596	8076.02
1996-97	536	1673.67	1228	3906.59	559	1822.42	21	58.49	3	5.90	2347	7467.07
1997-98	487	1450.73	815	2441.35	289	958.42	13	32.43	4	5.63	1608	4888.55
1998-99	144	424.24	382	967.15	106	367.11	2	2.96	1	1.78	635	1763.23
1999-2000	211	613.09	312	956.16	192	623.23	32	78.55	0	0	747	2271.03
2000-01	271	857.92	523	1122.59	168	598.15	41	110.12	1	3.23	1004	2692.02
2001-02	253	947.79	440	1415.92	320	1078.20	22	51.56	0	0	1035	3493.47
2002-03	573	1934.69	572	2076.80	159	601.80	6	16.09	1	3.00	1311	4632.38
2003-04	430	1313.34	506	1767.74	127	451.52	25	51.21	1	3.23	1089	3587.03
2004-05	441	1464.96	395	1375.16	168	746.56	31	45.12	0	0	1035	3631.79
2005-06	344	1178.42	296	1055.54	72	297.95	8	16.45	0	0	720	2548.35
2006-07	289	1122.54	237	885.34	113	561.03	3	3.73	0	0	642	2572.64
2007-08	26	54.34	0	0	0	0	0	0	0	0	26	54.34
2008-09	0	0	0	0	0	0	0	0	0	0	0	0
2009-10	0	0	0	0	0	0	0	0	0	0	0	0
2010-11	0	0	0	0	0	0	0	0	0	0	0	0
Total =	5518	18162.51	9031	29617.89	3255	11797.94	277	646.63	17	31.173	18098	60256.14

(Source:- Forest Department, Rampur Forest Division, Rampur)

In addition to that the following quantity of timber given to right holders from depot as per H.P. Govt. Notification dated 2nd January, 2010 in Nankhari Range only during the period 2011-12 is tabulated in Table No. 1.8

Table No. 1.8

Year	No. of TD application received	No. of TD application sanctioned by DFO	TD granted in cum		No. of application rejected	No. of TD application pending for sanction	Revenue received from T.D
			Free of cost	Right holder rate			
2011-12	32	20	3 cum	39 cum	12 Nos.	-Nil-	2,98,617/-

1.15.3 Lopping

Lopping of Broad leaved species except Ash, Walnut, Shisham and Boxwood is allowed. For Kail, Spruce and Silver Fir lopping is allowed provided that no tree under “two haths” in girth (90cm) at 4 feet 6 inches from the ground will be lopped and lopping is restricted to the lower half of the trees. Meaning thereby one third of the tree will be allowed to lop from the lower half of the tree. Lopping of Deodar is prohibited. This privilege is liable to be withdrawn at any time by the DFO with the permission of this Government.

1.15.4 Grazing The right holders are permitted to graze their cattle, buffaloes, sheep and goat for the whole year without any restriction in the forests, not closed to grazing by any specific order. The forest settlement provides that the rights of the villagers are limited to reasonable agricultural and domestic requirements of the people. Migratory graziers too have been permitted to graze their sheep, goats and buffaloes, during summer months as a matter of concessions.

1.16 Minor Forest Produce

The local people have rights to collect medicinal plants, herbs, roots, shrubs and other forest produce for bonafide domestic use and for sale to the traders as enshrined in the Bushahr Sutlej valley Forest Settlement Report, 1921 by H.M. Glover. The system of issuance of export permit has been made easier by delegating power on the Pradhan Gram Panchayat vide Govt. Notification No. FEE-B-C (9)/94-II dated Shimla-2, the 28th February, 2003.

1.17 Nautor Land

As in the plan under revision no nautor lands are now given on forest land, after the enactment of the Forest (Conservation) Act, 1980.

1.18 Encroachment

Encroachment is a major problem in the tract especially on un-demarcated protected forests including Govt. waste land as declared ‘Protected Forest’ by the H.P. Govt. notification dated 25th February, 1952. During the last plan period total 129-16-51 hac. Forests have been encroached and the details of these encroachment cases are tabulated and given in table No. 1.9.

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Table No. 1.9

Year wise detail of encroachment cases

Year	Previous balance						Cases registered during the year.						Eviction order passed						Balance cases under Trial					
	UPF		DPF		Total		UPF		DPF		Total		UPF		DPF		Total		UPF		DPF		Total	
	No	Area	No.	Area	No.	Area	No	Area	No.	Area	No.	Area	No	Area	No	Area	No.	Area	No	Area	No	Area	No.	Area
94-95	0	0	0	0	0	0	32	4-43.57	83	9.08-14	115	13.51-71	30	2-95.04	79	8-88-73	109	11-83-77	0	0	0	0	0	0
95-96	2	1-48-53	4	0-19-41	6	1-67-94	20	4.28-12	18	1-71-94	38	6.00-06	20	3-18-.02	17	1-71.-10	37	4-89-12	2	1-48-53	4	0-19-41	6	1-67-94
96-97	2	5-58-63	5	0-20-25	7	2-78-88	21	3-61-15	19	2.62-45	40	6.23-60	20	3-68-89	19	2.17-04	39	5.85-93	2	5-58-63	5	0-20-25-	7	2-78-88
97-98	3	2-50-89	5	0-65-66	8	3.16-.55	41	6-61-48	15	1.15-88	56	7.77-36	38	6.03-32	15	1-15.88	53	7-.19-20	3	2-50-89	5	0-65-66	8	3.16-.55
98-99	6	3.09-55	5	0-65-66	11	3-74-91	3	0.02-43	41	7.24-12	44	7.26-55	1	0-00-49	39	5-54-86	40	5-55-35	6	3.09-55	5	0-65-66	11	3-74-91
99-00	8	3.-10-99	7	2-34-92	15	5-45-91	5	1.54-16	20	3.27-29	25	4.81-45	4	1-36-41	19	2-67-72	23	4.04-13	8	3.-10-99	7	2-34-92	15	5-45-91
2-01	9	3.28-74	8	2-94-49	17	6.23-23	35	4.31-70	39	5.46-91	74	9.78-61	26	3.77-42	16	1.76-73	42	5.54-15	9	3.28-74	8	2-94-49	17	6.23-23
1-02	18	3-83.03	31	6-64-.66	49	10.47-69	8	1.55-81	8	2.46-84	16	4.02-65	7	1-20.60	7	1-41.90	14	2-62-50	18	3-83.03	31	6-64-.66	49	10.47-69
2-03	19	4-.18-24	32	7-69-.60	51	11-87.84	1	0.8	0	0	1	0.00-80	1	0.00-80	0	0	1	0.00-80	19	4-.18-24	32	7-69-.60	51	11-87.84
3-04	19	4.18.24	32	7-69-.60	51	11-87-84	8	0-49-70	49	4.98-40	57	5.48-10	2	0-48.24	47	4-96-27	49	5-44.51	19	4.18.24	32	7-69-.60	51	11-87-84
4-05	25	4-.19-70	34	7-71-73	59	11-91-43	14	2-57-45	1	0.16-34	15	2-73-79	19	1-98-.67	17	2-95-07	36	4.93-74	25	4-.19-70	34	7-71-73	59	11-91-43
5-06	20	4-78-48	18	4-93-.00	38	9-71-48	129	27-77-19	18	2.52-75	147	30.29-94	87	19-37-21	18	4-.15-09	105	23-52-30	20	4-78-48	18	4-93-.00	38	9-71-48
6-07	62	13-18-46	18	3.30-66	80	16-49-.12	92	26-34-81	6	1.18-38	98	27.53-19	29	4.21-48	11	2.03-86	40	6-25.34	62	13-18-46	18	3.30-66	80	16-49-.12
7-08	125	35-31.79	13	2.45-18	138	37-76-97	24	6.11-27	6	1.36-22	30	7.47-49	5	0-22-30	3	1-16-.90	8	1-39.20	125	35-31.79	13	2.45-18	138	37-76-97
8-09	144	41-20-76	16	2-64-50	160	43-85-26	0	0	0	0	0	0	144	41-20-76	0	0	144	41-20-76	0	0	16	2-64-50	16	2-64-50
9-10	0	0	16	2-64-50	16	2-64-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	2-64-50	16	2-64-50
10-11	0	0	16	2-64-50	16	2-64-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	2-64-50	16	2-64-50
11-12	0	0	16	2-64-50	16	2-64-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	2-64-50	16	2-64-50
							433	89.69-64	323	43.25-66	756	132.95-30												

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Total 144 No of UPF cases has been transferred to Revenue authority for initiating the eviction proceeding against the encroachers under section 163 of Land Revenue Act, 1954 and whereas 16 No of cases are under trial in the Court of Collector-cum- DFO Rampur for want of demarcation of land under Section 107 of the H.P. Land Revenue Act, 1954. The state of legal position on encroachment has been discussed in detail in Chapter-IX, Part-II----- the Forest Protection (Overlapping) Working Circle. In terms of H.P Govt. Notification dated 5-5-2010, the H.P. High Court in *Yogendra Singh V/s State of H.P., Cr. M.P. (M) No. 1299/2008 dated 20-5-2011* passed the order and directed to the State Govt. FIR should be registered against the person who has encroached upon more than 10 bighas of forest land. Consequent upon forest department 175 numbers of cases has been detected and FIR has been registered against the person who has encroached on forest land are tabulated in table No. 1.10.

Table No. 1.10

Statement showing the encroachment cases where FIRs lodged with the police under Section 33 of IFA, 1927 read with Section 447 of IPC as on 31-12-2012

Name of Range	Total FIR registered		Cases in which demarcation / investigation carried out		Cases filed in judicial Court							
					Cases put in Court for trial		Case filed for cancellation Report		Case filed for untraced		Total	
1	2	3	4	5	6	7	8	9	10	11	12	13
Rampur	24	18-86-28	24	16-68-58	24	18-20-43	-	-	-	-	24	18-20-43
Sarahan	23	14-50-95	23	14-37-21	17	13-52-96	6	0-84-25	-	-	23	14-37-21
Bahli	47	27-85-48	47	24-83-39	45	24-68-55	1	0-14-60	1	0-00-24	47	24-83-39
Nankhari	81	40-09-07	81	40-02-71	77	36-91-97	4	1-58-89	-	-	81	40-09-07
Total	175	101-31-98	175	95-91-89	163	93-33-91	11	2-57-74	1	0-00-24	175	95-91-89

1.19 The Forest (Conservation) Act, 1980

In the year 1980, Forest (Conservation) Act was promulgated which has made it mandatory to seek permission of the Central Government for diverting any forest land for non-forestry purpose. Thus forest land cannot be diverted to any non-forestry use without prior approval of Govt. of India under Forest (Conservation) Act, 1980. Instructions have been issued from time to time to all field officers to ensure that no non-forestry activity is allowed to be implemented by any user agency on any forest land without prior approval of Govt. of India. It is pertinent to mention here that Hon'ble High Court of Himachal Pradesh has also taken a serious note of violation of FCA, 1980 in the Contempt Petition No. 56/2009 titled as Kuldeep Chauhan V Balbir Singh Thakur dated 28-8-2009 and has directed not to undertake the construction of any road in forest areas without the mandatory permission under the FCA, 1980. Therefore, field functionaries must ensure that no work related to non-forestry activities should be allowed to be taken up without prior approval of Govt. of India under FCA, 1980. During the last plan period total 647.3166 hac. UPFs forests have been

diverted under the provisions of the Forest (Conservation) Act, 1980 and the details of the cases is tabulated and given in the Table No. 1.11

Table No. 1.11

Forest land diverted under FCA in Rampur Forest Division

Sr. No.	Year	Approval No.	Date	Name of the Proposal	Area involved
1	2	3	4	5	6
1	1983	8-228/83-FRY	19/9/1983	66 KV Duttanagar to Maleotidhar	20.7072
2	1985	8-2693/89-FRY	25/4/1985	220 KV Bhaba to Kunihar	47.54
3	1986	8-369/85-FC	25/4/1986	Nathpa Jhakri Project	81.3497
4	1986	99/85-FC	4/4/1986	66KV Andhra to Nogli	18.18
5	1986	8-441/81/86-FC	4/6/1986	66KV Nogli to Averi	4.77
6	1987	8-177/86-FC	30/7/1987	Ganvi Hydel Project Stage-I	28.5872
7	1993	9-396/89-FC	28/9/1994	400 KV Jhakri to Abdullapur	84
8	1993	8-369/89-FC	4/8/1995	400 KV Jhakri to Koldam	39.33
9	1993	9/96-92-ROC	25/5/1993	Shandhar Shraikoti road	1.42
10	1994	4-49/92-ROC	10/3/1994	Rai Bahli Khunni Road	3.33
11	1995	9-114/94-ROC	21/9/1995	Approach road to Pashada Quarry	4.9796
12	1999	9-165/94-ROC	23/7/1999	Badrash Brandli Road	2.076
13	1999	8-21/98-FC	7/5/1999	400 KV Karchham to Jhakri	40.4144
14	1999	9-579/98-ROC	23/7/1999	Racholi Kandi Road	2.02
15	2000	9-407/97-ROC	31/3/2000	Ashok Sood Quarry	0.1028
16	2001	9-1005/2000-ROC	30/8/2001	Raila Khanog Road	3.1136
17	2002	9-1246/2001-ROC	18/6/2002	Khanog Gadasu Road	1.06
18	2002	8-93/01-FC	6/6/2002	Diversion of additional land for NJPC	22.4907
19	2002	9-1452/02-ROC	19/6/2002	C/O School building for GPS Kandludhar	0.005
20	2003	9-1492/2002-ROC/336	10/3/2003	Ganvi HEP Stage-II	3.9204
21	2004	9-407/2004-ROC/641	28/7/2004	Bhima Stone Crusher	0.3935
22	2004	9-671/99-ROC/365	24/8/2004	Sunda Jaguni Road	2.22
23	2004	9-2219/2004-ROC/3264	10/12/2004	Ganvi Labana Sadana Road	2.7836
24	2004	9-2220/2004-ROC/3297	10/12/2004	Pajidhar Phancha road	2.1057
25	2005	9-1572/2002-ROC/916	21/2/2005	Ganvi kiao Road	2.008
26	2005	9-1561/2002-ROC/1381	21/3/2005	Parola Sholi	1.17
27	2005	9-HPB-2418/2004-CHA/3289	27/6/2005	realignment of Gaura mashnoo road	0.483
28	2005	9-HPB-2198/2004-CHA/5502	22/11/2005	Addu Mehridhar Nagalini road	2.3545
29	2005	FFE-B(F)(2)-125/05	9/12/2005	Block resource Cordinator Centre	0.038
30	2006	Ft.48-1190/2006 (FCA)	1/3/2006	Police Watch Post Rampur	0.168

1	2	3	4	5	6
31	2006	9-HPB-323/2005 - CHA/733	13/3/2006	Dandol Kashapat Road	3.8423
32	2006	Ft.48-1220/2006 (FCA)	30/3/2006	Skill upgradation for tribal youth	0.1737
33	2006	Ft.48-1208/2006 (FCA)	30/6/2006	Estt. of Comm post	0.0875
34	2006	9-HPB-462/05- CHA/3516	18/8/2006	Bus Stand rampur	1.9218
35	2006	9-HPB414/1997- CHA/3593	18/8/2006	Bushahr Laghu Udyog	0.2898
36	2006	FFE-B-F(2)-184/2007	11/10/2006	Ayurvedic dispensay Dofda	0.054
37	2007	9-HPB-401/05- CHA/278	3/1/2007	Kaleda beonthal road	1.2357
38	2007	9-HPB-181/06- CHA/289	4/1/2007	Bahli Munish road	1.7114
39	2007	9-HPB178/06-CHA/224	3/1/2007	Samej Sarpara Road	4.8476
40	2007	9-HPB471/2006- CHA/3948-52/4895	19/4/2007	Himalaya Stone Crusher	0.93
41	2007	9-HPB176/06- CHA/2669	30/3/2007	Kashadhar mandli Darkali road	4.9874
42	2007	9-HPB-396/06- CHA/2665	30/3/2007	Kharahan Delath Road	6.4315
43	2007	9-HPB326/05- CHA/1753	23/2/2007	Card board industry of Smt. Tara Devi	0.045
44	2007	FFE-BF(2) 183/2007	11/10/2007	Veterinary Hospital, Dofda	0.0551
45	2008	9-HPB-207/07- CHA/2383	20/3/2008	Nankhari Shakla Barog road	1.8814
46	2008	9-HPB-432/07- CHA/2318	20/3/2008	Pajidhar Chandi branda road	3.9406
47	2008	9-HPB-079/08- CHA/576	11/6/2008	Maglad HEP 4.5MW	4.5377
48	2009	9-HPC-375/2008- CHA/2488	28/4/2009	Kut HEP 24 MW	12.9583
49	2009	9-HPB-199/07- CHA/2872	28/5/2009	NH-22 to Averipatti road	2.8514
50	2009	9-HPB 558/98- ROC/3612	7/7/2009	Mohanti Devi Stone Crusher	0.455
51	2009	8-18/2008-FC	21/7/2009	400 KV DC T/line Karchham to abdullapur	111.246
52	2009	9-HPC 219/2008- CHA/6750	17/12/2009	Kiao Kut Kinf Road	7.336
53	2009	9-HPB-135/2008- CHA/113	31/12/2009	Lellon jhinjanoo road	2.6177
54	2010	9-476/1997-CHA/1763	18/5/2010	Mehta Stone Crusher	1.1078
55	2010	9-HPB-360/2009- CHA/2078	4/6/2010	Sechi-II SHEP 5MW	2.546
56	2010	9-HPB077/2010- CHA/3359	27/8/2010	Kurmi HEP 8MW	4.836
57	2010	9-HPB122/2007- CHA/4179	20/10/2010	T/line Sechi 4.5MW	1.2765

1	2	3	4	5	6
58	2011	9-HPB643/2010-CHA/2108	11/3/2011	Approach road to HRTC Workshop	0.1284
59	2011	9-HPB452/2010-CHA/8036	3/10/2011	Rajpura SHEP 4.5 MW	2.2914
60	2011	9-HPB328/2011-CHA/9774	28/11/2011	66 KV T/line Ganvi stahe I to Stage -II	3.8771
61	2012	9-HPB654/2010-CHA/2274	19/3/2012	Kurnu HEP 1.5 MW (Chatterkhand)	1.0879
62	2012	9-HPB234/2011-CHA	11/6/2012	Laru Kharela Road	2.7961
63	2012	9-HPB540/2009-CHA/4958	11/6/2012	Lalsa to Majhali road	5.989
64	2012	9-HPB393/2011-CHA/3890	14/5/2012	Jeori SHEP 9.6 MW	3.8298
65	2012	9-HPB375/07-CHA/77	19/6/2012	Nanti HEP 10 MW	4.0095
66	2012	9-HPB438/2009-CHA/5986	19/7/2012	Kuridhar chunja Karangla road	4.8338
67	2012	9-HPB-092/2010-CHA/6290	24/7/2012	Kut 5MW	1.5801
68	2012	9-HPB406/2010-CHA/4031	22/5/2012	Jogni SHEP 12MW	4.7267
69	2012	9-HPB224/2007-CHA/7061	27/8/2012	Sumez SHEP 14 MW	4.8427
Total					647.3166

1.20 Recent Development

1.20.1 MGNREGA

The National Rural Employment Guarantee Act, 2005 was passed on September 2005. The Act came into force on February 2, 2006 and was implemented in a phased manner. The objective of the Act is to provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. The law was initially called the NREGA but was renamed as MGNREGA on 2 October, 2009. A Job Card will be issued by the Gram Panchayat to the Household that has been registered. The Job Card should be issued immediately upon completing verification i.e. within a fortnight of the application for registration. If a worker who has applied for work is not provided employment within fifteen days from the date on which work is requested, an unemployment allowance shall be payable by the State Government at the rate prescribed in the Act. The responsibility for payment of unemployment allowance shall be with the Programme Office. At least 50% of the works in terms of cost in a Gram Panchayat will be allotted to Gram Panchayat for execution. This is the statutory minimum and the Programme Officer or the District Programme Coordinator may allot more if deemed feasible. The Ministry has set up a comprehensive monitoring

system. For effecting, monitoring of the project 100% verification of the works at Block level, 10% at the District. Level and 2% at the State level inspections need to be ensured.

This scheme was introduced in H.P. in 2008 and a meeting was held on 11-06-2008 by Secretary. Rural Development & Necessary decisions were taken:-

- i) The forest Department through its field functionaries submitted their shelf of projects to the Gram Sabha through BDO concerned. Schedule 1 under section 4(3) of the Act provides for the following works that can be included under MGNREGA. The focus of the scheme shall be on the following works in their order of priority:-
- ii) Water conservation and water harvesting;
- iii) Drought proofing (including afforestation and tree plantation);
- iv) Irrigation canals including micro and minor irrigation works;
- v) Provision of irrigation facility, plantation, horticulture, land development to land owned by households belonging to the scheduled Castes and Scheduled Tribes, or to land of the beneficiaries of land reforms, or that of the beneficiaries under the Indira Awas Yojna/BPL families;
- vi) Renovation of traditional water bodies including de-silting of tanks;
- vii) Land development;
- viii) Flood control and protection works including drainage in water logged areas.
- ix) Rural connectivity to provide all-weather access. The construction of roads may include culverts where necessary, and within the village area may be taken up alongwith drainages; and
- x) Any other work which may be notified by the Central Government in consultation with the State Government.
- xi) Live fencing work to protect crops from wild life depredation as suggested by the Govt. of India, Ministry of Rural Development (MGNREGA Division) dated 5th July,2012 shall be followed.

As indicated above, all works are subject to prior approval by the Gram Sabha and Panchayat Samiti/Zila Parishad. The Forest Department in this case is required to prepare a shelf of projects and submit to the Gram Sabha through Block Development Officer. As soon as the shelf of projects is approved by Gram Sabha the same is forwarded to Panchayat Samiti and Zila Parishad for approval.

The Range officer is appointed as nodal officer for the implementation of MGNREGA Programme at field level in their respective Forest Division. The operational guidelines alongwith the Act are available on Government of India web site www.nrega.nic.in. The copies of brochure on MGNREGA are available in the Directorate of

Rural Development and Panchayati Raj Department; the same can be collected for reference as and when required.

1.20.2 Green India Mission

The National Mission for a Green India was announced by Dr. Man Mohan Singh, Prime Minister of India as one of the eight Missions under the National Plan on Climate Change (NAPCC). It recognizes that climate change phenomenon will seriously affect and alter the distribution, type and quality of natural biological resources of the country. The NAPCC addresses the urgent and critical concerns of sustainable development and identifies the close linkage of the economy with its natural resource base, and cautions that climate-sensitive sectors such as forestry may face a major threat because of the projected changes in climate. This will have repercussions for livelihoods of people in general, and forest dependant communities in particular. The Green India Mission therefore puts the “greening” in the context of climate adaptation and mitigation, aiming to enhance ecosystem services like carbon sequestration and storage (in forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, timber and NTFPs.

The Central Govt. has put in place a National Mission for a Green India as part of the country’s National Action Plan for Climate Change with a budget of Rs. 46,000 crores (approx. USD 10 billion) over a period of 10 years. The overarching objective of the Mission is to increase forest and tree cover in 5 m hac. and improve quality of forest cover in another 5 million hac. Thus, the Mission will help in improving ecosystem services in 10 million hac. of land, and increase flow of forest based livelihood services to, and income of about 3 million forest dependent households, and enhances annual CO₂ sequestration by 50 to 60 million tones in the year 2020. The Mission is innovative in several respects:

- i) First, it proposes a fundamental shift from our traditional focus of merely increasing the quantity of our forest cover, towards increasing its quality and improving provision of ecosystems goods and service.
- ii) Second, the Mission proposes to take a holistic view of greening, not merely focus on plantations to meet carbon sequestration targets. There is a clear and more important focus on enhancing biodiversity, restoring ecosystems and habitat diversity.
- iii) Third, there is a deliberate and major focus on autonomy and decentralization. The Mission will be implemented through an autonomous organizational structure with a view to reducing delays and rigidity, while ensuring accountability.
 - a) Local communities will be at the heart of implementation, with the Gram Sabha as the overarching institution overseeing Mission implementation at the village-level. The Joint Forest Management Committee would be revamped as

Committees of the Gram Sabhac. This is in consonance with the fact forests are a source of livelihood for over 200 million people in the country, and hence centrality of their participation is critical.

- b) A key innovation is the idea of engaging a cadre of young ‘Community Foresters’, most of whom will be from scheduled tribes and other forest dwelling communities, to facilitate planning, implementation and monitoring of Mission activities at local level.

1.20.3 Time Frame

The actual implementation period of the Mission would spread over 10 years, coinciding with 12th and 13th Five Year Plan period, 2011-12 will be taken as the preparatory phase of the Mission. Thus, the Mission will have a preparatory phase, a first phase (five years) and a second phase (five year). Actual field operations will take place from 2012-13.

The preparatory phase of the Mission will be utilized for carrying out the reforms, setting up the Mission organization, leveraging resources for the Mission, identification of sub-landscapes/areas for Mission intervention, identification of partners, creating awareness across multiple stakeholders, setting up/revamping and strengthening of institutions to improve decentralized forest governance, sensitizations of forest department/multiple agencies, and forest dependent communities, capacity building of staff and the communities, commissioning of research/assessment etc. The Mission would consider getting many of these actions in the preparatory phase as conditionally before funding could flow for implementation which is reproduced as under:

1. Centrality of Gram Sabha for improved Forest Governance

- i) The Gram Sabha and the bodies set up by it to be the key institutions to plan and implement the Mission activities at the village level.
- ii) Revamping of JFMCs as bodies of the Gram Sabhac.
- iii) Legal empowerment of the bodies of the Gram Sabha, including the revamped JFMCs to protect, regenerate and sustainably manage forests. Thus could be done under Indian Forest Act and Forest (Conservation) Act, 1980. Provisions to acknowledge such bodies of the Gram Sabha would need to be made in Panchayat Act by respective States.

2. Revamped FDA's to strengthen decentralized forest governance

- i) The FDAs would be revamped as institutions contributing to decentralized forest governance.
- ii) The FDAs, at the district/division level, would be positioned as democratic and inclusive institutions, chaired by an elected representative instead of a

Government official. Representative of federations of local bodies including revamped JFMCs/forest committees of Gram Sabha and SHG federations to be represented in decision making body in the FDA at division level.

3. Strengthening Front Line Formation in Forest Department

- i) The existing vacancies of the front line staff (FG to RFOs) need to be filled on a priority basis during the preparatory phase of the project. A 10 year perspective plan of recruitment and capacity building must be put in place to ensure continuous inflow of new recruits.

1.20.4 State Action Plan

The State Action Plans could dwell on State specific details for Mission interventions. These Action Plans will also be required to propose a clear roadmap for forest governance reforms. The State Action Plan will need to be developed using an inclusive process, engaging the Forest Department, line agencies, civil society organizations and community groups etc. The State Action Plans will draw convergence with overall State Climate Action Plans.

1.20.5 State CAMPA

Whereas the forest land/Govt. land is diverted for non forestry purpose under FCA, 1980, user agency has to deposit the value of NPV, CA and CAT Plan in the State CAMPA account as per proposal approved by the MoEF, GoI. These funds have to be spent to maintain ecological and environmental losses caused by the user agency it may be site specific or otherwise. To make this procedure in uniform manner in all over the country, MoEF, GoI has instructed to form State CAMPA vide letter No. 1-58/09-MoS (I/c)-E&F dated 15/7/2012. To comply the instruction MoEF, GoI Govt. of Himachal Pradesh vide notification no. FFE-B-F (2)-72/2004-Pt-II dated 3/8/2009 has constituted “State Compensatory Afforestation Fund Management and Planning Authority” (hereinafter referred to as State-CAMPA) as an instrument to accelerate activities for compensatory afforestation, preservation of natural forest management of wild life infrastructure development and allied works. Its prime task is to regenerate natural forests and building up the institution engaged in this work. HP Forest department would be modernizing to protect and regenerate the forests and wild life habitat.

The state CAMPA is constituted to promote i) afforestation and soil and water conservation suitable for Himachal Pradesh, ii) conservation, protection, regeneration and management of existing natural forests iii) CA and CAT Plan activities & environmental activities. The function of state CAMPA also include funding, overseeing and promoting CA, CAT Plan, watershed works and wildlife conservation.

The money available with the State CAMPA will be utilized towards the development, maintenance and protection of forests and wild life management and 2% of the amount has to spend on monitoring and evaluation of the expenditure occurred.

State CAMPA releases the funds to the field officers as per the Annual Plan of Operation finalized. The State CAMPA is functioning through a Governing Body, a steering committee and Executive committee. Governing body is consisting of Chief Minister as Chairman, Forest Minister as Vice Chairman and Pr. CCF as Member Secretary alongwith other members. Steering Committee consisting of Chief Secretary as Chairperson, Addl. Pr. CCF (CAT) as member secretary alongwith other members. Executive Committee consisting Pr. CCF as chairperson and Nodal officer as Member secretary alongwith other members. Steering committee lay down or approve the rules and procedure for functioning of body and executive committee, monitoring the progress of the utilization of funds, approve the APO prepared by Executive Committee and annual reports audit accounts of the State CAMPA. Executive Committee take all steps to run the State CAMPA as per procedure laid down by the Steering Committee. All the works under CAMPA fund shall be executed by field functionaries at Divisional Level under the over all administrative/financial control of Executive Committee. They shall be responsible to prepare the APO and get the approval of APO from the Steering Committee and also to monitor the progress of the utilization of funds released by the State CAMPA.

1.21 Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

Recently, the Central Govt. came out with legislation namely “The Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006”. The objective of the Act has been set out in the Preamble to the Act which read that this is “an Act to recognize and vest the forest rights and occupation in forest land in forest dwelling scheduled tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded, forest rights on ancestral lands and their habitat were not adequately recognized in the consolidation of State Forests during the colonial period as well as in independent India, and to address the long standing in security of tenurial and access of forest rights. The Act is divided into six chapters spread over 14 sections. The Ministry of the Central Government dealing with Tribal Affairs or any officer or authority authorized by the Central Government in this behalf shall be nodal agency for the implementation of the provisions of the Act. The Act also empowers the Central Government to issue directions and make rules for carrying out the provisions of the Act and rules framed

there under scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Rules, 2008.

In pursuance of the Central Act, the Govt. of Himachal Pradesh has already been implemented this Act in three districts of Tribal Areas of the State in the first phase since 2008. Now the Government of Himachal Pradesh has decided to implement this Act in whole of the State with immediate effect vide notification No. TD (A)-3-1/2011 Loose dated 27-3-2012. The copies of the said Act and Rules are available on website www.forestrights.gov.in.

The implementation of the Act in the State of Himachal Pradesh is debatable and questionable as the well recorded forest rights has existed on record in various Forest Settlement Reports under the provision of Indian Forest Act, 1927 and H.P. Land Revenue Act, 1954. In Himachal Pradesh, Rights and concessions on all forest lands are already identified, recognized, admitted, documented and recorded in Forest Settlement Reports by the Britishers and subsequently notified by the H.P. Government in 1952 under Section 32 of the Indian Forest Act, 1927. No area has been left out. These rights are inheritable through succession and right holders/local people have been enjoying them without any infringement since its admission.

Himachal Pradesh is a unique State among the Indian States and having no forest villages as like other states in India. In M.P, Jharkhand, Chhatisgarh, Orissa, A.P, Tamil Nadu, West Bengal, Maharashtra and North-Eastern States tribal population live in forest villages but possesses no rights and ownership to the land they cultivate generations, as these are the forest land, as per Govt. record. They are primarily resided in forest and who solely dependent on forests or forest land for their bonafide livelihood needs or their survival. Whereas in State of Himachal Pradesh, tribals and other forest dwellers hold private land in revenue villages in their own name under the well settled laws i.e. H.P. Land Revenue Act, 1954 and well recorded forest rights under the provision of Indian Forest Act, 1927. Thus there are no tribals or group of people or forest dwellers or other people in state of H.P as like other states in India who are dwelling in forest areas and occupation on forest land for generation. There is much difference between occupation and encroachment on forest land and also difference between basic needs or necessity of forest produce for cultivating agricultural land and economy who dependent on forest produce directly or indirectly and dependent on forests or forest land for their bonafide livelihoods needs or survival who primarily reside in forest and dependent on forest land or forest and occupation of land since generation. This fact need to be reconcile with the twin objectives of Forest Conservation and forest rights under the provision of Forest Rights Act, 2006 and well settled law of the land i.e. H.P. Land Revenue Act, 1954, Indian Forest Act, 1927 and law laid down by the Apex

Court. ***In Chhotti Khan V. Mal Singh, AIR 1954 SC 575***, the Supreme Court held that the entries in recording of rights are presumed to be true unless the contrary is proved. By mere declaration or claiming encroachment on forest land by the tribals or forest dwellers or local people will not be treated as occupation on forest land until and unless the objectives of the preamble to the Act (i.e. Forest Rights Act, 2006) is fulfilled or achieved. Therefore DFO(T) must take precaution and necessary action before implementation of the Act in question keeping in view of the principle of law laid down by the Apex Court in ***M.C. Mehta V. Kamal Nath, (1997) 1 SCC 388 and Karnataka Industrial Area Development Board V.C. Kenchappa, (2006) 6 SCC 371, AIR 2006 SC 2038***. The Supreme Court held that the State is the trustee of all natural resources which are by nature meant for public use and enjoyment. The State as a trustee is under legal duty to protect the natural resources.

The Supreme Court further held that the 'Public trust doctrine' primarily rests on the principle that certain resources like air, waters and the forests have such great importance to the people as a whole that it would be wholly unjustified to make them a subject of private ownership. The said resources being a gift of nature, they should be made freely available to everyone irrespective of the states in life. The doctrine enjoins upon the Government to protect the resources for the enjoyment of the general public rather than to permit their use for private ownership.

Secondly, in case of determination of dispute of rights there is provision for special revision of record of rights or correction of entries. The H.P. Land Revenue Act, 1954 authorize the commissioner to direct the record of rights be recorded or revised for an estate, where _____

- (a) Record of rights of estate does not exist, or
- (b) The existing record of rights requires special revision.

In the above circumstances, the commissioner may issue notification for recording of rights or revision of record of rights of an estate:

It is very important to analyze the provision of Indian Forest Act, 1927 and H.P. Land Revenue Act, 1954, the great bulk of our forests are constituted on land in which the ownership vests in state Government but there are rights of user (servitudes) already existing on it in favour of individuals and communities by settlements of rights under the provision of law i.e. Indian Forest Act, 1927, Easement Act and H.P. Land Revenue Act, 1954.

Hence, Forest rights Act, 2006 need to be examined in length before implementation of the Act in State of Himachal Pradesh in the light of existing Revenue Act, Settlement of Forest Rights and Law laid down by the Apex Court so that forest dwellers or local people may not be rushed to grab forest land under the guise of this noble Act.

CHAPTER II A

FLORA AND FAUNA

Chapter II A - Forest Flora

2A.1 Introduction

The hills are usually devoid of these species below 800m of elevation except along the banks of the streams where scattered Shisham trees are found. Pure Chil forests are found on western slopes, where as Chil mixed with ban is found on cooler aspects on elevations ranging from 800m to 2000m. However, on the right bank of river Satluj in 15/20 area the slips are mainly covered with grass land and Chil forests start comparatively from a higher elevation of about 1100m. Between 1500m to 2100m elevation there are some pure Ban oak forests on Northern slopes. Middle elevations are occupied mainly by deodar and Kail while at high elevations from 2400m to 3000m spruce and silver firs are the predominant coniferous species. Higher up Kharsu oak is found upto 3600m scattered as well as in extensive patches. Some birch mixed with Kharsu oak is also found in the upper limits. Over 3600m elevation, trees are gradually replaced by scrubby growth of evergreens like Rhododendron (brass) species, ultimately merging into grass lands and finally to permanent snow line.

2A.2 General Description of the Growing Stock

The Forests of this tract have been classified as per “The Forest types of India” by Champion and Seth as follows:-

Dry Tropical Forests

Group 5 Tropical Dry Deciduous Forest.

- Sub Group** 5B Northern tropical dry deciduous forests.
5B/C2 Northern mixed deciduous forests.
5/IS2 Khair-Sissu forest.

Group 9 Sub-Tropical Pine Forests.

Group 12

- Sub Group** 12/C 1 Lower West Himalayan temperate forests.
12/C 1a Ban Oak Forests.
12/C 1b Mohru Oak forests.
12/C 1c Moist Deodar Forests.
12/C 1d Western mixed coniferous forests.
12/C 1e Moist temperate deciduous forests.
12/C 1f Low level blue pine forests.

12/C 1 /DS 1 Oak scrub.

12/C 2 Upper Broad leaved and coniferous forests.

12/C 2 a Kharsu Oak forests.

12/C b West Himalayan Upper Oak/fir forests.

12/DS 2 Himalayan temperate parkland.

Group 14 Sub Alpine Forests.

Sub Group 14/C 1 West Himalayan sub alpine birch/fir forests.

14/C 1b Birch/fir forests.

Group 15 Moist Alpine Scrub.

15/C Birch/Rhododendron scrub forests.

2A.2.1 Sub Group 5B/C 2 Northern Mixed Deciduous Forest

This type of forest is found above Rampur upto about 40 Km upstream of the river Sutlej and its tributaries, scattered in patches or in strips, below Chil pine (1200m) on the banks of the streams as well as river Sutlej. The forests are largely of the scrub type but the quality improves slightly in depressions and in shades and gorges formed by the river. On the southern aspect it goes up to 500m. On the alluvial soil, Sissoo occurs in good patches.

The important tree species are *Lannea coromandelica* (Jhingan), *Mallotus philippinensis* (Roghi), *Cedrela toona* (Toon), *Bauhinia variegata* (Kachnar), *Albizia lebbek* (Siris), *Bombax ceiba* etc.

The undergrowth consists of *Desmodium tiliaefolium*, *Rhus cotinus*, *Mallotus philippinensis*, *Plectranthus rugosus*, and *Colebrookia oppositifolia*. *Woodfordia floribunda*, *Rubus ellipticus*, and herbs like *Cannabis sativa*, *Gerardiana heterophylla*, and *Euphorbia royleana* occurs in cliffs on the hotter aspects but limited in distribution. These forests are now covered with poor quality grasses and bushes with scattered trees. The important species are *Dalbergia sissoo* (Shisham), *Cedrela toona* (Toon), *Sapindus Mukorossi* (Ritha) and *Bombax ceiba* (Semal) etc.

2A.2.2 Sub group 5/IS2 Khair-Sissu Forest

This Type of forests is restricted along the river Sutlej, Forests are found on gravelly and sandy loam soil. *Accacia catechu* is conspicuous by its absence throughout the tract and the crop comprises of, open to very open *Dalbergia sissoo* (Shisham), with fairly dense shrubby undergrowth of *Adhatoda vasica* (Basuti), *Zizyphus numularia* (Ber), *Meriandra strobilifera* (Pothi), *Mallotus philippinensis* and Sissoo (Shisham) is mainly in mature stage and forms the upper storey. *Arundo donax* (Nadu) is very common, while *Saccharum spontaneum* (Kash) occurs only on the exposed sandy soils.

2A.2.3 Sub-group 9/c 1 Himalyan Sub-Tropical Pine Forests

This type occurs between 1000m to 2000m elevation, overlapping the tropical dry mixed deciduous forest and lower elevations and giving way to temperate forest above. The principal species is *Pinus roxburghii* (Chil) which occurs remarkably in pure and gregarious form and constitutes stable sub climax due to biotic factors. The crop is generally irregular and mature trees are few and widely scattered. Where pure quartzite formation occurs, as noticeable near Pashada, Brawni and Bhadhal in Sarahan Range, the crop improves in quality and stocking.

Admixture of other species occurs along the upper limits as well as along the lower streams and damp ravines. The common associates are *Quercus incana* (Ban Oak), *Rhododendron arboreum* (Brass), *Lyonia ovalifolia* (Anyar) and occasionally trees of *Cornus* species and *Albizzia procera*. The associates may occur either in light admixture or occasionally form an under storey in pine forests. *Pinus wallichiana* (Kail) makes its appearance in the upper most reaches and is sometimes found extending into Chil as may be noticed in Brawni forests C.55 (new). A peculiar association is rarely noticeable in Gaura forests, Sarahan Range, where owing to the heavy rain fall on cool Northern aspect, Spruce comes fairly low upto 1800m and may be found growing along with Chil, pine and Kail. This phenomenon however, is not wide spread. The flora constituting the undergrowth varies in type and density according to the aspects and the overhead shade.

Under open stands of Chil, *Pistacia integerrima* is common as a low squat tree amongst a fairly dense bushy growth of *Woodfordia floribunda*, *Rhus cotinus*, *Desmodium sambuense* and *Rubus ellipticus* and occasional plants of *Lillium thomsonianum* in heavy grass clumps. Higher up and under a more regular canopy bush growth is lesser in extent and here *Desmodium* species, *Berberis* species, *Myrsine africana*, *Indigofera pulchella*, and *Caryopteris wallichiana* are found with *Plectranthus*, *Lespedeza* and other species of composite family as the common herbs such as *Fragaria vesica* etc.

2A.2.4 Group 12 Himalayan Moist Temperate Forests

This type extends the wet zone tract between the Chil pine forests below and the alpine formation higher up in the Division. The altitude range of this type is generally between 1500 m to 3300 m, these limits varying distinctly according to the aspect, configuration of the ground and the drainage. The chief characteristic of this type is the extensive development of the coniferous forests with relatively little admixture with broad leaved species. The number of dominant species is small, the species being dependent mainly on altitude and aspect for their distribution.

The conifer generally form well stocked forests of good height growth varying from 30 to 45m with a varying amount of underwood formed mostly of evergreen oaks. The conifer tends to avoid hot southern exposures, giving place to oak forests. Oaks i.e. Ban, Mohru and Kharsu form somewhat pure forests in their optimum growth zone, and are usually of low height 9m to 19m with widely spread crowns and poor holes. The quantity as well as stocking improves in sheltered localities and on good soils.

In these forests deciduous shrubby undergrowth is always present. Evergreen shrubs such as *Sarcococca saligna*, *Skimmia laureola* are usually met with *Strobilanthes* species occur gregariously over considerable areas. Climbers of temperate zone such as *Rosa moschata*, *Clematis montana* and *Hedera helix* are frequent. *Arundinaria falcata* sometimes forms extensive brakes.

2A.2.5 Sub-group 12/C 1 a Ban Oak Forests (*Quercus incana*)

The Ban oak is the common low level oak of the moist zone and is the major specie over considerable area which varies from 1500 to 2100m. It thus, overlaps the altitudinal zones of all the lower coniferous and is the common companion of the blue pine, deodar and spruce. Pure Ban Oak forests occur in sheltered belts in Nogli Valley and Machhanda Valley. Ahr and narenti block. The forests are of selection type and irregular in age. The chief associates are *Rhododendron arboreum*, *Lyonia ovalifolia* with some *Machilus odoratissima*, *Litsea umbrosa*. *Cedrela serrate*, *Carpinus viminea* etc, in damp ravines. There is generally good deal of shrubby undergrowth chiefly of *Berberis lycium*, *Indigofera gerardiana*, *Sarcococca saligna*, *Daphne papyracea*, *Desmodium tiliaefolium*, *Myrsine africana*, *Prinsepia utilis*, *Spiraea canescens*, *Lonicera quinquelocularis*, *Viburnum* species, *Rubus* species etc.

2A.2.6 Sub- group 12/C 1 b Mohru Oak Forests (*Quercus dilatata*)

These forests occur in small patches above the ban forests between 2100 to 2500m and are definitely of more mesophytic type than the ban oak which displaces it on dry ridges and hot Southren aspects. There is great admixture of secondary species in the top storey consisting manily of deciduous trees such as *Cedrela serrata*, *Acer pictum*, *Rhus semialata*, *Aesculus indica*, *Prunus cornata*, *Pyrus pashia* and *Juglans regia* etc.

This formation merges with Kharsu oak in the upper reaches. The crop is irregular with a preponderance of over mature trees and deficient of regeneration. Examples of this type are met within compartments 63(a) to 63(h) namely Marau, Dhua Rua, Jlabhi Dhar, Kahai Dhar, Deori Dhar, Runpu, Bangi Saran, Ddhara DPFs in the Manglad catchment and all along the valley of Suga, Ganwi and Kut of Sarahan Range.

2A.2.7 Sub-group 12DSI/ I c Moist Deodar Forests (*Cedrus deodara*)

The deodar forests occur between the altitudinal ranges of 1800m to 2400m but may go a little lower down in depressions of nallas and collar aspects and higher up on the southern aspects and sunny ridges with better drainage. Deodar is poorly represented in the heavy rainfall zone of the Manglad catchment and the areas adjoining Sarahan where it generally clings to rocky ridges. Here, a few small patches occur on well drained rocky ground e.g. in C. 59 (Gopalpur) and C.61 (Dofda). The under growth consists of *Viburnum foetens* and *Indigofera pulchella*, *Rosa* species, *Daphne* species, *Jasminum* species.

2A.2.8 Sub- group 12 DSI/I d Westren Mixed Coniferous Forests

This type is commonly referred to as mixed conifer but it also includes pure Spruce and silver fir types and mixed Deodar, Kail and Spruce forests. The forests occur above the pure Deodar forests mixed with low level blue pine deodar forests at altitudes of about 2400m to 3000m or more. High level blue pine is found both in and above it and the fir –oak mixture above it. These forests are commercially important. In the moist mixture of coniferous trees often of very fine growth, such as spruce, deodar, blue pine and silver fir with varying amount of evergreen and deciduous broadleaved undergrowth and, strips and patches of broadleaved trees like *Aesulus indica*, *corylus colurna*, *Juglans regia*, *Prunus cornauta* etc. the conifers are of good quality.

2A.2.9 12 DSI/I e Moist Temperate Deciduous Forests

The coldest aspects and all reentrants and ravine bottoms of the spruce belt between 2100m to 3000m are entirely occupied by a rich mixture of broad leave species to the exclusion of coniferous except scattered spruce and a very occasional deodar.

The oaks are only occasional member of this type, which is commonly known in Bushahr as Thach (grazing land) owing to the richness of the shrubby growth and the quantity of lopping, which the mixed broad leaved species provide. The common trees are *Acer pictum*, *Acer Caesium*, *Pyrus pashia*, *Lyonia ovalifolia*, *Rhododendron arboreum*, *Rhus cotinus*, *Rhus punjabensis*, *Celtis australis*, *Corylus colurna*, *Aesculus indica*, *Alder*, *Walnut*, *Birdcherry*, *populus ciliata* and less commonly the Box wood, Ash and Yew. The shrubby growth is a mixture of *Skimmia laureola*, *Cotoneaster bacillaris*, *Deutzia corymbosa*, *Viburnum foetens*, *Lonicera quinquelocularis*, *Litsea species*, etc. Herbs growth is poorly developed except in a few rather specialized types of canopy e.g. a dense growth of *Chaerophyllus reflexum* under a pure stand of *Pyrus pashia*, *Galium species*, *Rubia species*, *Salvia species*, *Voila species*, *Adiantum* fern, Horsechestnut and under the very dense growth of the *Corylus* and *Pyrus* stands a herb growth of *Viola species* and *Ainliana species* instead of shrubs.

2A. 2.10 Sub-group 12 DSI/ I f Low Level Blue Pine Forests (*Pinus wallichiana*)

The blue pine is second only to deodar in its importance as a commercial timber, and it accompanies the deodar throughout the whole field of the latter's distribution. The blue pine has two altitudinal zones which are well defined although the species is quite common on intermediate grounds between these two habitats. The low level form, depending on a moderately good monsoon rainfall and northern aspect is well developed in Shimla hills and lower Bushahr. The high level type is dependent on a heavy and long lying winter snow fall and is confined to upper forests limits in the inner hills.

This species is a wonderful coloniser and has established itself over large areas during the last 100 years. Of all the large trees species of the moist zone, the blue pine is undoubtedly nearest to deodar in its ecological requirements and in its love for a warm well drained soil. Hence, deodar is following blue pine and establishing itself in ever increasing numbers in this belt assisted, of course, by judicious thinnings and cleaning under the Working Plan prescriptions.

2A.2.11 Sub-group 12/DSI Oak Scrub

This serial type occurs near habitations between 1500m to 2200m elevation and covers mostly UPF's where heavy lopping and browsing as well as unregulated fellings for fuel and agricultural implements have reduced oaks to low, stunted, unsound and bushy trees often of coppice origin. Mostly ban and mohru areas are in this state but some kharsu areas along Narenti, Narkanda and Baghi ridge have also been reduced to scrub state due to heavy lopping by villagers and gujjars. *Rhododendron arborium* and *Lyonia ovalifolia* are common associates, while undergrowth consists of thorny and unplantable bushes of *Berberis lycium*, *Prinsepia utilis*, *Rosa macrophylla*, *Rosa moschata*, *Rubus niveus*, *Spiraea lindleyana*, *Sarcococca saligna*, *Wikstroemia canescens*, *Salvia glutinosa* etc, Regeneration of oaks is almost absent due to heavy pressure of grazing, browsing, lopping and unrestricted fellings for fuel etc. these are getting gradually denuded.

2A.2.12 Sub – group 12/C 2 Upper West Himalayan Temperate Forests

(i) 12/c 2 a Kharsu Oak Forests (*Quercus semecarpifolia*):-This type generally occurs between 2400m to 3400m elevation and is met with along Narenti Narkanda dhar, Hattu Ridge, and form fairly extensive belts from Baghi to Moral Kanda and along Daranghatti Hansbeshan Ridge, Swalar etc. These Kharsu Oak forests are slowly gaining importance on account of their demand for various commercial uses. Kharsu seeds well and regenerates easily as compared to other oaks. It finds good expression on the Southern aspects at the top of the Ridges in a belt of pure forests. In their upper reaches, the dense oak forests end abruptly at the edge of alpine pasture. On other exposures in Sarahan Range, this oak

descends down the nallas and depressions and occurs as scattered trees or in large pure groups amongst the open silver fir stands, other trees of second storey being *Betula utilis*, *B. alnoides* and *Taxus baccata*. This mixture advance towards the higher regions into the alpine pastures rather than the pure Kharsu does.

The herbaceous cover is usually coarse and consists of the following species:-
Anaphalis species, *Fragaria vesca*, *Primula denticulata*, *Caultheria trichophylla*, *Saxifraga ligulata* etc. the common climbers are *Schizandra grandiflora* and *Vitis semi-cordata*.

(ii) 12 /C West Himalayan Upeer Oak/Fir Forest:-This type occurs between 2500 m to 3300 m elevation especially on the Northern aspects and sheltered sites. The forests are covered with snow for several months in the winters. *Abies pindrow* and *A. spectabilis* the low and the high level silver fir to gather forest belt throughout the wet zone with much the same distribution as the spruce.

Kharsu oak, forms a belt of pure on the southern aspects in the main and side Valleys of Sutlej in the wet zone between 2500m to 3400m to the complete exclusion of the silver fir, the dense oak forest stopping abruptly at the edge of the alpine grass lands. On the exposures in pandrabis of Sarahan Range this oak occurs as a scattered trees or in large pure groups amongst the open silver fir stands, other trees of second storey being species of *Betula alnoides*, *Betula utilis*, *Euonymus tingens*, and *Taxus baccata*. The mixture goes up the hill much higher into the alpine pasture than the pure Kharsu does. In this type silver fir, regenerates itself freely whenever the Oak and other broad leaved trees from a light understory in the fir forests. Excellent examples of this may be observed in fir forests along the upper ridges in the Ganwi Suga, Kut and Manglad Valleys of this area.

2A.2.13 Sub-group 12/C I/DS 2 Himalayan Temperate Secondary Scrub, Thach

Parkland

This several type occurs mostly between 2400m to 3600m elevation for more in the Mohru Kharsu and Fir forests and is the result of heavy grazing, lopping and fires which have thinned out the forests to a varying degree, destroyed all under growth except for patches of inedible species and reduced the shrubby ground cover to a grassy turf. The thach consists of an open park like land with scattered usually mature mis- shaped and after moribund trees standing over a grassy turf full of flowers in springs. The common tree at such places is Birdcherry, Acer and Kharsu. These thaches are heavily grazed year after year by enormous flock of sheep and goats. Due to thick humus deposits and luxuriant weed growth, the regeneration of fir and other broad leaved is not coming up at all and the ground is being replaced by grassy turf. Examples of this may be seen in all over the wet zone less rarely in dry and arid tracts e.g. in Gaura, Manglad forests of Sarahan Range, Narenti, Khudlu,

Jammunda, DPF's of Kumarsain Range and Forest numbers 18-C4 (Punan)20-C 1 to C-4 (Kungal Mundar)21, (Bahali) 22 (Bai) and 23 (Andela) of Nogli Range are typical examples of this type.

2A.2.14 Group 14 Sub–Alpine Forest

(i) Sub–group 14/C 1 West Himalayan Sub-Alpine Birch/Fir Forests (Betula/Abies)

This type occurs above 3000m elevation and extends upto 3400m. It comprises of mostly Un-demarcated protected Forests and upper fringes of forests No. 30(c-8) Sharan Jarashi, 35 Kuki Darkali and 36 Dibridansa of Nogli Range and Hattu DPF's. The Principal species in this type are Kharsu oak mixed with scattered fir and Maple and occasional *Betula utilis* along upper limits. Amongst under growth, *Viburnum foetens*, *Rosa sericia*, *Cotoneaster acuminata* are commonly found. Medicinal herbs like *Aconitum heterophyllum* (Patis), *Gentiana kurroo* (Karu) etc. occur in this type. Large flocks of local sheep and goats graze in these areas during summer months.

2A.2.15 Group 15 Moist Alpine Scrub

This type occurs from 3300m to the limit of tree growth at 3900m. It consists of evergreen scrubby growth, usually upto 1m high forming a dense cover over big patches broken by grass. Outlying patches of alpine forests, colonies of the larger *Rhododendron campanulatum* some times, occur in this zone. The Shrub species are *Salix elegans*, *Lonicera parviflora*, and *Polygonum vacciniifolium*. Herbs are *Aconitum heterophyllum* (Dhoop) and *Gentiana Kurroo* (Karu).

2A.2.16 15/C 1 Birch/ Rhododendron Scrub Forests

This forms the upper limit of alpine forest and occurs as patches of varied size in these sheltered sites and usually on northern and western aspects. The Rhododendrons with its various species occur as a dense mat in which *Betula utilis*, *Salix elegans*, etc occur in varying proportions. The whole mass of vegetation is well adapted to stand heavy snow. The common shrubs are *Salix elegans*, *Cotoneaster microphylla*, *Lonicera orientalis* & herbs are *Potentilla species*, *Primula denticulata*, *Aconitum heterophyllum* etc.

The Hon'ble Supreme Court of India in CWP No. 202/95 dated 28.03.2008 in T.N. Godavarman Thirumulpad versus Union of India & Others held that 16 major forest types have been classified by Champion and Seth further grouped into 6 ecological classes depending upon their ecological functions as follows:-

Eco-Class I-	Consisting of Tropical Wet Evergreen Forests, Tropical Semi Evergreen Forests and Tropical Moist Deciduous Forests.
Eco-Class II-	Consisting of Littoral and Swamp Forests.

Eco-Class III-	Consisting of Tropical Thorn Forests and Tropical Dry Evergreen Forests.
Eco-Class IV-	Consisting of Tropical Thorn Forests and Tropical Dry Evergreen Forests.
Eco-Class V-	Consisting of Sub-Tropical Broad Leaved Hill Forests, Sub-Tropical Pine Forests and Sub Tropical Dry Evergreen Forests.
Eco-Class-VI-	Consisting of Montane West Temperate Forests, Himalayan Moist Temperate Forests, Himalayan Dry Temperate Forests, Sub Alpine Forests, Moist Alpine Scrub and Dry Alpine Scrub.

Keeping in view of the above classification of forests the only eco-class V & VI are falls in the catchments of the forest in and outside the protected area for the application of Forest (Conservation) Act, 1980.

2A.3 Status of Natural Regeneration

Due to ban imposed on green felling, no green fellings were carried out during the period of the Working Plan under revision. Therefore no regeneration survey was conducted as proposed in the Working Plan under revision.

2A.4 Injuries to which the Crop is Liable

The forests of this division are exposed to various injuries caused by climatic, fire, man, animal and birds, insects, fungi etc. and are described as under:-

- i) Climatic injuries** It is caused by the extent of snow, by wind action, hail storms, lightening, frost and drought.
 - (a) Snow** Due to heavy snow fall, breaking and uprooting of trees are quite common. The damage is more in conjusted pole and sapling crops.
 - (b) Rain** Persistant rain causes land slips/slide which destroys large number of trees.
 - (c) Wind action and Hail Storms** Considerable wind damage in the form of uprooting and breaking of trees occur during October, November and March. Hail storms are common during April.
 - (d) Lightning** Occasionally, individual trees are damaged due to lightning but the damage is insignificant. Only few trees are damaged annually by lightning.
 - (e) Frost** Young seedling suffers in case of exceptional winter frost.
 - (f) Drought** There is a drought period of two to three months before and after rains which causes mortality to a large number of seedlings in the afforested areas. Fire damage is maximum during periods of prolonged drought.

- ii) **Biotic Injuries** This factor is largely responsible for injuries to trees and forest crops. The various biotic factors are as follows :-
- (a) **Fires** The greatest damage to forests is due to fires. As per the latest report of forest survey of India, the proportion of forests areas prone to forest fires annually ranges from 33% in some states to over 90% in other. About 90% of the forest fire in India is created by humans. India witnessed the most severe forest fire in the recent time during the summer of 1995 in the hills of U.P. and H.P. The fires were severe and attracted the attention of whole Nation. In case of severe fire it is not possible to restore the original condition and new crop raised in the area is never as good as the one destroyed. Fires are caused accidentally as well as through incendiarism. Accidental fires due to lightening or carelessness and are not very common. Most of the fires are due to local incendiarism with the belief that the burning of forest areas improves the fodder resources by getting fresh grass and tender herbage.
- (b) **Human** The injuries to the forest is also caused by human being as given below:-
- (i) **Lopping** Local people mostly indulge in lopping of trees for their bonafide use like fuel and fodder which makes the trees sufferer greatly on account of heavy and irregular lopping especially near the habitations and along the Satluj river where large flocks of sheep and goats are grazed during winter.
- (ii) **Cutting of Torchwood & Debarking of Walnut** The villagers do considerable damage to Deodar, Kail and Chil trees, by cutting deeply and scooping out the resinous torchwood from the basal portion of the trees. These damages are most severe near the villages. The roots and stems of walnut trees are also debarked by the villagers for cleaning the teeth which is also known as Dandasa in local dialect. Due to these cut injuries; the trees are exposed to insects and fungal attack.
- (iii) **Felling** Though incidence of illicit felling is not very high in this division but a few trees are some times cut illicitly by the villagers for their bonafide domestic use.
- (iv) **Encroachments** The encroachment of forest land for cultivation and other purposes continue to be the most pernicious practice endangering the forest resources throughout the country. The decisions of the State Government to regularize the encroachments from time to time have induced the people for further encroachments in the forest land and the problem remained as elusive as ever for want of effective and concerted action against this evil practice.

- (v) **Removal of Pine Needles** Local people collect fallen pine needles for their litter purposes. The excessive and continuous removal of the needles especially near the habitations makes the soil bare and thus exposes it to soil erosion and loss of fertility.
- (vi) **Grass Cutting** Though, this practice is beneficial but the damage is only caused by inadvertent cutting of seedling during grass cutting operations.
- (vii) **Quarrying** There are few number of regular quarrying sites in this tract. But due to this action land slides are common and causes damage to the tree growth. Considerable damage has been caused by quarrying operations.
- (c) **Wild Animals Birds &** Wild animals also damage forest crop, but such damage is not so menacing. Monkeys and Langoors destroy the seed and uproot the young seedling. Flying squirrel destroy lot of conifer seed annually. The Himalayan nutcrackers eat the seed of pine cones. Pheasants also eat up the seeds from the polythene bags in the nursery of Deodar and Chil. Black bear also do considerable damage to the Deodar, Blue pine saplings and poles by debarking and girdling. Bear also consume large quantities of Oak acorn, seeds of Horsechestnut and walnut etc. Percupines and Monkeys dig out young seedlings in the nurseries as well as in the plantations areas and eat roots. Flying squirrels consume unripe cones of Deodar, Kail and Chil and as such sizeable quantity of seed is destroyed. The birds and Lizards nip the young seedlings and eat fruit. Wood packers bore holes in the stems of standing trees.
- (d) **Damage by Insects** Considerable damage occurred to the Fir crop along Bagi-Sungri ridge in forest Shilla, Punan, Kungalmundar, Bahli, Bai, and Andela in Rampur Range by a leaf defoliator identified as *Abraxas fuscescens*. The root borer damages the nursery seedlings. Cock Chafer grubs and wire worms damage young Deodar seedlings while the larvae of the *Euzophera cedrella* attack Deodar sapling considerable. Insect damage is sporadic and does not assume the form of an epidemic. *Deodar defoliator*, *Ectropia Deodara* does great damage to *Deodar*, *Euzophera Cedrella* attacks deodar cones and destroys the seed. Malolontta (Cock Chafer) and Elater (wise worm) kill young deodar seedlings in the nurseries and plantations devouring the roots. The insect *Chermes abietispiseoe* causes galls on Spruce. There is another insect namely *Photophagus Chalcit* which causes galls on Deodar needles and Spruce.
- (e) **Fungi :-** The following are the most fungi which attack on the plants in this tract:

- i) ***Trametes pinii*:** This causes significant damage to kail in this division. The fungus causes decay mainly in the heart wood of Kail trees. The heart wood is stained light pink or brown or reddish, due to which the disease is known as ‘red-rot’. *Trametes pinii* in fact, in Kail mainly attacks through trunk wounds caused during lopping which should be prohibited or controlled to minimize infection. In case of severe attack, the loss of timber is enormous. The lopping carried out during monsoon is more damaging because the infection spreads during these months therefore, the lopping that too silviculturally should be done during winter or spring seasons only.
- (ii) ***Fomes annosus*:** It attacks deodar poles through the roots in badly drained soil and results in their death. The Deodar root fungus has very occasionally killed individual saplings and poles in pure Deodar crops. The damage due to this fungus is not appreciable and only sporadic casualties have been noticed in this division. As the fungus is soil borne, digging of trench around infected groups of poles, uprooting and burning the infected material will be helpful in controlling this fungus. *Peridermium cedri* a needle fungus causes witches broom and kills trees by attacking leading shoots. *Fusarium* species causes “dumping off ” of the seedling on the wet sites. Other fungi are not of much consequence except for termite pinii.
- iii) ***Peridermium companulatum* & *P. brebis*:** These fungi attack the needles of Chil and Kail respectively and kill them. Slight attack of these has been sporadically noticed in some Chil and Kail forests.
- iv) ***Fusarium* species:** It attacks the roots of young deodar seedlings which consequently damp off. Bad drainage & poor aeration are the main causes of this disease. Deodar should, therefore, always be grown in well drained soils. Besides this, damping off in conifer seedlings is also caused by *Pythium*, *Rhizoctonia* & *Phytophthora* spp.
- (f) **Climbers:** - There are mainly three climbers namely *Vitis Semecodate*, *Rosa Moschata* and *Hydra Helix* which are most common and are commonly found in Deodar and Kail Forests. These climbers if not removed have been seen to be damaging young plants by suppression.

CHAPTER II B

FLORA AND FAUNA

Chapter II B – Forest Fauna

2B.1 Introduction

India is recognized as one of eighteen mega diverse countries and has four identified bio-hotspots. They are the Himalayas hotspot which has diverse eco-systems ranging from alluvial grass lands, sub-tropical broad leaf forests to alpine meadows. Second hotspot in India is in the North East of India and part of Indo-Burma Comprising an aggregate of 2 million Km². The third hotspot is in the rain forests of the Western Ghats and is home to a rich endemic assemblage of plants, reptiles and amphibians. Finally, the Andaman & Nicobar Island Chain forms the biological hotspot in India that is closely allied on the Sundaland hotspot of South East Asia. It is home to 7.6% of all mammalian, 12.6% of all avian, 6.2% of all reptilian, 4.4% of all amphibian, 11.7% of all fish, and 6.0% of all flowering plant species. This diversity becomes even more remarkable given that ***our country, with only 2.4 per cent of the total land area of the world, contributes 8 per cent to the known global biological diversity, while also being the second largest populous nation in the world, with over 1.2 billion people.*** It is this unique diversity that the people of India hold in great esteem, are very proud of and have strong cultural and social bonds with.

This deep rooted historical and cultural association with wildlife is central to India and its people. In modern times, burgeoning human population and the consequent exploitation of land and forest resources along with hunting and trapping for trade, food and sport has threatened the survival of many species - from charismatic and well known species to many other lesser known animals and plants whose status is harder to determine.

Post Independence, there has been a growing concern about the decline of wildlife populations and the necessity of conservation and preservation of India's wildlife. This led to the enactment of the Wild Life (Protection) Act, 1972.

By an amendment in 2003, the objective of the WLPA, reads as follows, ***“An Act to provide for the protection of wild animals, birds, plants and for matters connected therewith or ancillary and incidental thereto with a view to ensuring the ecological and environmental security of the country.”***

Thus wildlife conservation is acknowledged as integral to ecological and environmental security of our country, rather than being limited to conservation of certain species of plants, animals and birds or their habitats.

(a) Mammals

A variety of fauna is found in the tract due to variation in altitudes, topography, climate and vegetation. The important fauna is Leopard or Panther (*Panthera pardus*), Himalayan Black Bear (*Selenarctos thibetanus*), Brown Bear (*Ursus arcots*), Jungle Cat (*Felis chaus*), Leopard Cat (*Felis bengalensis*). Himalayan Pine Marten (*Martes flavigula*), Jackal (*Canis aurs*) Red Fox (*Vulpes vulpes*), Ghoral (*Nemorhaedus goral*), Musk Deer (*Moschus moschiferus*), Kakker (*Muntiacus muntijak*), Indian Wild Bear (*Susscorfa cristatus*), Monkey (*Macaca mulatta*), Langurs (*Presbytis entellus*), The Giant Indian Flying Squirrel (*Etaurista petaurista*), Indian Hare (*Lepus nigricollis*)

(b) Birds

Himalayan Griffon Vulture (*Gyps himalayansis*), Golden Eagle (*Aquila chrysaetos*), Monal (*Lophophorus impeyanus*), Cheer Pheasant (*Catreus wallichi*), Chakor (*Electors chukor*), Koklas (*Pucrasia macrolopha*), Kaleej Pheasant (*Lophugs leucomelana*), Red Jungle Fowl (*Gallus gallus*), Western Tragopan (*Tragopan melanocephalus*), Black Partridge (*Francolinus francolinus*), Wood Cock (*Scolopax rusticola*)

(c) Reptiles Himalayan pit viper (*Ancistrodous Himalayanus*), Common Indian Krait (*Bungarus Caerules*), Indian Cobra (*Naja Naja*), Rat Snake (*Pyas Mocosus*), Common Indian Monitor (*Varanus Monitor*), Rock Lizard (*Agamo Tuberculata*), Blood Sucker (*Techydrmous Spp.*)

2B.2 Injuries to which the Fauna is Liable

The fauna of the tract is decreasing due to reduction of the habitat as a result of ongoing development activities. The need of growing population is the cause of animal-human conflict. The normal living conditions of the wild life are disturbed which is a matter of concern. The following are the hazardous influences threatening the wild life:-

i) Habitat Destruction The extension of many species is often associated with the denudation of their natural habitats, owing to ever increasing biotic pressure forestry operations, and development activities like construction of roads and buildings etc. taking place in the natural habitats of wildlife. Roads restrict the movement of fauna. Corridors connecting two vegetation zones gradually vanish due to various developmental activities, which again restrict the movement of Wildlife especially bigger herbivores. The shrinkage of corridors has resulted in the confinement of these herbivores in a particular territory, which was not so in the past. The fragmentation of the Forests has also been causing problems to the avian fauna, mega carnivores and lesser carnivores. Crop raiding and human casualties due to the attack of Wild Bear, macaques, leopards etc are the main consequences which villages are experiencing.

ii) Environmental and Ecological Factors Environmental factors are food, water and shelter, which are most important components in a habitat. The shortage of the above components is often associated with the habitat destruction. Plant life, upon which animal subsist has an important role in the well being of the animals. Where grazing has been a real problem, the available food has to be shared by the wild fauna and cattle population.

Water is another component which determines the existence of fauna. Water source in the Wilderness are also competed upon by cattle population and wild fauna. Ecological factors like temperature, humidity etc also affects animal life. Seasonal variations of weather such as severe drought can have marked effect of wildlife. Humidity also has an effect on the loss of moisture from the body of certain animals.

iii) Fires Fires paly havoc with wildlife. The wild animals get trapped in fire and killed. Most susceptible are the young ones. Fires destroy eggs, micro-fauna and nests. There is considerable loss of habitat too.

iv) Epidemics Epidemics amongst the wildlife is not a common feature, yet deer and antelopes are susceptible to diseases being transmitted through domestic cattle grazing freely in forest.

v) Atmospheric Influences:-The adult are seldom affected by the climatic disturbance but the young once suffer casualties mostly from frost. The hatching of birds is badly affected by heavy rains. Drought reduces the water sources and threat to wildlife increases.

vi) Hunting/Poaching In spite of complete ban on hunting, the stray incidences of hunting wild animals do take place particularly, when the animals migrate to lower elevations due to unfavorable conditions. The damage to orchards and agriculture crops prompts local people to resort to hunting.

vii) Climatic Conditions Sometimes the adverse climatic conditions like heavy rains, heavy snow, and prolonged drought affect the wild animals particularly the young ones.

viii) Disease Transmission Epidemics constitute one of the main factors for the depletion of our fauna. Very little work has been done on the detection and treatment of wildlife diseases in Himachal Pradesh. The diagnosis of free wild animals is very difficult but nevertheless, extremely important. Several communicable diseases of bacterial, viral and protozoan origins occur among wildlife, Wildlife and domestic cattle suffer from almost similar diseases and the chance of transmission is extremely high one such example is Foot & Mouth disease.

2B.3 Protection of Fauna

Following are the measures for protection of fauna

- (i) Wildlife (Protection) Act, 1972 prohibits shooting and hunting of wild animals and trade in Animal articles of trophies. All the statutory provisions and regulatory measures of the Act should be enforcing strictly.
- (ii) There are enough water streams and springs in the area and water shortage is not a major problem. Grazing by local animals however needs to be controlled/ regulated so that the herbivores get enough food especially in lean months.
- (iii) Fires in summer in some localities and majority in winters (due to negligent panwri burning) cause considerable damage to the existing wildlife. Therefore effective fire protection measures and control of fires will help to a great extent in protection of wildlife.
- (iv) Notice boards having useful information and restrictions should be established at prominent entry points at the boundaries of forests. These should be in Hindi/English.
- (v) Cases of cattle damage by leopard, other carnivores and bear are often reported in the tract. This is due to shortage of prey in their habitats. Although compensation is paid for the losses, yet it is insufficient to cover the complete loss. Effort should be made to provide timely and adequate compensation.
- (vi) Bears and porcupine cause damage to the agriculture fields. There is no compensation available for such damage; people are often tempted to do away with the damaging animals. A suitable crop compensation policy/ crop insurance scheme is only likely to be helpful to people. Therefore need the Govt. policy for addressing the problem of crop damage by wild life on priority as applicable in the other States in India.
- (vii) Spreading of the message of awareness and conservation can have good results. In this context celebration of wildlife week, organizing Nature clubs in schools and colleges and involvement of N.G.O.'s is called for. The ultimate aim should be the involvement of local population in conservation of biological diversity.
- (viii) Renewal of existing arms licenses & grant of new ones to be judiciously one subject to condition that arms will deposit with the Police Department especially in winter season in every years on set of harvesting of crops to avoid any misuse of gun/arms under the provision of Wild Life (Protection) Act, 1972.
- (ix) Adequate patrolling staffs particularly of Fgds in fields are must for the protection of wild life in outside the Protected Area.

CHAPTER III

UTILIZATION OF THE PRODUCE

3.1 Agricultural Customs and Wants of the Population

Forest in mountains constitutes the prime source of fodder and grass for Cattle, Fuel wood, fertilizer, fiber and a host of other produce. About 90% of the total population of the State is rural and is dependent on forest, for meeting their needs of fuel wood for cooking and heating purposes. In Himachal Pradesh the domestic needs of timber for construction of houses are also met from the forests through the inherent TD rights. Branches of trees are also lopped for sporting of vegetable crops. Leaves of trees including needles of Chil pine constitute the bedding material for the animals during winter and rainy seasons. Majority of rural population is used to zero cost fire wood from forests and most of them do not have resources to buy fuel. Prior to the imposition of moratorium on green felling State Forest Department was harvesting wood from its forest for packaging of apple and vegetables. This demand had grown to 0.3 million m³ and out of which more than 40% constituted the official supplies. This mounted tremendous pressure on the State Forest both in terms of physical volume extracted and the financial burden due to subsidized process that was charged.

People depend on forests for timber & other forest produce. The land holdings are small and un-economic. The area is not self sufficient in agricultural commodities, however horticulture has picked up very well except few areas of Jhakri, Nogli, Rampur, Dutt Nagar Beat of this division. The human population of the tract is generally dependent on forest for meeting requirement of timber, agricultural implements, fuel wood and grasses etc. With the increase of population the requirement of timber has increased whereas the carrying capacity of the forests to meet the requirements has decreased considerably. Therefore, dependence of agriculture/horticulture on the forests should be clearly brought out.

The type of houses built in the locality and the requirement of timber, agricultural implements, fuel, fodder, fallen leaves for manure, stones and slates for building construction etc. should be discussed so as to lead to some logical arrangements for meeting all the legitimate requirements of the local population. Timber is granted to right holders for bonafide domestic and agricultural use. The annual quantity of timber given to right holders on right holder rates and free grant during the period 1993-94 to 2010-11 is given in *Table No. 1.7 Chapter 1 of Part-I*.

Supplementary income of people has significantly improved through a variety of development works undertaken by different Govt. agencies / Projects over the past. As a

result of improvement in economy of the tract standard of living of general masses have improved. Majority of the people live in properly designed pucca houses. Education is spreading. Mechanization of agriculture is also coming in though at a slow pace. The tables below gives the statistics of human population on the basis of census for the year 1971 to 2011 and Growth in general population in Himachal Pradesh along with the cattle population is tabulated in table No. 3.1 & 3.2.

Table-3.1

Human Population in Rampur Sub-Division						
Sr. No.	Census year	Total Population		Total	% age Annual growth rate	Population density
		Male	Female			
1	1971	29082	27706	56788	23.04	62
2	1981	34018	31385	65403	23.71	77
3	1991	42033	38468	80501	20.79	93
4	2001	51293	45887	97180	17.54	109
5	2011	53802	49810	103612	12.81	123

Table-3.2

Growth in general population in Himachal Pradesh			
Year	Population	Decennial growth rate	Density of population
1901	1920294	-	34
1911	1896944	(-) 1.22	34
1921	1928206	1.65	35
1931	2029113	5.23	36
1941	2263245	11.54	41
1951	2385981	5.42	43
1961	2812463	17.87	51
1971	3460434	23.04	62
1981	4280818	23.71	77
1991	5170877	20.79	93
2001	6077900	17.54	109
2011	6855509	12.81	123

Table-3.3

Live stock population in Rampur Forest Division

Sr. No.	Name of Animals/Number							
	Ox	Cow	Buffalows	Sheep	Goat	Donkey	Mule	Total
1		35589	636	25561		156	384	62326

3.2 Markets and marketable produce

The primary marketable products of this division are timber, resin, fuel wood etc. The commercial exploitation of the forests has been transferred to the Himachal Pradesh Forest Corporation Ltd. since 1982, when the H.P. Forest Produce (Regulation of Trade) Act, 1982 came into force and since then all commercial exploitation is being executed through the HPSFDC.

Medicinal herbs and fruits from the forests are collected by the right holders for their own domestic use and the local people sell the medicinal herbs collected seasonally as per prescribed four years cycle discussed in detail in Chapter VIII, NTFP (Overlapping) Working circle.

3.3 Demand and supply of forest produce

3.3.1 Timber: The demand of almost all forest produce is ever increasing and it definitely has huge pressure on forests. Although the state has imposed ban on green felling yet meeting requirements of the people is a challenge. All the forest produce like timber, fuel wood, NTFP are in great demand. The supply of timber requirement for construction/repair of houses has gone over 10 to 15 crores whereas it was 60-70 lac in 1985-86. The yield position of PB-II, PB-III is on plus side in Deodar-Kail and Chil Working circles.

The major marketable Forest produce is coniferous Timber viz Deodar, Kail, Fir, spruce and Chil. The harvesting is being done by the H.P.State Forest Corporation Limited. The Timber of various species removed (standing volume) from the tract is given in the Table No. 4.2.1. in Chapter IV.

3.3.2 Fuel wood and Charcoal: The estimated requirement of fuel wood in the division is estimated to be 15000 and 18000 quintals respectively for domestic use only. The LPG has significantly reduced the requirement of fuel wood but the villagers enjoy privilege of getting free fuel wood from forest and very often resort to heavy lopping and stripping of bark of Ban oak. Indiscriminate felling of Ban oak in the past has left little scope to fell more ban oak trees which is the main source of fuel wood and charcoal in the tract. Ban oak is completely protected species as notified vide letter No. Fts. (F) 13-38/84 dated 11.3.86.

3.3.3 Fuel wood Requirement

The yearly per head requirements of fuel wood for 1,03,612 families is 9,59,447 qlts. People depend on fuelwood for cooking and heating in this region. The average per head consumption of fuelwood in rural areas has been assessed by the Forest – Survey of India (NZ) Shimla. According to the survey the annual consumption of fuel wood/ head is 11.39 qlts. Out of which 9.26 qlts. is procured from Government forests and 2.13 qlts. from private lands. Besides this agriculture waste and LPG gas are also used. Subsidy on LPG should be

increased so that pressure on Government Forest can be reduced. The requirement of Fuel wood to be met with from Govt. forests is tabulated in the table No3.4.

Table No.3.4

Year	Population	Requirement of Fuel wood to be met with from Govt. forests
2011 census	103612	959447 qtls

3.3.4 Forest Grazing and Fodder requirement: Large number of un economic and poor bred domestic cattle are kept for farm work as well as manuring purposes. Stall feeding is still little known in the tract. The villagers depend for their grazing requirements upon the forest resources only. Hay (locally known as toil) has got to be started in the upper belt for their winter requirements where the area is under snow cover. Un-restricted grazing is practiced in all the forests. The cattle are left loose throughout the day and they wonder all over in the neighboring forests in search of fodder. Pressure of grazing near thickly populated villages is very heavy. The cattle population of the tract is tabulated in the table No .3.5

Table No.3.5

Cattle Population

Year	Sheep	Buffalo	Cow	Donkey	Mule	Total
2011	25561	636	35589	156	384	62326

In erstwhile Bushahar State, the areas of the demarcated protected forests are generally open to grazing by right holders cattle, sheep and goats. Divisional Forest Officer, however, has the power of closing and fencing areas as he may consider necessary in the interest of Forest Conservancy. The right of grazing admitted is too liberal. The number of cattle to be grazed is not fixed. Un-demarcated forests areas adjoining villages are very heavily grazed.

3.3.5 Fodder Requirement

That based upon the data of Himalayan Watershed Management Project (H.P.) Plan for sub watershed 14.17 and 18 Giri water shed, the requirement of fodder is given in table No.3.6

Table No.3.6

Particulars	Population	Unit	Animal units
Cow	35589	1	35589
Buffalo	636	1.5	954
Sheep	25561	0.25	6390
Others	540	1.00	540
Total			43473

At the rate of fodder consumption of 4.5 Kg dry matter per day per animal unit with 70% utilization, the total dry matter fodder requirement would be :-

$$\frac{43473 \times 4.5 \times 365}{1000 \times 0.7} = 102006 \text{ M.T.}$$

3.4 Medicinal Herbs/NTFP: Medicinal herbs and fruits from the forests are collected by the local people for their own domestic use and for sale in the market.

The detail of NTFP being exported from Rampur Forest Division under approved four year cycle is tabulated in table No:- 3.7

Table 3.7

Detail of NTFP Exported from Rampur Forest Division							
Year	Name of Panchayat	Name of Species	Scientific Name	Quantity exported (in Qtl.)	Royalty realised (in Rs.)	Export permits fees (in Rs.)	Total Revenue (in Rs.)
1	2	3	4	5	6	7	8
1993-94	Munish, Duttnagar & Phancha	Tagor Ganti	Valeriana hardwickii	3.3	5		5
		Tagor Grass	Valeriana hardwickii	1.3			
		Ritha	Sapindus mukorossi	30	25		25
		Chalora	Lichen	32	20		20
		Karoo	Picrorhiza Kurrooa	5.75			
		Dhoop	Jurinea macrocephala	236			
		Talis patra	Abies webbiana	0.82	6964		6964
Total				309.17			7014
1994-95	Sarahan, Jaghori, Phancha & Koot	Dhoop	Jurinea macrocephala	409.48	209110		209110
		Kakar singi	Pistacia integerrima	2.42			
		Shingli Mingli	Dioscorea deltoidea	5.2	4680		4680
Total				417.1			213790
1995-96	Sarpara	Pather Fod	Saxifraga ligulata	5.9	1997		1997
		Som Lata	Ephedra gerardiana	2.32			
		Bai		4.15			
	Phancha	Bach	Acorus calamus	20	4220		4220
		Karoo	Picrorhiza Kurrooa	3			
	Deothi, Kashapat & Munish	Dhoop	Jurinea macrocephala	116	80416		80416
		Bach	Acorus calamus	29			
		Karoo	Picrorhiza Kurrooa	27.5			
		Chalora	Lichen	10.2			
		Som Lata	Ephedra gerardiana	30.2			
Total				248.27	86633	0	86633

1	2	3	4	5	6	7	8
1996-97	Kashapat, Munish & Deothi	Dhoop	Jurinea macrocephala	1.25	10158		10158
		Chalora	Lichen	7.75			
		Buch	Acorus calamus	25			
		Chukhari	Rheum emodi	16.25			
		Butcher		55			
	Bahli	Rewal chini	Rheum emodi	46	81751	0	81751
		Talish Patra	Abies webbiana	51			
	Darkali	Bhojpatra	Betula utilis	76.5			
		Thuth	Salvia moorcrotiana	5.1			
	Taklech	Chora	Angelica glauca	14.5			
	Narain	Chalora	Lichen	36			
		Karoo	Picrorhiza Kurrooa	6			
		Dhoop	Jurinea macrocephala	98			
	Buch	Acorus calamus	42				
Total				480.35				91909		91909
1997-98	Bahli	Dhoop	Jurinea macrocephala	20	11300	0	11300
	Narain	Bach	Acorus calamus	10			
	Koot	Dhoop	Jurinea macrocephala	40	20000	0	20000
Total				70	31300	0	31300
1999-2000	Kinoo & Sarahan	Bhojpater	Betula utilis	19.5	2690	0	2690
		Dhoop	Jurinea macrocephala	2			
		Buch	Acorus calamus	5.5			
	Darkali	Dhoop	Jurinea macrocephala	18	10040	0	10040
		Buch	Acorus calamus	8			
Total				53	12730	0	12730
2002-03	Nankhari	Gucchi	Morchella esculenta	0.25	2500	0	2500
	Sarahan	Shingli Mingli	Dioscorea deltoidea	80	72000	0	72000
	Phancha	Shingli Mingli	Dioscorea deltoidea	50	45000	0	45000
	Munish	Shingli Mingli	Dioscorea deltoidea	50	45000	0	45000
Total				180.25	164500	0	164500
2003-04	Rampur	Shingli Mingli	Dioscorea deltoidea	150	135000	0	135000
	Kashapat	Shingli Mingli	Dioscorea deltoidea	30	27000	0	27000
Total				180	162000	0	162000
2004-05	Darkali	Khanor	Aesculus indica	220	25	0	25
Total				220	25	0	25
2006-07	Phancha	Bhojpatra	Betula utilis	11.22	25	0	25
Total				11.22	25	0	25
2011-12	Darkali	Nag Chatri	Trillidium govanianum	50	1250	0	1250
Total				50	1250	0	1250

1	2	3	4	5	6	7	8
2012-13	Darkali	Nag Chatri	Trillidium govanianum	1.83	18300	0	18300
Total				1.83	18300	0	18300

3.5 Method of Harvesting and their Costs

In the past the felling, extraction and conversion of Timber was done through open public auction of the lots to the private contractors. Since the nationalization of the Forests, extraction and all the logging operations are being done by the H.P. State Forest Development Corporation Ltd. Similarly Resin Tapping too is done by the H.P. State Forest Development Corporation Ltd.

Because of increase of labour cost, the cost of extraction has also increased. As per record of H.P.S.F.D.C, approximate cost of extraction of sawn wood per cum for the year 2010-2011 excluding royalty are tabulated in table No:- 3.8

Table-3.8

Timber extraction cost statement

Sr. No.	Name of Work	Timber cost Per cum (Rs.)
1	Lopping and felling	90.00
2	Sawing and Conversion	865.00
3	Carriage from forest to roadside	1098.00
4	Carriage by trucks	649.00
5	Contingency charges and establishment.	4252.00
Total		6954.00

The detailed cost of resin extraction are tabulated in table No: - 3.9

Table-3.9

Resin Extraction Cost Statement

Sr. No.	Name of Work	Cost per quintal (Rs.)
1	Setting up of crop including collection charges	25.00
2	Resin Extraction upto R.S.D	1071.00
3	Store Consumed	-
4	Carriage Charges	45.00
5	Establishment Charges	4438.00
6	Miscellaneous Charges.	114.38
Total		5693.38

3.6 Lines of Export

There has been revolutionary development of network of roads (metalled and un-metalled) which have significantly boosted up export of forest produce from the tract. From forest upto road side, the Forest produce is generally transported manually. There after the forest produce is transported by roads. Length of main roads is tabulated in table No:- 3.10

Table-3.10

Sr. No.	Name of Road	Distance in Kms.
1	Nogli Sungri road via Taklech Bahli	60 Km
2	Taklech Majhali road	30 Km
3	Bhadrash Brandli Sungri road	40 Km
4	Nirath Nankhari via Barach	45 Km
5	Nirath-Kandreri	35 Km
6	Narkanda-Khamadi via Nankhari	60 Km
7	Jeori-Phancha	35 Km
8	Rampur Sarahan via Kinoo Mashnoo	50 Km
9	Rampur-Sarpara	25 Km

3.7 Past and Current Prices

The Average royalty rates of timber obtained from the Forest Corporation during the year 2007- 2008 to 2010-2011 are tabulated in table No:- 3.11

Table-3.11

Royalty rates/average rates per cum (Rs.)

Year	Deodar	Kail	Fir/Spruce	Chil
2007-2008	4315.00	2388.00	677.00	431.00
2008-2009	4315.00	2388.00	677.00	431.00
2009-2010	5664.00	2944.00	836.00	626.00
2010-2011	5903.00	3098.00	790.00	572.00

The average royalty rates for Resin are tabulated in Table No:- 3.12

Table-3.12

Year	Average royalty rates of resin per blaze (in Rs.)
2007	23.00
2008	27.70
2009	33.70
2010	35.00
2011	65.00

The present average market rates of various Forest produce are tabulated in Table No:- 3.13

Table-3.13
Average Market Rates (2009-2010)

Sr. No.	Name of Forest Produce	Unit	Rates per Unit (Rs.)
1	Chil Timber	cum	5507.00
2	Deodar Timber	cum	27704.00
3	Kail Timber	cum	15898.00
4	Rai Timber	cum	7639.00
5	Mixed Fuelwood	cum	610.00
6	Charcoal	cum	1480.00

CHAPTER IV

ACTIVITIES OF FOREST DEVELOPMENT CORPORATIONS IN HARVESTING AND MARKETING OF FOREST PRODUCE

4.1 General Description

The H.P. State Forest Development Corporation Ltd. an undertaking of the H.P. Government which came into existence on the 25 of March 1974. This corporation has been mainly created with the following objectives.

- i) To carryout extraction of timber and resin on scientific lines by adopting suitable modern techniques.
- ii) To eliminate the contractors agency in respect of works of timber extraction and resin tapping.
- iii) To obviate the chances of illegal felling of trees, illicit tapping of resin and other malpractices.
- iv) To work the forest on commercial lines by recycling of funds for works and also by raising funds from financial institution as per requirements.

The H.P. State Forest Development Corporation Ltd. took over the complete working of the Government Forest w.e.f. 25/01/1983. The H.P. State Forest Corporation has been working salvage lots comprises of dry diseased, uprooted and damaged trees, handed over to them for working which the lots of green trees coming in the road alignments are also handed over for working through H.P.S.F.D.C. after obtaining prior approval of the Central Government under Forest Conservation Act 1980. The objectives of forest corporation reveals that sustainable extraction of produce from forest is assured and this guarantees the upliftment of socio economic status of State by providing benefits to local people directly and keeping forests intact by scientific exploitation indirectly. Forest Development Corporation is indeed adding in increased income of rural as well as urban population by way of giving employment during exploitation in rural areas and processing in urban areas. A single unit of rosin factory gives employment to large number of people hailing from both rural and urban populations. Forest Corporation is adding income to State Government by way of selling quality products generated from resin, turpentine and salvage lots etc.

After nationalization of forests in 1983, standing trees are being handed over to HP State Forest Development Corporation at rates decided by the Himachal Pradesh Government from time to time. Only dry and fallen trees referred to as salvage are handed over to Divisional Manager, HPSFDC Ltd. Rampur who has jurisdiction over this division. The H.P. State Forest Development Corporation carries out extraction through conventional methods

and there is no sign of any mechanization to be introduced in the future. Felling is done by axe or saw. The trees are cut in to logs of different sizes with the help of saws. These logs are further squared with help of axe and then sawn into scantlings by using pharnies. All these works are executed through labour supply mates under the direct supervision of the Forest Corporation Staff. The details of extraction of Timber for the last fifteen years are tabulated in table No:- 4.1.

Table 4.1
Timber yield

Year	Volume marked in m3	Volume Felled in m3	Volume converted in m3	Converted %
1993-94	2171.52	2171.52	972.84	44.80
1994-95	16843.62	16843.62	7832.28	46.50
1995-96	11557.07	11557.07	4841.25	41.89
1996-97	33229.76	33229.76	13803.64	41.54
1997-98	15073.56	15073.56	6395.71	42.43
1998-99	21614.27	21614.27	8637.06	39.96
1999-2000	5382.68	5382.68	231.65	41.46
2000-01	8384.62	8384.62	3557.59	42.43
2001-02	32086.61	32086.61	14945.94	46.58
2002-03	6158.93	6158.93	2486.97	40.38
2003-04	7381.57	7381.57	2778.42	37.64
2004-05	6043.82	6043.82	2128.63	35.22
2005-06	17797.66	17797.66	7709.94	43.32
2006-07	43941.62	43941.62	18468.66	42.03
2007-08	10351.88	10351.88	4641.78	44.84
2008-09	18181.11	18181.11	7625.15	41.94
2009-10	24737.96	24737.96	10637.32	43.00
2010-11	25337.475	25337.475	10900.18	43.02
2011-12	6705.363	6705.363	2808.20	41.88
Total =	312981.10	312981.098	131403.210	800.86

4.2 Forest Development Corporation and Harvesting

4.2.1 Timber Extraction Work

Timber Lots: Forest development corporation in Himachal Pradesh commenced in 25th March of 1974 with the mandate to deal with marketing of timber, fuel wood, Pulpwood, Bamboo, Khair, resin turpentine oil, subsidiary products viz phenyl, Varnish, Black Japan viz a viz Fiber board factory at Baijnath is presently engaged in the joinery works, timber chemical treatment and timber seasoning for Government as well as private timber. With complete nationalization of timber extraction works in HP through the aegis of the H.P. State Forest Corporation Ltd, both in Govt. and private forests, it has become absolutely essential

to ensure uniformity in working procedures and maintain records in all Forest Working Divisions

(a) Marking: Marking is to be done by the territorial staff in accordance with the instructions issued by the Pr. CCF HP and concerned Conservator of Forests. The marking lists should be prepared in triplicate.

In case of salvage markings, the event (Fire, wind, snow etc.) requiring salvage markings should be clearly mentioned. The trees standing on very steep and rocky portions, likely to be damaged during fellings or conversion should not ordinarily be marked. The facsimile of the hammer mark has to be affixed on the marked tree on the lower most portion of the tree on down hill so that no difficulty is felt while carrying out fellings.

(b) Time Schedule for Working: The list of forests to be marked each year must be intimated by DFOs to DM by 30 June every year. In case of Khair, Chil, fuelwood coppice Bamboo etc. lots the marking list must be submitted by 15th September for the year in which the work has to be started. No marking list for such type of felling should be received either by the Director or Divisional Manager without the approval of managing direction after 30th September in case of Chil lots and 15th December in case of high level conifer lots viz: Fir, Spruce, Deodar, Kail and temperate Broad leaved species.

The working period of a lot related to the standing volume would be as under:-

- i) Lots having standing volume upto and including 2832 M³ = 1 year
- ii) Lots having standing volume of 2833 M³ to 8496 M³ = 2 year
- iii) Lots having standing volume of 8497 M³ to 16992 M³ = 3 year
- iv) Lots having standing volume of 16993 M³ to 28320 M³ = 4 year
- v) Lots having standing volume of 28321 M³ and above = 5 year

(c) Due dates of payment of royalty installments from lots are fixed in table No.:- 4.2

Table-4.2

Sr. No.	Lots	Period
1	2	3
I	Chil Lots	1/3 by 15 th January
		1/3 by 20 th March
		1/3 by 15 th June
II	Khair and Coppice lots	1/3 by 15 th February
1	2	3
		1/3 by 15 th March
		1/3 by 15 th June
III	High lying Coniferous one year lots	½ by 30 th November
		½ by 20 th March.

(d) Lead Measurement

No change in the length of lead will be allowed after it has been measured by a committee comprising of one gazetted officer of concerned forest working division one gazetted officer of the adjoining forest working division and Assistant Manager of the concerned lot.

(e) Handing over and Taking over of the Marked Forests

The marked forests should be handed over to the Divisional Manager, Sub Divisional Manager or Assistant Manager under proper receipt. The possession should be given after the Forests have been inspected and the description in the markings in respect of illicit fellings or other deficiencies in the marking like fit, unfit etc should be pointed out and reconciled. Any discrepancy noticed after taking over will be to the account of Forest Working Division.

4.2.2 Resin Extraction Work

4.2.2.1 Resin Lots: Resin lots are handed over annually to H.P. State Forest Development Corporation at Resin royalty rates fixed by Himachal Pradesh Government for every year. Earlier the extraction was done by cup and lip method which proved to be disastrous for many forests. Now there is complete shift to rill method of extraction which gives equally good yield as well as obviates the likely damage by fire and wind. The instruction of Resin Tapping is contained in Punjab Forest leaflet No. 13 which shall be followed. The detailed techniques of Resin Tapping have been discussed in Chapter II in Chil Working Circle. However, the detail of resin extraction is tabulated in Table No: - 4.3

Table 4.3

Resin yield

Year	No. of blazes	Yield of resin	Average yield per 1000 blazes (Qtls.)
1	2	3	4
1993	60847	1141.64	18.76
1994	27977	1054.31	37.68
1995	34119	1746.12	51.17
1996	33291	1602.87	48.15
1997	30823	1216.23	39.78
1998	34876	1844.57	52.89
1999	34225	2126.16	62.12
2000	29774	915.45	51.10
2001	33788	2076.72	61.46
2002	33788	2077	61
2003	32732	1941	59
2004	44009	2289	52
2005	44009	2229	51
2006	44009	1894	43
2007	46216	2204	48

1	2	3	4
2008	50819	2219	44
2009	49875	1902	38
2010	29896	961	32
2011	18237	626	34
2012	18237	628	34

(Source: HPSFDC Rampur Working Division, Rampur)

4.3 Marketing of Forest Produce

The local people are mostly agrarian. The land holdings are much less than the required livelihood. Due to lack of motorable road and poor marketing infrastructure in the tract, the local people cannot sell their meager agricultural products in the open market. Similarly the local people also exploit NTFPs from Non Protected areas of the tract to supplement their incomes but due to lack of poor marketing infrastructure and value addition, they always used to sell their produce through middle man in the market. It is therefore, quite imperative that the forest department provide ready marketing inputs through co-operative societies to exclude middle man, so that they could get fair price for their goods and avoid over exploitation of NTFPs from forest. Scientific inputs to enhance cultivation, storage and value addition and marketing shall go a long way in enhancing income of local people through maintaining traditional knowledge and help reduce pressure on the national resources of the tract in sustainable manner.

There is little local market for the forest produce; the demand of local people being met mostly through exercise of rights. Timber extracted from this division is marketed through sale depot Baddi. The annual sale turn for the year 2010-2011 was Rs. 3,11,71,000 as per data given by Divisional Manager Baddi, and the Rampur division contributes to only 18 to 20 %. The resin is processed and further sold through R&T Nahan and Bilaspur factories.

4.4 Result of Socio Economic Survey

4.4.1 Ethnic identities, Tradition, Custom and Dependence of Local People on Forests

There are 48 panchayats comprising 327 villages in Rampur Forest Division. The society of Kashapat and 15/20 area of this division is by and large poor agrarian. Land holdings are marginal and not sufficient to sustain them. The earliest record on the general condition and livelihood patterns of the local people is available from the observation made by Mr. J.B. Fraser a British Military Officer during the year 1814. Mr. Fraser observed that due to mountains, poor infrastructure development and barren terrain; little grain was produced in the tract. The grain was imported from the plains. The age old system polyandry prevails in most of the 15/20 and Kashapat area of Rampur Sub Division but has been rapidly

loosing ground to monogamy these days. The age old polyandry system is not encouraging in the society. Polyandry was in former days, directly encouraged by the State through penalties exacted on partitions. When a set of brothers divided movable property one half share of the whole was appropriated by the State and division of immovable property was refused official recognition. That is why dependence of the people on forest resources were dependable on carrying capacity of forests in sustainable manner. Their life and livelihood depend upon the rich biodiversity of the forests. They have been living in harmony with the forests & wild life since time immemorial. The material existence of the local people depends on forests to such an extent that they cannot visualize in the absence of biological resources. Their folklores and culture is full of references to the forests and wild life. There are several rights and rituals where some forest produce is used one way or another. They have co-existed since time immemorial and will continue to co-exist in a mutually re-enforcing relationship in future also.

During the recent years, the tract of the Rampur Forest Division is open to outside influence of culture, has been a great deal of commercialization except some part of 15/20 and Kashapat area. This is because of infrastructure development, NJPC and Rampur Hydro Power Projects which has brought opening up the tract i.e. road, socio-economic development and education. They have improved extensive development in growing apple and other fruits besides traditional agricultural crops. Since the agricultural crops are insufficient, the local people in remote areas also rear goats and sheep as the secondary occupation and they remained dependent on forest resources.

The condition of people living in 15/20 area and Kashapat are not good, people are poor, clinging to old customs, traditions and beliefs. The land holdings are marginal and un-economic. Still the area is deprived of road and social development and not self sufficient in sustenance to their life. No doubt horticulture has picked up very well and playing a predominant role in Sarahan, Gaura-Mashnoo, Gopalpur, Nankhari and Bahli area and making them prosperous as fruit growers but rest of the area of the tract the condition of the people is not good and still meager income. Very few people are employed on seasonal basis. Employment provided by the forest department and other departments which augment their meager incomes in 15/20 and Kashapat area of the tract. Secondly people collect and sell the NTFPs to supplement their income but now they have been deprived of their rights to collect and sell the NTFPs from Protected Areas as conveyed by the Govt. of India dated 20-10-2003 in compliance of the Hon'ble Supreme Court order dated 14-2-2000. Thus it is not only contradictory to the Forest Policy, 1988 but also it affects on the right to livelihood of poor people in and around the Daranghati WildLife Sanctuary. By depriving the rights and

concessions from the Protected Areas as per Forest Settlement Report, 1921, there have been direct conflict among people and field functionaries; hence, it is influencing the management and conservation of forests to a large extent. Illegal poaching, illegal construction of roads and lack of concern for biological conservation issues among local people is having least impact on the precious forest resources of this division.

Due to net work of communications and developmental activities in the fields of Agriculture, Horticulture, Education and Health etc. there is a marked improvement in the living conditions of the inhabitants except 15/20 area and Kashapat block of this division. The main problem of the local people of 15/20 area and Kashapat block is dearth of road, health, education and other public utility services etc. The people are facing problem of damages to their agricultural crops by wild animals for which they are still depriving their rights to get compensation due to lack of H.P. Govt. Policy. Secondly domestic requirement of fuel wood, fodder, minor forest produce and timber for construction and repair for house/hamlet should be the first priority as Constitutional mandate rather than commercial. Similarly domestic energy, fuel wood needs to be substituted as far as practicable with alternative source like bio-gas, LPG, solar energy and fuel saving devices as a measure of conservation also need to be popularized in rural areas. Alternative measures should be adopted to reduce the social custom based on forests like people cut one pole for grass storage locally known as “Tolli” every year as a right which should be stopped by providing them alternative angle iron pole on subsidized rate. Stall feeding needs to be popularized in all the villages of the tract to reduce the pressure on the bio-diversity by providing incentive to local people etc. This will help in increasing the forest cover and maintaining the ecological balance of the tract. Realizing this impact on the society the courts in India have also dealt with cases relating to environment and development. A principle has evolved out of these decisions that the socio-economic development shall have to be made in closest possible harmony with the forests and environment.

CHAPTER V

FIVE YEAR PLANS

5.1 Introduction

Planning in India derives its objectives and social premises from the Directive Principles of State Policy enshrined in the Constitution of India, Article 38 and Article 39 (a), (b) and (c) are cited in the resolution of 15th March, 1950 by which the planning commission was setup. These are_____

“The State shall strive to promote the welfare of the people by securing and protecting, as effectively as it may a social order in which justice, social, economic and political, shall inform all the institution of natural life” (Article 58 of Constitution)

The State shall in particular, direct its policy towards securing _____

- a) that the citizens, man and women, equally, have the rights to an adequate means of livelihood,
- b) that the ownership and control of the material resources of the community are so distributed as best to sub-serve the common good,
- c) that the operation of economic system does not result in the concentration if wealth and means of production to the common detriment,

The national planning process was started in 1951 in India with the formulation of First Five Year Plan. The first three five year plans laid thrust on the promotion of agriculture and industrialization, Environment-related issues pertaining to the improvement of human environment such as sanitation, public health, nutrition, water supply and housing got due priority in national programmes under the three five year plans. However, environment protection did not receive any significant recognition under the development planning except the forest development and soil conservation.

The brief description of the activities under taken right from 1st Five Year Plans in this Division is given as under:-

5.2 First Five Year Plan (1951-56)

The First Fiver Year Plan showed maximum concern about rehabilitation of forest areas, which had been over exploited either to meet the Second World War needs. Little efforts were made to help stabilize soil in highly eroded areas through Afforestation. In response to the Forest Policy of 1952, the Central Board of Forestry, Constituted in 1950 to provide guidance to the Central Government in the formulation of policy and programmes in the field of forestry. The wastage in conversion and felling of trees was minimized. Besides, man made forests of economic species were raised.

After the merger of states in 1949, the forests were densely stocked and exploited commercially. By enlarging the scope of 1894 forest policy, the new National Forest Policy which was formulated in 1952 i.e. during First Five Year Plan, the forest of this division were also managed as per the prescription of the Working Plan. In this Division during Madan's Working Plan (1947-48 to 1958-59) which almost falls in the First Five Year Plan, the main broad objective of the management were not only to preserve all the existing forest growth, but also suitably to extend it wherever possible primarily with view to prevent further denudation of hills to stabilize the existing land slips etc. and to maintain an even flow of water in the various flames which ultimately flow into river Sutlej.

The year-wise revenue and expenditure of the erstwhile Upper Bushahr Forest Division is tabulated in table No:- 5.1.

Table 5.1
Revenue and Expenditure of Rampur/Kotgarh Forest Division during First Five Year Plan

Year	Revenue(Rs.)	Expenditure(Rs.)	Surplus(Rs.)
1951-52	218058	48307	169751
1952-53	161418	41536	119882
1953-54	378350	43932	334418
1954-55	438554	74720	363834
1955-56	770500	74711	695789

(Source: Working Plan by I.D. Sharma)

Keeping in view the large scale import of food grains and inflationary pressures on the economy, the First Five Year Plan (1951-56) accorded the highest priority to agricultural including irrigation etc. rather than forestry operation.

5.3 Second Five Year Plan (1956-57 to 1960-61)

The Second Five Year Plan seeks/lays stress to rebuild rural India, to lay the foundations of industrial progress, and to secure to the greatest extent feasible opportunities for weaker and under-privileged sections of our people and the balanced development of all parts of the country. Both the First and the Second Plan put considerable emphasis on preservation processes, improvement of communications and introduction of degraded forests, establishment of new plantations, especially of fast growing species, application of modern systems of intensive forest management, better moderately of inferior varieties by seasoning and preservation processes, improvement of communications and introduction of modern techniques. Large tracts of degraded forests situated in the former Zamindari estates and princely States came under Government control. Schemes for the demarcation of such areas and preparation of maps were taken up.

During this period Mehar Chand's Working Plan (1932-33 to 1961-62) was in vogue in this division. This plan like earlier plans, dealt only with the demarcated forests and the general objectives of management were to preserve the demarcated forests and to improve them with a view to prevent erosion, to regulate water supply in streams, to obtain sustained yield of timber and charcoal. In addition to this it was proposed to regenerate the extensive blanks caused by 1921 fire besides satisfying the legitimate requirement of the local residents for timber, fire wood, grazing and grass cutting etc. It was during this period that all types of demarcated forests, irrespective of vegetative association, were included and shelter wood system of regeneration by compartments was introduced for the Deodar and pine forests. Beside this the deodar forests were exploited for revenue with emphasis on regeneration by mainly natural means.

The year-wise revenue and expenditure of the erstwhile Upper Bushahr Forest Division is tabulated in table No:- 5.2.

Table 5.2
Revenue and Expenditure of Rampur/Kotgarh Forest Division during Second Five Year Plan

Year	Revenue(Rs`)	Expenditure(Rs`)	Surplus(Rs`)
1956-57	369422	100260	269162
1957-58	836528	112590	723938
1958-59	595985	140331	455654
1959-60	674039	203832	470207
1960-61	447438	187725	259713

(Source: Working Plan by I.D. Sharma)

Thus the plan aimed at an increase of 25% in the natural income, rapid in industrialization, large expansion of employment opportunities rather than conservation of forests, Deodar forests were exploited for revenue with emphasis on regeneration by mainly natural means. The natural regeneration was supplemented by the artificial regeneration in the form of patch sowing & planting of deodar.

5.4 Third Five Year Plan (1961-62 to 1965-66)

The first two Five Year Plans have helped strengthen the foundations of economic, social life, industrial, economic growth, scientific and technological advance. The Third Five Year Plan seeks to give a more precise content to the social objectives of the Constitution and represents a large advance towards their moderately. It takes account of the successes and the failures in the first two Plans and sets the tasks to be fulfilled in the perspective of development over the next fifteen years and more. Work on the preparation of the Third Plan commenced towards the end of 1958 and was carried out in three main stages. Development

of forest resources was an integral part of the programme for optimum land moderately. Forests have important protective as well as productive functions. They not only supply timber, fuel, fodder and a variety of other products but also have a moderating influence against floods and erosion and help maintain soil fertility.

The country adopted a national festival of tree planting 'Van Mahotsava', in 1950 which was started with the objectives of creating mass awareness about the value of forests in human well being. At the same time, the drawback of the Forest Policy of 1894 necessitated a fresh look at the forest policy. The earlier forest policy was revised in 1952 and a new National Forest Policy was formulated. The main objectives of the policy were:-

- a) Cover one-third of total geographical area with forests, 60% in hilly regions and 20% in the plains.
- b) Functional classification of forests viz, "Protection Forests, National Forests and Village Forests.
- c) Guarding National interests on top priority basis.
- d) Curbing indiscriminate extension of agriculture.

It is interesting to note that Forest Policy of 1952 retained the concept of reserved forests" which was enunciated under the earlier Forest Policy of 1894 and placed them under the exclusive control of State Government. Although, the policy accepted the category of "Village Forests" to serve the needs of people in surrounding villages, but it did not grant them the right to manage these forests. As during the British rule, the approach of State continued to reflect a lack of faith in the capacity of people to manage or protect their forest resources without State intervention and support, people were in fact seen as a major threat to forests.

During this period, three numbers of Working Plan viz **Mohan Singh's Working Plan (1947-48 to 1967-68)**, **I.D. Sharma's Working Plan (1961-62 to 1975-76)** and **Tandon's Working Plan (1961-62 to 1975-76)** were in vogue. The **Mohan Singh's** plan dealt with reserve forest only. The Dehat forests were not covered in the plan. The main objectives of the plan was to create normal forest with normal distribution of age classes in due course of time, and to satisfy the domestic and agricultural requirements of the local right holders including those of fruit growers for the manufacturing of fruit boxes. In addition to this the objective was also to maintain and increase the yield of timber by producing trees of dimensions sufficient to produce the standard sizes, restocking of fire blanks and to prevent denudation/desiccation of soil.

The year-wise revenue and expenditure of the erstwhile Upper Bushahr Forest Division is tabulated in table No:- 5.3.

Table 5.3

Revenue and Expenditure of Rampur/Kotgarh Forest Division during Third Five Year Plan

Year	Revenue (in Rs.)	Expenditure (in Rs.)	Surplus (in Rs.)
1961-62	509200.55	374789.95	134410.60
1962-63	1124470.70	693055.18	431415.52
1963-64	1970225.73	756324.63	1213901.10
1964-65	2001264.00	721037.00	1280227.00
1965-66	1692128.38	770322.11	921806.27

(Source: Working Plan by C.L. Sudhera, IFS)

During the plan period industrial and domestic demands put a great deal of pressure on forests leading to serious shortages of wood and sharp increase in fire price rise had to massive illegal felling and inevitable tensions between rural communities and Forest Department.

Also, grazing policies remained unimplemented and increasing cattle population continued to affect forestry's conservation principles. By and large, forests were accorded low priority in the States on account of other needs of more immediate concern. The indiscriminate use of forest land for non forestry purposes increased considerably.

5.5 Fourth Five Year Plan (1969-70 to 1973-74)

The object of the third plan was to raise the productivity of forests, to increase the output through better techniques of timber extraction, to develop forest communications and to bring about increased use of preservation and seasoning processes. The Third Plan also laid stress on the development of village and extension forestry. The main objectives of the Fourth Plan in forestry sector were:-

- (i) to increase the productivity of the forests,
- (ii) to link up forest development with various forest based industries
- (iii) to develop forests as a support rural economy. The increase per hectare production per annum of forests in India is estimated at about 0.53 cubic meters as against the world average of 2 cubic meters. Emphasis was laid on measures to meet the immediate and long-term agricultural and industrial requirements, since the demand for various forest products, timber, domestic fuel and raw materials for industries has rapidly increased.

To increase forest production, the Fourth Plan envisaged further efforts at creating large scale plantations of valuable quick-growing species and species of economic and industrial importance. A concerted effort at regenerating areas, where forest produce was removed for industrial uses was taken. The basic principle of Government policy was the minor forests, pastures and grazing grounds must be managed mainly in the interest of the

population of the tract and particularly to serve their requirements of fuel and fodder requirements.

The year 1972 marks a watershed in the history of environment management in India. It was the year in which a conference on Human Environment was held in Stockholm under the aegis of the United Nation. Late Mrs. Indira Gandhi, our the then Prime Minister, addressed the conference wherein she attracted the attention of the world community towards our peculiar environmental problems. Pointing out the causes of environmental degradation, she asserted that ‘poverty and need’ are the biggest polluters. She added that “the environmental problems of developing countries are not the side effects of excessive industrialization but reflect the inadequacy of development. The rich countries may look upon development as a cause of environmental destruction, but to us it is one of the primary means of improving the environment for living or providing food, water, sanitation and shelter, of making the desert green and the mountain habitable.

In 1972, comprehensive national law, the Wild Life (Protection) Act, 1972 was enacted intended solely to protect wild life. A Centrally sponsored scheme “Project Tiger” was launched in 1973 to ensure maintenance of a viable population of tigers in India for scientific, economic, aesthetic, cultural and ecological values and to preserve for all times, areas of such biological importance as the national heritage for the benefit, education and enjoyment of the people.

The year-wise revenue and expenditure of the Rampur/Kotgarh Forest Division is tabulated in table No: - 5.4.

Table 5.4
Revenue and Expenditure of Rampur/Kotgarh Forest Division during Fourth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1969-70	2108609	844502	1264107
1970-71	2254094	1003325	1250769
1971-72	3268663.40	1287198	1981465.40
1972-73	4180000.94	1304379.43	2875621.51
1973-74	4529780.80	1303378.88	3226401.92

(Source: Working Plan by C.L. Sudhera)

Keeping in view the facts and figure, the Fourth Five Year Plan accorded the highest priority to exploitation of high lying forest for earning of revenue rather than conservation of forests and improving the condition of the less privileged and weaker section especially through provision of employment and livelihood etc.

5.6 Fifth Five Year Plan (1974-75 to 1978-79)

The fifth plan was formulated against the backdrop of severe inflationary pressures. The major objectives of the plan were to achieve self reliance and adopt measures for raising the consumption standard of people living below the poverty line.

The major objective identified in forestry in the fifth plan was the creation of large scale man made forests through institutional financing. The plan proposed a network of State Forest Corporations for establishment and management of man made forests. The birth of Forest Corporation and the economic considerations further pushed the ecological consideration to secondary place. The second important objective of the fifth plan was to develop farm forestry and to improve degraded forests so as to increase the fuel and timber supply in rural areas. Wild Life Protection also was attended to during this plan. Programmes for development of national parks, strengthening of research on endangered animals including project tiger were taken during this plan.

The Constitution of India came into force on 26th January, 1950. The Constitution originally did not make any specific provision to deal with the environment, forest protection and wild life of the country. The Constitutional 42nd Amendment is also significant from environmental protection point of view as it was through it that the natural commitment of environment protection and improvement was explicitly incorporated into our Constitution. The overriding concern for environmental protection with this amendment has now been inserted Articles 48 A and 51 A (g) in the Constitution of India.

The subjects mentioned in the Concurrent List, inter alia, include forests, protection of wild animals and bird's population control and family planning, minor ports, factories and boilers. Entries No. 17 A and 17 B dealing with birds" respectively, were inserted in the Concurrent List by the Constitution (42nd Amendment) Act, 1976. Earlier these subjects were found in State List. Thus, during the seventies, the environment policy and planning in India had taken place.

In this backdrop, for the control of water pollution, Water (Prevention and Control of Pollution) Act, 1974 was passed. This Act resulted information of Central/State Board for prevention and Control of Water Pollution with primary duties of setting standards, monitoring and legal enforcement.

During this period the **Tandon's Working Plan (1961-62 to 1975-76)** and **I.D. Sharma's Working Plan (1961-62 to 1975-76)** continued to be existed in this division. Besides managing the forests as per prevalent Working Plans, the main emphasis had already shifted towards raising the plantations on blank degraded forests & regenerating the

forests marked for extraction of timber for packing cases. The HP State Forest Corporation Limited came into existence wef 25-3-1974, registered under **The Companies Act, 1956**. The timber extraction was gradually transferred to corporation since 1976 onward.

The year-wise revenue and expenditure along with plantation activities of the Rampur/Kotgarh Forest Division is tabulated in table No: - 5.5

Table 5.5
Revenue and Expenditure of Rampur/Kotgarh Forest Division during Fifth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1974-75	2484280.34	1343049.33	1141231.01
1975-76	2783630.56	1584843.82	1198786.74
1977-78	2683613	1953509	730104
1978-79	4502375	2547873	1954502

(Source: **Working Plan of Rampur/Kotgarh Forest Division by C.L. Sudhera and Working Plan by R.K. Kapoor**)

5.7 Sixth Five Year Plan (1980-85)

Development without destruction was the theme of the sixth five year plan, which laid emphasis on the ecological and social security, the major thrust of the plan as regards forest management and protection was saving the natural forests from further depletion, formation of new fuel and fodder reserves to meet the growing needs of local population and creation of more National Parks and Wild Life Sanctuaries.

The sixth five year plan framework document as approved by the National Development Council States, “It is imperative that we carefully husband our renewable resources of soil, water, plan and animal life to sustain our economic development. A full chapter on ‘Environment and Development’ has been including in the sixth plan. This chapter was devoted to the discussion on problem of environmental degradation such as land use, agriculture, forestry, wildlife, water, air, marine environment, minerals, fisheries, renewable resources, energy and human settlement, with a view to evolve sound environmental and ecological principles.

On the basis of the Tiwari Committee recommendations, the Govt. of India setup a Department of Environment (DOE) with effect from November 1st, 1980, some States namely Karnataka, Uttar Pradesh, Punjab & Madhya Pradesh also established separate department of Environment at the State Level. In 1985, the Department of Environment was replaced by an integrated Department of Environment, Forest and Wild life. In addition to this, two powerful agencies were created to tackle specific environmental problem; they are, namely, the

National Waste Land Development Board and the Central Ganga Authority, to further improve the implementation of environmental law and policy decisions.

With a view to meeting the basic and economic needs of community, the programme of social forestry initiated in 1981-82 remained continuing. The social forestry programme which inter-alia includes Farm Forestry, Extension Forestry, and Reforestation on degraded forests and Recreation Forestry; those programmes were assisted by several external agencies, including the World Bank, United State Agency for International Development and Overseas Development Agency of United Kingdom. The 20 Point Economic Programme of late Prime Minister Mrs. Indira Gandhi also included Afforestation Social Forestry and Farm Forestry programmes.

The year-wise revenue and expenditure of the Rampur/Kotgarh Forest Division is tabulated in the table No: - 5.6

Table 5.6
Revenue and Expenditure of Rampur/Kotgarh Forest Division during Sixth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1980-81	3589901	3241715	348186
1981-82	5464150	3537595	1926555
1982-83	9789922	4397675	5392247
1983-84	6311348	4319387	1991961

(Source: Working Plan of Rampur/Kotgarh Forest Division by R.K. Kapoor)

The main objectives of the plan was to create normal forest with normal distribution of age classes in due course of time, and to satisfy the domestic and agricultural requirements of the local: right holders including those of fruit growers for the manufacturing of fruit packing boxes etc. Thus plan accorded the highest priority to exploitation of high lying forest for earning of revenue rather than conservation of forests.

5.8 Seventh Five Year Plan (1985-90)

The seventh five year plan was envisaged in the development strategy of generation of productive employment. Given the twin emphasis on employment and productivity in the Seventh Plan, the objective was to expand employment opportunities consistent with increases in productivity. The basic approach to the Seventh Plan was also, sustainable development in harmony with the environment. Towards this end, it would have to be ensured that all development programmes, in all sectors, will take environmental considerations fully into account. Environmental management, a term encompassing environmental planning, protection, monitoring, assessment, research, education, conservation and sustainable use of resources, was now accepted as a major guiding factor

for national development in India. From the early seventies, India had played a significant role at international forums in delineating and articulating the relevance of environmental concerns in the context of economic development. There had been, over the last decade, a progressive strengthening of official involvement in environmental management in India, with increased scientific, technical, administrative and legislative backup at the Central and State levels. Major activities in the area of environment work was initiated or stepped up during the Sixth Plan which included: water and air pollution monitoring and control; environmental impact assessment; natural living resource conservation; special projects on wildlife; ecological studies by the Botanical and Zoological Surveys of India; eco-development programmes; environmental research promotion; and environmental information, education, training and awareness.

The perceiving the richness of the natural resources and the need for their adequate management so as to harness their potential to meet the material needs for the present and for time to come, the seventh five year plan emphasized on the need to manage the resource base in such a manner as to enable sustainable development. Pointing out the necessity of remedial measures, the plan emphasized that official and voluntary agencies must work together to create the needed awareness for resource conservation.

As regards the policy perspective on forest management, the seventh plan envisaged “Forest for survival” as its theme. The plan, giving highest priority to restore the forest cover with 33% of the geographical area of the country being brought under forests from the present level of about 23%: asserted for preserving biological diversity, increase the vegetal cover by massive Afforestation and development Afforestation into a people’s movement (Social Forestry) enhance the productivity of existing forest areas etc.

The failure of the National Forestry Policy, 1952 particularly inadequate management of forests, negligible efforts made to improve the availability of fuel wood and fodder to forest dwellers which resulted in social conflicts on forest resources use, the short comings of social forestry programme and dwindling forest cover, necessitated a fresh look at the Forest Policy of 1952. The States came under increasing pressure in order to involve people in the protection and management of forests resources and therefore to re-orient its earlier policies. In 1988, a National Forest Policy was formulated with principle aim of ensuring environmental stability and maintenance of ecological balance.

Since forestry is a Concurrent List subject, a State forest policy under the ambit of the National Forest Policy was enunciated by the Government of Himachal Pradesh in 1988. In terms of the Govt. policy decision the complete moratorium on green fellings, the silvicultural marking done upto 1984-85 were discontinued and only salvage marking were

carried out. Thus prescription given in the Working Plan was not followed. The Afforestation programme under the social forestry has failed to achieve its objectives of people's movement for Afforestation due to less public participation in this scheme.

The year wise revenue and expenditure of the Rampur Forest Division is tabulated in Table No.:- 5.7.

Table 5.7

Revenue and Expenditure of Rampur Forest Division during Seventh Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1985-86	5453378.6	10388961.34	-4935582.74
1986-87	2015577.38	10737426.35	-8721848.97
1987-88	1032147.51	12967287.92	-11935140.41
1989-90	1972114	13989057	-12016943

(Source:- Records of Rampur Forest Division, Rampur)

5.9 Eighth Five Year Plan (1992-97)

The Eighth Plan was aimed at to undertake re- examination and reorientation of the role of the Government as well as the process of planning. The plan was to work out the ways and means of involving people in the developmental task and social evolution. The emphasis was to strengthen the people's participatory institutions.

To ensure the protection of natural environment the plan suggests preventive and regulatory strategies. The strategy of prevention involving raising of public awareness, strict enforcement of laws, statutory assessment of environmental impact of projects, and efforts to regenerate the productivity of ecosystem, can be useful in many cases of environmental degradation. Stringent laws, rigorously implemented, through stringent punitive measures and by marking an undesirable action expensive for the offender, can prevent environmental destructions. The plan calls for the necessity of statutory environmental impact assessment of all projects and activities before their implementation, as such would prevent environmental degradation by making it obligatory on the part of executing agencies to undertake compensatory measures.

A number of programmes of Afforestation were taken up to secure people's participation. Under this scheme, priority was given to:-

- a) establishment of decentralized nurseries and school nurseries.
- b) block plantations especially on community land and lands of SC/ST and people living below the poverty line.
- c) pasture development through people's institutions and involvement, are
- d) assistance in the implementation of the Tree Patta Schemes.

The scheme of decentralized people's nurseries was initiated in 1986-87 to encourage seedling production by farmers, especially small and marginal farmers to establish small, dispersed nurseries to cater to local needs of planting material and provide income generating activities to the beneficiaries.

An appraisal of the Afforestation schemes undertaken during the plan period has appeared some deficiencies. They have no specific plan of action for meeting fuelwood and fodder requirements except for the continuance of the scheme for rural fuel wood plantation, which does directly address these issues. Under the social forestry programme, the efforts have already been departmental mode. The rural poor and tribals, who depend mostly on public and forest lands for their livelihood, have at best, been given restricted access to the areas taken up for development.

The year-wise revenue and expenditure of the Rampur Forest Division is tabulated in table No: - 5.8.

Table 5.8

Revenue and Expenditure of Rampur Forest Division during Eighth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1990-91	2001481	14829564	-12828083
1992-93	2456308	19314381	-16858073
1993-94	5560788	15663314	-10102526
1994-95	5307715	18667066	-13359351

(Source:- Records of Rampur Forest Division, Rampur)

During this period the R.K. Kapoor's Working Plan (1993-94 to 2007-08) continued to be existed in this Division. Fellings of trees as prescribed in Working Plan had not been done due to ban on green felling. Plantation as prescribed has been done under social forestry scheme but results of planting are not encouraging because of lack of proper supervision and maintenance, non co-operation of local people and in effective closures and protection from biotic pressures. Almost, all plantation done upto 2000-01 were failure with few exceptions.

5.10 Ninth Five Year Plan (1997-2002)

The Ninth Five Year Plan, was launched in the 50th year of India's Independence, and will take the country into the new millennium. The emphasis was given to the Integrated Watershed Approach. Since the smallest viable geographical unit is the watershed, it was therefore, imperative that the integrated watershed approach should be followed. The watershed is a geo-hydrological natural unit which has evolved through interaction of rain water with the topography. The measures such as conserving rain water, through treatment of drainage lines in the micro-watersheds and promoting in-situ moisture were proposed. This

includes 3-tier appropriate vegetation consisting of grasses, shrubs and trees for fodder, fuel, timber and fruit in a topo sequence which is in consonance with soil depth and moisture. And the objectives were:

- i. Eco-restoration and Eco-preservation
- ii. Involvement of the local population
- iii. Gender sensitive planning
- iv. Use of appropriate technology
- v. Redevelopment of traditional agro-eco-systems based on traditional knowledge and technology
- vi. Scientific approach to agriculture, animal husbandry and horticulture in order to raise productivity
- vii. Development of ecologically sustainable industries and tourism.

The hill areas of the country particularly the Himalayan and the Western Ghats regions support the basic life giving natural resources but they have very fragile and sensitive eco-systems. The need to conserve natural resources and the environment particularly to prevent damage to fragile and irreplaceable eco-systems, the Hill Areas Development Programme (HADP) during the 5th Plan was introduced. The programmes implemented during the 5th Plan period were namely beneficiary oriented. While emphasizes shafted to eco-development in the 6th Plan, the general tenor of HADP remained substantially the same as that of the normal State Plan following the same sectoral approach. In the 7th Plan laid particular emphasis on the development of ecology and environment as summed up in three phrases, namely, **eco-restoration, eco-preservation, and eco-development**. It aimed at enolving plans and programmes to take care of socio-economic growth, development of infrastructure and promotion of ecology of the areas covered by the HADP. During the 8th Plan attention was focused on productive sectors of the hill economics especially in modernizing agriculture practices and small scale industries at household, cottage and village levels. For this involvement of people was considered of paramount importance. The aim was to meet actual basic needs of the people through improved management of the land and water resources.

The major environmental problems being faced by Hills are deforestation and soil erosion, which are leading to the drying up of water resources, flash flood, cloud bursts and decline in the yield of food and cash crops, fodder, fuel and other minor forest produce. Besides water retention capacity and productivity of land have been adversely affected. Similarly, poverty in the hills, intensive human & live stock pressures along with encroachment on forest land and indiscriminate felling of trees for commercial purposes in

hill areas have already led to loss of soil and rapid depletion and destruction of forest cover. Development activities like construction of buildings, roads, hydro power projects, large and medium industries and mining etc. have aggravated environmental problems. Consequently, perennial sources of water such as springs and small streams have dried up in many hills areas.

The strategy for the 9th five year of Himachal Pradesh States” the degraded forest lands, the village common lands and waste lands will be rehabilitated through various state plans/centrally sponsored and externally aided projects schemes so that a forest cover of 50% by 2000 AD as per policy of the State Govt. is arrived at”. The National Forest Policy, 1988 also has recommended that at least 2/3rd of the total geographical area of Himachal Pradesh should be under forests.

On an average, an area of 172.5% Sq. Km. was planted every year. Recent trends show a continuous decline in the area planted each year, because of paucity of funds and a ban on silviculture and Working Plan operation in the State under an order of the Supreme Court in T.N. Godavarman case dated 12-12-1996, except for the right holders. However dry and fallen trees i.e. salvage marking can be removed through the H.P. State Forest Corporation.

The Govt. of H.P. Constituted the Forest Corporation in 1974, the only agency responsible for the harvesting and exploitation of forests, including resin extraction. Earlier, private contractors carried out all activities related to forests.

The most valued forest product in 2001-02 was timber, followed by medicinal plants and herbs and resin. The total forest produce was worth Rs. 231.30 Crore. Until 1970, timber removal from the forests was more than the annual prescribed yield, which was unsustainable. And since 1985, the annual removal from the forest has always remained below the prescribed yield due to ban imposed by the Govt. on silvicultural operation and also under an order of the Supreme Court dated 12-12-1996.

In the light of the increasing pressure on forests through multiple stake holders and the national policy of conserving the forests for maintaining ecological balance and development, allocation to this sector should have been increasing in successive five year plans. On the country, it has been declining continuously w.e.f. 7th Plan (1985-1990). This has affected the pace of Afforestation, protection and management of forests in the State.

The year-wise revenue and expenditure along with plantation activities of the Rampur Forest Division is tabulated in Table No: - 5.9 and 5.10

Table 5.9**Revenue and Expenditure of Rampur Forest Division during Ninth Five Year Plan**

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1996-97	15596909	24590790	-8993881
1997-98	1522554	2935800	-1413246
1998-99	3354938	32383627	-29028689

(Source:- Records of Rampur Forest Division, Rampur)

Table 5.10**Plantations raised during the year 1996-2000 in Rampur Forest Division**

Year	Area planted in Nankhari Range (hac.)	Area planted in Bahli Range (hac.)	Area planted in Rampur Range (hac.)	Area planted in Sarahan Range (hac.)	Total area planted (hac.)
1996-97	134	80	148	142	504
1997-98	201.8	257.50	232	290.60	981.90
1998-99	122	52	222	206	602
1999-2000	115	186	271	372	944
Total	572.8	575.5	873	1010.6	3031.90

(Source:- Records of Rampur Forest Division, Rampur)

During this period, the R.K. Kapoor's Working Plan (1993-94 to 2007-08) continued to be existed in this Division. Fellings of trees as prescribed in Working Plan had not been done due to ban on green felling in compliance of Hon'ble Supreme Court's order dated 12-12-1996. Thus no silvicultural operation as prescribed in the Working Plan had been carried out due to ban on green felling and blanks/open areas were also not taken up planting/regeneration in planned way. Only plantation as prescribed had been done under various departmental and CAT Plan Scheme but results of planting are encouraging as compare to plantation have done during nineties. However, it needs improvement in plantation technique and management in planned way.

5.11 Tenth Five Year Plan (2002-2007)

The Tenth Five Year Plan (2002-07) has been prepared against a back drop of high expectations arising from some aspects of the recent performance. GDP growth in the post-reforms period has improved from an average of about 5-7% of the 1980 to an average of about 6.1% in the Eighth and Ninth Plan period, making India one of the ten fastest growing countries in the world.

These positive developments are, however, clouded by other features which give cause for concern. The situation in this regard is much worse in the rural areas. Land and

forest degradation in hills areas and over exploitation of ground water is seriously threatening sustainability of rural livelihood and food production.

The country's forest resources are under tremendous pressure. Intensified shifting cultivation, indiscriminate removal of timber, fuelwood, fodders and other forest produce, forest fires and encroachment has led to forest degradation and deforestation. Forests meet nearly 40% of the country's energy needs and 30% of the fodder needs. It is estimated that about 270 mt. of fuelwood, 280 mt. of fodder, over 12 million m³ (cubic meter) of timber and countless non-wood forest products (NWFPS) are removed from forests annually. The future management need for meeting the requirements of the community.

Forest plays an important role in environmental and economic sustainability. They provide numerous goods and services, and maintain life support systems essential for life on earth. Some of these life support systems of major economic and environmental importance are:

- (i) supply of timber, fuel wood, fodder and a wide range of non-wood products;
- (ii) natural habitat for bio-diversity, and repository of genetic wealth;
- (iii) provision of recreation and opportunity for ecotourism;
- (iv) playing an integral part of the watershed to regulate the water regime, conserve soil, and control floods; and
- (v) Carbon sequestration and carbon sink.

Despite significant resource flows and national concern, the potential of forests to reduce poverty, realize economic growth, and their contribution to the local and global environment has not been fully realized. A combination of market and institutional failures has led to forests failing to contribute as significantly to rural incomes and poverty alleviation and economic growth as would be possible under good economic and technical management.

The following strategies were proposed in order to address the concerns of forests sector and to achieve the objectives of sustainable forests management:

- i) The role of forests to maintain the hydrological balance is complementary. Successful models of watershed development have helped conserve soil and moisture, improve ground water recharge and the water regime and mitigated the adverse impacts of drought. The watershed approach should be universally adopted for the maintenance and development of forests.
- ii) Due to the increase in human and cattle population, the existing forest resource is under intensive pressure to meet the demands for various forest produce, i.e food, fodder, fuel, fertilizer, timber, bamboo, medicinal plant, etc. About 41% of the forest area is degraded due to over exploitation of forest produce. However, no strategy to

conserve the forest eco-system would be successful unless the basic needs of the society are met. The future management strategy must, therefore, take into account this compelling need of the community to meet their requirements.

- iii) The forest areas near population centre's/villages have degraded faster due to over-exploitation and the forest resources has become impoverished. It has adversely affected the livelihood security and employment opportunity of people dependent on forests. Therefore, a special programme needs to be drawn up for development of such villages and to provide alternative sources of income.

5.11.1 Forest Plantations

The following initiatives were proposed for improving the productivity of forest plantation:-

- i) The plantation strategy should be based on creating new forest resources that help reduce pressure on natural forests and preferably reverse the negative impact of deforestation while meeting the increasing demand. India can benefit from the experience of other countries, which have developed policies and incentives to promote private sector participation in accelerating the pace of Afforestation.
- ii) At present, the performance of forest plantations in terms of survival, growth and yield is poor. The mean annual increment (MAI) of forest plantations varies from about 2m³/ha/year for valuable timber species to about 5-8 m³/ha/year for eucalyptus and other fast growing species. This is far below the MAI of over 10m³ and about 50m³/ha/year for good quality plantations in different countries.
- iii) The productivity and success of plantations can be improved by appropriate site selection, site species matching, planting of elite clones, proper maintenance and protection, timely tending, thinning, irrigation, application of manures and pesticides, etc.
- iv) Reduction in harvesting and post harvesting losses should be achieved by adopting improved technologies.

5.11.2 Green India Programme: Out of the 328.27 m ha total geographical area of the country; around 300 m ha is the available productive land. The actual forest cover is 63.73 m ha of which only 37.73 m ha has good forests. About 20 m ha is covered under tree plantations (agro-forestry, farm forestry, social forestry and other plantations). Thus, in order to bring one-third area under forest/tree cover, $(100-37.73-20 = 42.27)$ 43 m ha of area should be covered under the greening programme over 10 years. The detail programme should be as follows:

- * 15 m hac. of degraded forest land to be covered under JFM.
- * 10 m hac. of irrigated area to be brought under commercial agro-forestry.
- * 18 m hac. of rain-fed area to be brought under subsistence agro-forestry.

Significant efforts are required for greening India to address the food security and environmental challenges. The country is facing the problem of surplus food production on one hand and unemployment, poverty and food deficiency on the other. The implementation of Greening Programme through “food for work” scheme will ensure meeting the basic needs of people, environmental protection, food accessibility and productive employment generation to 10 crore people (mainly tribals, dalits, backwards, other backward classes, landless and women).

Participatory arrangements have existed in Indian Forestry for several years, in the form of forest labour co-operatives, resin tappers, NWFP Collector’s Co-operatives societies and other associations. The JFM programme has led to several positive out comes in many states in India. The major ones are (i) change in the attitude & relationship of local communities and forest officials towards each other and the forests, (ii) improvement in the condition of forests (iii) reduction in encroachments but in this division results are not encouraging as compare to low lying areas of Himachal Pradesh. Similarly tree plantation has been expressed over the low productivity of plantation due to several factors such as inadequacies in the site selections and site species matching, poor plantation stock, lack of proper maintenance and protection, fire hezard, financial and capacity constraints etc.

5.11.3 R.K. Kapoor’s Working Plan (1993-94 to 2007-08) continued to be existed and was in vogue in this division. The year-wise revenue and expenditure along with plantation activities of the Rampur Forest Division is tabulated in the Table No: - 5.11 and 5.12

Table 5.11

Revenue and Expenditure of Rampur Forest Division during Tenth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
2000-01	18234328	25398999	-7164671
2001-02	9734141	21137799	-11403658
2002-03	4112285	26244900	-22132615
2003-04	30029874	19274254	10755620
2004-05	6946549	20219700	-13273151

(Source):-Records of Rampur Forest Division, Rampur)

Table 5.12**Plantations Raised during the year 2001-2005 in Rampur Forest Division**

Year	Area planted in Nankhari Range (hac.)	Area planted in Bahli Range (hac.)	Area planted in Rampur Range (hac.)	Area planted in Sarahan Range (hac.)	Total area planted (hac.)
2000-01	95	84	187.57	168	534.57
2001-02	79	63	86.7	130	358.7
2002-03	50.5	52	208.2	160.5	471.2
2003-04	37	39.2	89	133	298.2
2004-05	38.5	42	79	81.38	240.88
Total	300	280.2	650.47	672.88	1903.55

(Source :-) Records of Rampur Forest Division, Rampur)

5.12 Eleventh Five Year Plan (2007-08 to 2011-12)

India has entered the Eleventh Plan period with an impressive record of economic growth. After a lackluster performance in the Ninth Plan period (1997–98 to 2001–02), when gross domestic product (GDP) grew at only 5.5% per annum, the economy accelerated in the Tenth Plan period (2002–03 to 2006–07) to record an average growth of 7.7%, the highest in any Plan period so far. Besides, there was acceleration even within the Tenth Plan period and the growth rate in the last four years of the Plan has averaged 8.7%, making India one of the fastest growing economies in the world.

National Forest Policy 1988 acknowledged the importance and primacy of local communities and provided for a sustainable management approach with maintenance of environmental stability as the prime objective. Commitment to conservation of nature was highlighted by the targets of maintaining one-third of land under the forest/tree cover.

Plan investment in forestry and wildlife sector so far, including State and Central plan, was about 1% of the total plan outlay. The National Forestry Commission (2006) has recommended an investment of 2.5% of the plan outlay in the forestry and wildlife sector. Our total plan outlay of the State and central plan in forestry and wildlife sector was 1% only.

The Integrated Forest Protection Scheme was redesigned to provide assistance to the states for building capacity and basic infrastructure for modern forest management. Improving Management Planning and Survey (land records) set-up was the first priority for Central assistance. The following components were provided for modernization of the State forest management:

- i) Modernization of the management planning (Working Plan) units with equipment, infrastructure, and manpower. This may include forest inventories, training and satellite imagery processing, and GIS facilities. This included professional services such as ecologists and sociologists for relevant inputs.
- ii) Forest Land Information System for land records, with modern and empowered survey, and land record maintaining mechanisms for documenting the legally recognized individual rights, concessions, ownerships including those under the Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act, 2006.
- iii) Forest boundary demarcation by providing assistance for the state-of-the-art infrastructure, training/outourcing survey work, fixing permanent boundary pillars, updating the forest block indices and compartment histories.
- iv) Installation of forest fire surveillance and warning systems, along with fire management planning in participatory mode.
- v) Assistance for general infrastructure for accommodation in remote areas, communication, improvement of road network, etc., were a part of this programme.

The year-wise revenue and expenditure along with plantation activities of the Rampur Forest Division is tabulated in the Table No: - 5.13 and 5.14

Table 5.13
Revenue and Expenditure of Rampur Forest Division during Eleventh Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
2005-06	8191831	26133600	(-) 17941769
2006-07	20414637	31919400	(-) 11504763
2007-08	944134	28155367	(-) 27211233
2008-09	1291231	38148506	(-) 36857275
2009-10	132856334	45706706	87149628

(Source:- Records of Rampur Forest Division, Rampur)

Table 5.14
Plantations raised during the year 2006-2010 in Rampur Forest Division

Year	Area planted in Nankhari Range (ha)	Area planted in Bahli Range (ha)	Area planted in Rampur Range (ha)	Area planted in Sarahan Range (ha)	Total area planted
2005-06	66.5	64	145.14	141.5	417.14
2006-07	71	70	156	178	475
2007-08	40	68	114	106	328
2008-09	55.75	64	66.46	93.75	279.96
2009-10	150	185	113	123	571
Total	383.25	451	594.6	642.25	2071.1

(Source: Records of Rampur Forest Division, Rampur)

During this period, the **R.K. Kapoor's Working Plan (1993-94 to 2007-08)** for the forest of Kotgarh/Rampur forest division continued to be existed in this division and the revision of Kapoor's Working Plan had also started during 2012. The intervening period between '2008-09 to 2011-12' will be considered as plan holiday because no green fellings took place during this period as a result of complete moratorium on green fellings and in compliance of the Supreme Court order dated 12-12-1996.

5.13 Twelveth Five Year Plan (2012-13 to 2016-17)

The objectives of the Eleventh Plan were faster and inclusive growth and the initiatives taken in the Eleventh Plan period had resulted in substantial progress towards both objectives. Inevitably, there are some weaknesses that need to be addressed and new challenges that need to be placed. A comprehensive assessment of outcomes on all these fronts during the Eleventh Plan is not possible at this point, because the data for recent year is still not available. However, available evidence suggests that there have been significant gains on many of these fronts, even though there are shortfalls in some areas on which further work is needed.

Several issues have been flagged during the Planning Commission consultations with different stake holders which deal with hand, mining, forest and wild life management, climate change, waste management, reduction of pollution, conservation of forests and biodiversity etc. These must be viewed in the light of the enormous inter connection that exist within the broader dynamics of environmental management. Important issues that require focused attention during the Twelfth Plan are:-

- i) Securing ecology of watershed and catchment.
- ii) Cumulative Environmental Impact Assessment (CEIAs) for vulnerable regions.
- iii) Carrying capacity studies in selected river basins.
- iv) Maintaining acceptable water quality and quantity through pollution control of water resources.
- v) Restoration of wet lands & lakes etc., and
- vi) Management of waste water discharge from Industrial and Commercial establishment into major water bodies.

5.13.1 Water Resources Management

Water is a relatively scarce resource in India. We have 16.0% of the worlds's population and only 4.0% of the usable fresh water. Since the annual availability of fresh water is fixed and demands are bound to expand as production increases, large production can only be sustained if, available water resources are harnessed in a sustainable manner and water use efficiency is increased. At the same time, India receives nearly 1200 mill meters of

rainfall throughout the year. Available evidence suggests that with increased use of water, mostly on an unsustainable basis, the country is headed towards a grave water crisis. An irrigation account for 80.0% of our total water usage, 60.0% of irrigation water and 80.0% of rural drinking water comes from ground water.

Satellite data reveals that there has been a decline in the ground water level of 4 centimeters each year between 2002 and 2008 in the alluvial tracks of Northern India where natural rates of recharge are high. This is equivalent to an increase in over 70.0% in the rate of water extraction compared to the previous decades. The decline in the water table evidence shows in the crystalline, volcanic and mountainous regions that account for nearly 70% of our landmass where natural rate of ground recharge is very low.

Lack of any co-ordination between competing uses and the complete absence of regeneration has aggravated the problem inherent in the anarchic drilling for ground water. The fact that neither power nor water is adequately priced has only promoted the misuse of our ground water resources.

Water quality issue also arises due to chemical pollution through excessive fertilizer use and reckless dumping of untreated waste into our rivers. Only about 30% of the total sewage generated in the country is actually treated before being dumped into available water bodies.

Water is one of the most vital natural resources of Himachal Pradesh. The State is richly endowed with a hilly terrain having an enormous volume of water from the catchment areas of Satluj, Beas and Chenab rivers. These rivers form part of the Indus system. As such, the state has enormous potential of water resources in the form of glaciers and rivers but ground water resource is limited.

In spite of the fact that there is a large volume of water available in the State, only one third of its cultivated area is irrigated because of physiographic constraints. It is ironical that this water rich state is also not free from drought at times. The normal monsoon rainfall in the state varies from 17 to 120cm. Mandi, Bilaspur, Sirmour, Una, Hamirpur, Kullu and Kangra are high rainfall districts where the annual rainfall exceeds 100 cm. Lahaul & Spiti and Kinnaur district receives a low annual rainfall of about 20 cm.

Most of the surface water resources of Himachal Pradesh flow from perennial rivers which originate from glaciers. The flow in those rivers is further augmented by runoff from the catchment areas. The Sutlej has its origin in Tibet and flows through Himachal Pradesh forming the largest river catchment area in the State.

5.13.2 Ground Water Resources

The ground water resource occurs mainly in unconsolidated sediments of inter montane valleys and in the submontane tract. Kangra, Una, Hamirpur, Bilaspur, Mandi, Solan and Sirmaur districts, particularly their valley areas depend upon ground water. The exploitation is done through open wells, tube wells, infiltration galleries and wells.

5.13.3 Traditional sources of water

As there is an in-balance between the supply and consumption of water, particularly by the poor and weaker section of society, the traditional sources of water play a significant role. These include springs, Kuhals, Baories, Ponds, Khaties and ditches etc. These systems supplement the water requirements of the rural and urban areas. There are about 10512 traditional sources of water in the State for drinking water in rural habitations.

The demand of water in the rural & urban areas based on population projection till 2021 is tabulated in table No:- 5.15.

Table No. 5.15

District/State	1999		2001		2011		2021	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Bilaspur	2.69	22.84	2.90	23.76	4.18	28.90	6.04	35.06
Chamba	4.70	30.18	5.03	31.5	7.06	38.96	9.92	48.12
Hamirpur	3.63	27.39	3.90	28.23	5.58	32.75	7.99	37.85
Kangra	8.30	90.9	8.63	94.44	10.46	114.43	12.67	138.37
Kinnaur	-	5.75	-	5.96	-	7.13	-	8.53
Kullu	2.99	23.61	3.13	24.71	3.88	31	4.82	38.89
Lahaul & Spiti	-	2.47	-	2.55	-	2.96	-	3.46
Mandi	7.64	59.57	7.89	62.1	9.31	76.45	10.98	94.12
Shimla	21.75	37.7	23.81	38.47	37.45	41.6	58.91	42.52
Sirmaur	6.05	28.14	6.48	29.3	9.20	35.81	13.06	43.65
Solan	7.63	27.19	8.22	29.15	11.92	36.12	17.27	44.57
Una	4.83	27.86	5.10	28.84	6.71	34.33	8.83	40.82
Himachal Pradesh	70.21	384.32	75.04	399.01	105.76	480.44	150.49	575.97

(Source:- Himachal Pradesh Human Development Report, 2002).

The demand for water in the urban area has been projected by following the norm of 140 Ipcd whereas the norm of 70 Ipcd has been followed for rural area. By 2021, the urban areas of the state will require 150.49 mld. of water, out of which over one third will be required by Shimla alone. The demand for the water in the rural areas is much higher than in urban areas as a majority of the population of the state lives in the rural areas. Thus, greater thrust is needed for providing drinking water in the rural areas.

5.13.4 Water quality: Under the national drinking water mission programme, the IPH Department has set up water quality testing laboratories at Dharamsala, Una, Peo and Kandaghat.

The State Pollution Control Board has been monitoring the quality of surface water only. Surface water pollution is on the rise. During the period from 1993-94 to 1996-97, an increase in total coli form has been observed at some places. Dissolved oxygen is lower in deep water. This may prove detrimental to the development of aquatic life.

Ground water pollution has been observed in the industrial towns of Parwanoo and Kala Amb as per the report of the Central Pollution Control Board, Government of India (1995).

5.13.5 In situ Rainwater Harvesting

Village habitations and towns, which are located at low to high altitude areas of the mountain ranges of Himachal Pradesh, are in dire need of water for domestic as well as irrigation purposes. The only in situ water resource available to them is rain water. The most feasible option is to harvest it along the streams as well as nallahs, or the catchment area of watershed and on rooftops etc., and prevent run-off, evaporation and seepage. Fortunately, Himachal Pradesh has abundant rainfall, except at few places and therefore there is a big scope for tapping this resource for drinking and irrigation.

In the towns, rooftop water harvesting in government office buildings, school and panchayat buildings and houses should be done on a war footing for in situ collection and storage of high quality rainwater to meet urgent requirements, after necessary purification measures.

Thus 12th Five Year Plan showed maximum concern about water shed management & Environment and emphasis on water management needs to be promoted in a sustainable manner to increase the productivity of land in hilly areas.

5.13.6 Maintenance of Surface water Bodies

Concerted efforts are need to engage in the process of de-siltation and restitution of water bodies through treatment of their catchment area so that they comply the fruitful purpose of providing capacity to store rain water, water for drinking and other purposes and land themselves to fisheries. Ground water management needs to be promoted in a sustainable manner to increase productivity of land especially in hilly areas where ample untapped ground resources are available.

5.13.7 Ground Water Management

Ground water will continue to be a major resource for both irrigation and drinking purposes. It is vital to ensure that this resource is used in a sustainable manner. For this we must greatly expand the scope of rain water harvesting and ground water recharge. Preliminary studies suggest that the extent of recharge that is possible with the existing precipitation is extremely high in the alluvial plains where the rates of recharge are high. In

the more rocky areas of central India, where recharge rates are lower, rain water harvesting and ground water recharge needs to be supplemented by the creation of rain fed small sized reservoir/water bodies, including farm ponds, dug wells and Van Sarovar to impound rain water. This needs to be done by convergence the MGNREGA with the Integrated Watershed Management Programme.

5.13.7 Improving Forest/Tree Cover

The second main objective of the twelfth Plan is to improve forest cover which includes both canopy cover as well as extension of afforestation of degraded forest land. To meet the country's demand for timber and non- timber forest produce, a comprehensive approach is required. Upto the Eleventh Plan period the focus was on increasing area under forest and tree cover. However, there is a tremendous scope for increasing the stock and quality of existing forests. "Green India Mission" is being designed to regenerate at least four million hectare of degraded forests, increase density of cover as two million hectare of moderately dense forests and overall increase the density of forest and tree cover to ten million hectare of forest land, waste land and community lands. Thirdly forestry extension can be achieved through afforestation of non conventional forest areas adopting farm and agro-forestry approaches. While doing so fruit bearing species may be given importance for wild life and strengthening the nutritional security of the rural population.

5.13.8 Community Rights and Minor Forest Produce

While it is clear that what the primary tribal collectors of Non timber Forest Produce (NTFPs) get today is a very small fraction of the potential value embedded in NTFPs, we must also ensure that apparent movement forward on Panchayat (Extension to Scheduled Areas) Act (PESA) does not end up making things worse for the primary tribal collectors of NTFPs.

5.13.9 Wildlife

Both habitations pressure and invasive alien species constitute a threat to native bio diversity in both the terrestrial and adequate eco system. Fragmentation and degradation of wildlife habitats adversely affects the population of wild animal species resulting in increased man animal conflicts. The country has taken a pioneering step in formulation of Biodiversity Act, 2002 and Biodiversity Rules, 2004 assigning adequate importance to community conservation and management of bio-resources for the benefit of all stakeholders. This Act is very much in time with the International Convention and Protocol on Bio-diversity Conservation. Proper implementation of the Act at Gram Sabha level will be the important task for the Twelfth Five year Plan. The twelfth Finance Commission has recommended grant-in-aid for forests in H.P. as under:-

Year	Amount in crore
2010-11	12.58
2011-12	12.58
2012-13	25.16
2013-14	25.16
2014-15	25.16

During the Plan period, the revised Working Plan for Rampur Forest Division by B.L. Negi, IFS will be operative and the recommendations/suggestion given in the twelfth five year plan will be achieved during the Working Plan period.

The year-wise revenue and expenditure along with plantation activities of the Rampur Forest Division is tabulated in the Table No: - 5.16 & 5.17.

Table 5.16

**Revenue and Expenditure of Rampur Forest Division during Twelfth Five Year Plan
(2010-11 to 2011-12)**

Year	Revenue (Rs`)	Expenditure (Rs`)	Surplus (Rs`)
2010-11	10595121	46799345	-36204224
2011-12	5575856	44173082	-38597226

(Source:- Records of Rampur Forest Division, Rampur)

Table 5.17

Plantations raised during the year 2010-11 to 2011-12 in Rampur Forest Division

Year	Area planted in Nankhari Range (hac.)	Area planted in Bahli Range (hac.)	Area planted in Rampur Range (hac.)	Area planted in Sarahan Range (hac.)	Total area planted (hac.)
2010-11	80	100	122	270	572
2011-12	26	23	27.52	69.5	146.02
Total	106	123	149.52	339.5	718.02

(Source: Records of Rampur Forest Division)

During this period, the **R.K. Kapoor's Working Plan (1993-94 to 2007-08)** for the forest of Kotgarh/Rampur forest division continued to be existed in this division and the revision of Kapoor's Working Plan had also started during 2012. The intervening period April, 2008-09 to 2011-12 will be considered as plan holiday because no green fellings took place during this period as a result of complete moratorium on green fellings and in compliance of the Supreme Court order dated 12-12-1996. The incidence of forest fire in the State has increased during this plan period and more area is burned each year. Fire is a major factor that causes considerable damage to the forests of this Division and department has

failed to protect the forest including plantation area due to paucity of fund, poor infrastructure development, difficult geographical terrain and socio-legal problem etc.

5.13.10 Inadequate Investment in Forestry Sector

Forestry is the biggest land use in the State. Investment inputs in forestry are grossly-inadequate compared to the economic benefits derived from the forest-leaving aside their role in soil, water and environment conservation. To meet the development needs, forests have been looked upon as a source of revenue for the State. There is quite insufficient budget keeping in view of needs of forest management and the massive Afforestation programme required to bring 50% of the area under forest cover according to State Forest Policy. Even the external financial support (donor assistance) is not considered as additionality but is treated as part of the regular budget of the Department.

CHAPTER VI

STAFF AND LABOUR SUPPLY

6.1 Staff

The staff position of Rampur Forest Division as it stood on 31-3-2012 under various categories is tabulated in table No. 6.1

Table-6.1
Staff position of Rampur Forest Division as on 31-3-2012

Sr. No.	Category	Sanctioned strength	Existing strength	Variation
1.	DFO	1	1	-
2.	ACF	1	1	-
3.	Forest Ranger	6	2	(-) 4
4.	Dy. Ranger	17	15	(-) 2
5.	Forest Guards	48	51	(+) 3
6.	Supdt Gr.II	1	1	-
7.	Sr. Assistants	2	2	-
8.	Jr. Asstt/Clerks	4	3	(-) 1
9.	Kanungo	1	1	-
10.	Peon	4	3	(-) 1
11.	Chowkidar	9	7	(-) 2
12.	Mali	5	4	(-) 1
13.	Dandidar	0	1	(+) 1
14.	Sweeper	1	1	-
15.	Forest Worker	70	59	(-) 11
16.	Electrician	1	1	-
17.	Dak runner	1	1	-
18.	Driver	2	2	-

There has been no increase in staff strength as warranted by increase of work load and charge of public attitude with time.

6.2 Executive Charges: This division consists of four territorial ranges viz Nankhari, Bahli, Rampur and Sarahan. List of Divisional Forest Officers who has held the charge of Divisional Forest Office Rampur is tabulated in table No.:- 6.2

Table-6.2

List of DFOs who held the charge of Rampur Forest Division			
Sr. No.	Name of DFOs	Period	
		From	To
1.	Sh. Manmohan Singh Negi	1-6-1984	30-4-1986
2.	Sh. Pankaj Khullar	2-6-1986	30-6-1987
3.	Sh. Jasjeet Singh Walia	1-7-1987	30-6-1989
4.	Sh. Pradeep Kumar Sinha	1-7-1989	4-7-1992
5.	Sh. Shamsher Singh Negi	6-7-1992	27-7-1998
6.	Sh. Vijay Kumar Singh	27-7-1998	20-6-2000
7.	Sh. Ashok Kumar Chauhan	21-6-2000	24-7-2000
8.	Sh. Anil Vaidya	25-7-2000	5-6-2006
9.	Sh. Amitabh Gautam	5-6-2006	30-6-2008
10.	Sh. C.M. Sharma	1-7-2008	3-8-2008
11.	Sh. B.L. Negi	4-8-2008	9-12-2010
12.	Sh. D.R. Kashyap	10-12-2011	6-3-2011
13.	Sh. P.D. Dogra	7-3-2011	3-1-2012
14.	Sh. B.L. Negi	3-1-2012	To date

The list of Administrative Ranges, Blocks and Beats in Rampur Forest Division is given in **Appendix No.-LVIII**

6.3 Labour supply: Generally adequate local labour is available in the tract for various forestry operations like raising of nurseries, plantation, cultural operation, enumerations, marking, repair of boundary pillars, construction and repair of buildings, roads and paths etc. Slight scarcity is felt during monsoon planting season i.e. in July and August which coincides with the apple and vegetable harvest season. Gorkha labour from Nepal is also available for different departmental works. The forest corporation also engages labour locally for resin extraction and timber exploitation. But the H.P.S.F.D.C. are mostly relying on imported labour from Mandi, Kangra, Nepal and U.P. areas. The daily wagers are also being regularized as per Govt. policy for time to time. In Rampur Forest Division, nearly 50 to 100 numbers of daily wagers are working regularly in the division for whom the work is being provided. Nearly 250 to 500 other persons are also employed annually as casual labour during seasonal forestry works.

The work achieved in one man day i.e. work done by an adult labourer in one working day for eight hours is tabulated in table No:-6.3

Table-6.3

Sr. No.	Name of Work	Quantity of Work
1.	Soil working picking 15 cms deep, digging trench 30 cms deep breaking clodes and pilling earth from trench over the 15 cms piked line forming a ridge and furrow for very hard soil.	7.08 cum
2.	Soil working patches worked at 30 cms deep clodes broken	4.81 cum
3.	Pit making 30x30x30 cms size	2.40 cum
4.	Digging over completely to 30 cms deep (after this to make the dug up spil into actual beds needs about 150 labourer to do one hac. in one day)	2.97 cum
5.	Broad cast sowing in the nursery	372 sq.M
6.	Weeding in nursery (Ist and rain weeding)	93 sq.M
7.	Weeding in nursery (2 nd and rain weeding)	57.6 sq.M
8.	Making root-shoot cuttings	400 Nos.
9.	Planting cutting includes making and transport over 2.5 Kms.	80 Nos.
10.	Weeding in patches in plantation weeding- Ist weeding	30.6 sq.M
11.	Weeding in patches in plantation weeding- 2 nd weeding	22.37 sq.M
12.	Grass cutting in March (Variable)	278.07 sq.M
13.	Cilling i.e. cutting grass in patches around plants.	278.07 sq.M

(Source: As per Forester's companion)

6.3.1 In the changed scenario (JFM, PRA techniques, etc), there is the need for imparting specialized skills to the field staff in view of the changing trends may also be discussed.

Forestry works are also coming under the ambit of MNREGA wherein work is being executed by employing the job card holders. But there is scarcity of labours under MNREGA particularly for forestry works.

6.4 Labour rates

The wage rates of labour have been increased many folds. The daily wage rate for normal unskilled labour was Rs. 20 per day during 1990 which is now Rs.150 per day (September, 2012). The Conservator of Forests, Rampur Circle fixes the labour rate for Rampur Circle. The past and present rate of daily waged unskilled labour is tabulated in Table No: - 6.4

Table-6.4

Sr. No.	Category of daily labour	Rates per Day (Rs)	
		Past	Present
1	2	3	4
1.	Un-skilled	120	130
2.	Quarry man (Khangir)	120	130
3.	Driller (for Air Pump)	120	130
4.	Sprayman	120	130
5.	Carpenter Ist class	218	235

1	2	3	4
6.	Carpenter 2 nd class	162	178
7.	Mason Ist class	218	235
8.	Mason Iind class /Stone Chisler	162	178
9.	Painter Ist Class/distemperer	162	178
10.	Painter Iind Class/White washer	132	143
11.	Blacksmith	153	166
12.	Plumber Ist Class	153	166
13.	Plumber Iind Class	128	140
14.	Bar binder	132	143
15.	Sawmiller	152	166
16.	Assistant Sawmiller	120	130
17.	Cleaner	120	130
18.	Electrician Ist Class (I.T.I.)	192	208
19.	Electrician 2 nd Class	152	166
20.	Surveyor	192	208
21.	Driver	162	178
22.	Feller (Girani)	120	130
23.	Logger	120	130
24.	Sawyer (Charani)	120	130
25.	Dresser (Pachhani)	120	130
26.	Chowkidar (Office, Depot, Nursery etc)	120	130
27.	Khalasi, Zoo Animal Attendant/Fire Watcher/Grinder forch flooring/ Mate/ Calliperman/Mali, Sweeper/ Enumerator/ Enclosure sweeper	120	130

(Source: As per schedule of work and labour rates for Rampur Circle for the year 2012-13)

6.4.1 Labour for resin extraction operations: The extraction of resin from the forest is under the control of HP State Forest Development Corporation Ltd. and they allot the works to the labour supply mates on their schedule of rates for various applications or some times invite tenders.

CHAPTER VII

PAST SYSTEM OF MANAGEMENT

7.1 General History of Forests: There are no records available which could throw the light on the early history of these forests. It is, however, admitted that no system of conservancy of forest was in force. Shifting cultivation was practiced on a large scale, and the forests were gradually destroyed for agricultural purposes. With the increase in population, agricultural land, fuel and grass became more acute. This led to a very heavy and constant pressure on the adjoining forests and resulted in depletion of vegetation both in extent and quality. Annual burning of forests for new and tender blades of grass, led to the destruction of fire tender species. In such acute circumstances, necessity towards forest conservancy was realized during later half of the century.

7.2 Past System of Management and their Results: Since the plan includes forest areas which were managed by different administration of various states, each state had, therefore, its own past history and system of management. However, little is known about the history of the forests covered by the Working Plan before the advent of the British Rules. Consequently the general history and past management of each constituting unit/area is being described by and divided into different constituents as under:

- (i) Bushahr State Forests
- (ii) Sangri State forests
- (iii) Delath State Forest

Bushahr State Little is known of the history of Bushahr Forest prior to 1850. During 1850, an Indian trader purchased Deodar trees from the Raja at two anas per tree. He was followed by European traders, who worked the accessible Deodar forests. According to the old reports, the trees were of great size, and the methods of extraction employed resulted into enormous wastage.

In 1864, the management of the Bushahr State Forest was taken over by the British Government and a lease was concluded with the Raja of Bushahr State in consideration of certain payments. In the same year, Brandis made of inspection of forests in the Sutlej Valley. After inspection he drew up a felling scheme based on enumeration on rough linear surveys. Thus felling was confined mainly to the easier forests on the left bank of the Sutlej.

In 1872, Brandis again vested Bushahr and found that the rate of felling had averaged only 1400 trees annually. He recommended an early preparation of a proper working plan which was soon taken up in hand by Ribbentrop with Batchelor and stenhouse. This plan for the period 1875-1890 was of particular interest because then was first realized the necessity

for differentiating between the treatment of compact blocks of regular high forest and that of irregular forest on steep ground. The former type received two successive regeneration felling and in the latter, felling were to be made by selection of individual trees. The forests were worked by the departmental agency.

Bushahr forests were leased to the Punjab Government, and the first regular lease was drawn up during 1877 which was renewed from time to time during 1928 and 1942. The control of Bushahr forests was transferred to Himachal Pradesh Government w.e.f. April 1, 1949.

The first detailed working plan was prepared by Mr. Lace in 1892 for a period of twelve year 1892 to 1904. The forests of this Division were covered in the following working plans as under:-

- i) Lace's working plan 1892-1904.
- ii) Hart and Gibson's working plan 1904-1928.
- iii) Kitchingman's working plan 1928-1958.
- iv) Madan's Working Plan from 1947 to 1958-59.
- v) Mehr Chand's working plan from 1932-33 to 1961-62.
- vi) Convetry's Working Plan (1901-21)
- vii) Glover's working plan from 1927-28 to 1946-47.
- viii) Mohan Singh's working plan from 1947-48 to 1967-68.
- ix) I.D. Sharma's working plan from 1961-62 to 1975-1976.
- x) Tandon's working plan from 1961-62 to 1975-76.
- xi) C.L. Sudhera's working plan from 1978-79 to 1992-93.
- xii) R.K. Kapoor working plan from 1993-94 to 2007-08.

7.2.1 Lace's Working Plan 1892-1904: Systematic management was introducing during 1892 for the first time when the first plan was prepared by Lace. In this Working Plan the Working circles coincided with different Ranges. The Deodar bearing areas consisted generally of the small patches far away from Sutlej. The streams were considered too small to float logs. Due to long lead to the river, sleeper extraction was also considered very expensive. On account of all these reasons no fellings were proposed in the Nogli Working circle. However, 1316 M³ yield was harvested without any prescription.

7.2.2 Hart and Gibsons Plan (1904-1928): In 1904, Hart and Gibson's Plan came into force. In this plan four Working circles, each with different method of treatment, were formed. Out of these the Satluj Working circle and entire Sholi Working circle was covered by the Working Plan.

- (a) The main object of the management in these two circles was to increase the stocking of Deodar. In Nogli felling series against prescribed yield of 7330 1st class deodar trees of 60 cms d.b.h. and over, 6148 1st class and 2791 2nd class trees were felled during the plan period. The growing stock during the period is said to have increased by 308 meter cube. The growing stock at the end of the plan was 0.107 million meter cube.
- (b) In the Sholi Working circle against the prescribed annual yield of 10150 1st class Kail trees (75 cm dia and above), 14062 1st class and 9030 2nd class trees were felled. Another 596 1st class and 557 2nd class Kail trees were granted to right holders which also counted towards the prescribed yield. The reasons for the over felling, included silvicultural requirements of some deodar plantation and removal of burnt trees in 1921 etc.
- (c) As a result of thinning and improvement fellings in favour of deodar, there was an increase in its stocks of over 30 cms dia.
- (d) Another prescription of this plan pertained to the introduction of deodar in pine areas and as a result deodar plantation was established over 58.7 hac. It was also observed that early removal of kail over wood assured success of deodar plantations and freeing the plantations from the attack of *Peridermium cedrii*. Another conclusion drawn by kitchingman from the experience gain during the plan that the restocking of blanks was difficult and expensive proposition and that in blanks, caused by fire, it was better to plan blue pine first rather than attempt deodar directly.

7.2.3 Kitchingman's Working Plan 1928-1958: The results of the three circles constituted under this Working Plan from 1929-1946 when the plan was revised by Madan are as under:

(i) The Regular Working Circle: This covered an area of 4244 hac. of Kail and Deodar forests mainly. Total area was divided into five periodic blocks under the Shelter wood system with a rotation of 150 years. 1211 hac. were allotted to PB-I and PB-II, the balance 2001 hac. to the remaining three periodic blocks.

a) Yield position: The yield was prescribed for different species both from regeneration fellings in P.B.I and supplementary felling and thinning from other P.B.s including grant of timber to the right holders is tabulated in Table No:- 7.1

Table-7.1

Species	PB I	Other PBs	Total M3
Deodar	196	140	336
Kail	714	644	1358
Chil	742	84	826

- b) No yield was prescribed for Fir and spruce. The yield deviation obtained up to March 31,1946 is tabulated in Table No:- 7.2

Table-7.2

Species	Main Yield	Supplementary yield	Total m3
Deodar	(-) 754.88	2094.12	1339.24
Kail	(-) 4454.80	7362.04	2907.24
Chil	(-) 496496	7865.20	3124.24
Total	(-) 10174.64	17321.36	73270.72

- c) The deficit in main fellings was due to the damage by fires in the year 1921 and 1930. More yields were extracted from supplementary fellings on account of heavy demands for timber during the 2nd World War.
- d) **Regeneration Operations:** The proportionate area that should have been regenerated during eighteen years of the Working Plan worked out to be 510.3 hac. However, considering Shilla and Balala compartments as unsuitable for allotment to P.B.I being Fir areas which were allotted for experimental purposes, only 364.5 hac. area should be the net area for regeneration. Against this regeneration was established over 341.8 hac. including 185 hac. of Deodar plantation in PB-I.
- e) **Much of the plantation programme was carried out as per prescriptions** this included P.B.I areas mentioned above in addition to the plantation of 141.31 hac. in other P.B.s
- (ii) **The Sholi-Nogli Working Circle:** This Working circle covered an area of 15816 hac. and included those deodar, blue pine and chil forests which were situated on steep grounds and were unsuitable for working under regular system. The main objective of management

was to increase the deodar growing stock and to approach as near the normal distribution of age classes as possible. The silvicultural system adopted was a sort of modified selection system along with selection fellings, thinning was also prescribed. The yield was prescribed by number of trees separated for each species of deodar, blue pine and chil. The prescription for spruce and silver fir was estimated.

Results of the Working circle as a whole worked satisfactory except that to meet the increased demand during the war, heavy felling were made and more kail was removed. Instead of increasing the proportion of deodar, the number of deodar trees went down. In 1929, there were 4115 deodar trees over 30" diameter and in 1946, the number was 2932. Similarly, number of kail trees too was reduced from 4121 to 3719 during the period from 1929 to 1946. The position of yield on March 31, 1946, the period upto which this Working Plan remained in force indicated deficits in respect of deodar and chil. Deodar was in deficits by 431 trees, kail in excess by 470 trees and chil in deficits by 73 trees. Some compartments were worked twice and some were not worked at all. Thinning was carried out in deodar and kail forests. The fir forest remains almost fully stocked due to very light selection fellings.

(iii) Protection Working Circle: This contains the forests either lying on very precipitous ground or which could not be worked at profit. The total area of this Working circle was 17596 acres. No fellings were prescribed and the forest was to be protected only.

Forest of Sarahan Range: These forests were originally a part of Bushahr state and were covered earlier by various schemes and plans as discussed earlier under Bushahr hill state forests, except Pandrabis illaqua which is discussed as under:-

(a) Kitching man's plan (1929-39): Kitching allotted the area of Pandrabis in to two Working circles as under:-

i) Western Pandrabis selection working circle (3733.29 hac.) All the forests lying on the western bank of river Suttlej were allotted to Western Selection Working Circle: All Deodar and Kail trees of over 30 cm diameters were enumerated in 15 cm dia. Classes. The silvicultural system adopted was modified selection system which consisted of selection fellings along with group selection fellings and thinning cum improvement fellings. Exploitable diameter of Deodar and Kail was fixed at 75 cm and rotation at 150 years. Yield was calculated by number of trees. The annual yield was fixed at 250 trees of Deodar and 150 trees of Kail both over 75 cm diameter. During 2nd world war 6208.88 m³ of Fir and Spruce was removed under unregulated fellings. By end of March, 1947, the yield was in deficit by 628 Deodar and 648 Kail trees both of IB class. Excess felling has been done in the PB-IV. This is mainly on account of pressure of demand for packing cases in the upper belt mainly for fir & Spruce species. However, in the case of BL species the felling done was less than

the prescribed. All these have come from PB-I & PB-IV areas, efforts were done to regenerate these areas also.

ii) Selection Working Circle (424.03 hac.): These forests were situated on the north bank of river Sutlej and formed a separate geographical entity.

7.2.4 Madan's Working Plan (1947 to 1958-59): The Kitchingman's Working Plan was to be revised in 1944 but it could not be taken up on due date on account of partition coinciding the revision was delayed and it was prepared only for 12 years. There were three Working Circle s but the allotment of certain areas to different circles was changed depending upon their locality factors.

a) The Regular Working Circle (3042.8 hac.) In this plan besides PB-I and PB-II, PB-V was also allotted and the remaining areas were referred to as unallotted Periodic blocks. The conversion from irregular forest was prescribed to continue under the Punjab Shelter Wood system. Thinning and improvement felling were prescribed to be carried out other then PB I. The regeneration period of 30 years was prescribed. The rotation was fixed at 150 years.

Yield Position:-The annual yield prescribed and obtained included the requirements of right holders; species wise position is tabulated in table No:- 7.3

Table-7.3

Species	Prescribed yield	Yield obtained	Deviation
Deodar	4200	709.90	2895.90
Kail	19992	18647.44	(-) 1344.56
Chil	10080	5736.08	(-) 4344.03
Fir	5376	16296.28	10927.74
Total	39648	47775.7	8135.01

The excess yield of deodar according to ID Sharma was due to calculation of yield on conservative basis i.e. not taking increment into consideration and low assessment of value of constant used in formula for calculating yield. The deficit in chil was due to non availability of old trees for felling due to slow progress of regeneration. In case of fir, excess yield by 200%, was due to either under estimation of growing stock in far flung area or excessive felling or both.

b) Regeneration operations: The progress of regeneration was totally unsatisfactory. The closure was not properly enforced and most of the PBI areas remained neglected and the blanks caused by 1954 fire also remained unattended.

- c) **The Sholi Nogli Selection Working Circles (6370.25 hac.):** The constitution of this circle remained almost the same as in Kitching man's plan. This Working Circle was divided into two groups for the purpose of separating out pure fir forest from mixed forest and the silvicultural system prescribed was Punjab Selection System. The rotation was fixed for 150 years and felling cycle for 12 years was fixed to coincide with the period of the plan. The total area comprised of 2247.3 hac. of Deodar Pine group and 4122.9 hac. of Fir Spruce group. The position of yield is tabulated in Table No.:- 7.4

Table-7.4

Species	Prescribed yield	Yield obtained	Deviation
Deodar	1200	1068	(-) 132
Kail	1920	1651	(-) 269
Chil	480	517	37
Fir	16800	13991	(-) 2809
Total	20400	17227	(-) 3173

The deficit in deodar, kail, and fir is said to be mainly due to slow progress of regeneration on account of which over wood could not be removed.

- d) **Regeneration operations:** As in case of regular Working Circle the regeneration operation in this circle also remained neglected.
- e) **The Protection Working Circle (6686.55 hac.)** All the demarcated forest in Kochi, which had not been allotted to any other circle, was included in this Working Circle. The constitution of the circle remained almost the same as in Kitching man's plan. The chief object of management was to prevent denudation and to conserve the forests, to maintain a constant flow of water in the streams flowing through them. No fellings were prescribed or permitted. Although no fellings were prescribed yet 4533 m³ of Deodar 1158.96 m³ of Kail and 4258.14 m³ of Fir were removed for meeting with the requirements of right holders and fruit packing cases.

7.2.5 Mahr Chand's Working Plan (1932-33 to 1961-62):- This plan like other plans dealt only with the demarcated forests covering 6336.63 hac. The general objects of management were to preserve the demarcated forests and to improve them with a view to prevent erosion, to regulate water supply in streams, to obtain sustain yield of timber and charcoal and to regenerate the extensive blanks caused by 1921 fire besides satisfying the legitimate requirement of the state residents for timber, firewood grazing and grass cutting

etc. This was the forest Working Plan in which all types of demarcated forest, irrespective of vegetative association, were included and Shelter wood system of regeneration by compartments was introduced for deodar and pine forests four Working Circle were constituted which are briefly described as under: -

(i) The Regular Working Circle: -The kail, deodar and chil forests, with some proportion of fir and spruce in upper reaches of kail areas, covering total area of 1646.32 hac. were allotted to this Working Circle. The treatment prescribed was gradual conversion of existing uneven aged forests into blocks of more or less even aged blocks by concentrated regeneration in P.B.I areas. A rotation of 120 years with regeneration period of 30 years was adopted. 432.94 hac. was allotted to PBI, 291.60 to P.B.II and remaining two P.B.III and P.B.IV.

a) Annual yield: - Annual yield was to be controlled separately for P.B.I, PBIII and P.B.IV. All trees above 45 cms dia in P.B.I and 50 cms diameter in PBIII and PBIV were to be counted to be yield. The result of fellings is tabulated in Table No: - 7.5

Table-7.5

Species	Yield in M ³ (1949-50 to 1960-61)								
	Prescribed			Felled			Excess or deficit		
	PBI	PBIII & IV	Total	PBI	PBIII & IV	Total	PBI	PBIII & IV	Total
Deodar	1176.00	1444.80	2620.80	1666.56	605.24	2271.80	770.56	(-) 839.55	(-) 68.99
Kail	3259.20	3360.00	6619.20	1200.64	4062.91	5263.55	(-) 2058.56	720.91	(-) 1355.65
Chil	403.20	100	504.00	77.28	43.68	120.96	(-) 325.92	(-) 57.12	(-) 383.04
Fir	3561.60	6854.40	10416.00	458.08	2863.28	3321.36	(-) 3103.52	(-) 3991.12	(-) 7094.64

b) The above table shows that there is excess felling of deodar in PBI though the table yield from this circle for the species is within the permissible limit of +-5% deviation. The deficit in case of other species is due to non availability of over wood for felling in view of over progress of regeneration in P.B. I areas

c) Besides the above, 23.52 M³ of deodar, 556.64 M³ of kail and 601.44 M³ of Fir was removed from PBII areas for formatting the right holders demand during 1949-50 to 1960-61.

d) Regeneration operations: The progress of regeneration on the whole was satisfactory, though during the last 15 years, much attention was not paid to the replacement of failures and planting of failure.

e) Due to lack of demand for poles of smaller dimensions in the past, thinning were not marked in full and even where these were marked, the smaller poles were not felled by the purchasers.

(ii) The Oak Working Circle: The forest bearing mostly Ban, Mohru and Kharsu oaks with sufficient proportion of fir covering an area of 1369.71 hac. were allotted to this

Working Circle. The main objects of management were to maintain and increase the proportion of oaks for sustain production of charcoal. The silvicultural system adopted was selection system. An exploitable diameter of 60 cms and rotation of 200 years was adopted because spruce and fir were expected to be of 75 cms. and over in diameter during this year. Felling cycle was fixed at 15 years and yield was prescribed by number of trees ie. 210 oak trees, 175 spruces and 125 silver fir every year.

a) Yield position: During the year of 1949-50 to 1960-61 against the prescribed yield of 2520 oaks and 3600 fir and spruce trees only 293 oak and 1600 fir trees were removed. In addition 264 trees of Kail, 12 numbers of deodar and 1 number of chil trees were also removed during the period. The deficit in fellings of oaks was due to lack of demand for charcoal in Shimla market because coke was readily available. The spruce and fir trees also could not be worked out due to lack of demand.

(iii) The Fir Working Circle: The forest containing pure spruce and silver fir covering the total area of 2784.37 hac. were allotted to this Working Circle. Based on enumeration over 45% of the total area and exploitable size of 75 cms. diameter, 790 trees of spruce and 410 trees of fir were removed annually on a 15 year felling cycle. Deficit felling were permitted and against 14430 of spruce and fir only 8325 trees were felled from 1949-50 to 1960-61. However, 276 kail and 46 deodar trees were also felled during this period.

(iv) The Protection Working Circle: The high lying Kharsu, oak areas along ridge and the precipitous areas covering an area of 536.22 hac. were allotted to this Working Circle. No treatment except protection was prescribed. Buffalo grazing along Hatu ridge was restricted to 30. However, 34 number fir, 3 number kail trees were felled from this Working Circle form 1949-50 to 1960-61 mainly for meeting the demand of right holders and fruit packing cases.

7.2.6 Convetry's Working Plan (1901-21): Since this plan deals with the reserve forest falling in Kotgarh forest division, hence the result of this plan has not been described under this plan.

7.2.7 Glover's Working Plan from (1927-28 to 1946-47): In this plan only thinning were prescribed for restocking of burnt areas and meeting the demand of right holders. These prescriptions were carried out in letter and spirit except in fir areas no thinning was carried out due to material being unsalable. Since this plan deals with the forest falling in Kotgarh forest division, hence the result of this plan has not been described under this plan.

7.2.8 Mohan's Working Plan (1947-48 to 1967-68): This plan also covered the only reserved forest falling in Kotgarh forest Division with the object of creating normal forest with normal distribution of age classes and to meet the demand of fruit packing cases. There

were two Working Circles. Since this plan deals with the reserve forest falling in Kotgarh forest division, hence the result of this plan has not been described under this plan.

(i) Sangri State Forests

No authentic attempts were made by the then ruler to frame some rules for the management of the forests by regulating the grant of timber and other forests produce, grazing, grant of nautors etc. After the state in Himachal Pradesh when these forests formed part of Kumarsain range, these forests were brought under the systematic management in I.D. Sharma's Working Plan (1961-62 to 1975-76).

(ii) Delath State Forests

As there are no demarcated protected forests in Delath area these forests do not come under the preview of the current Working Plan.

7.2.9 I.D. Sharma's Working Plan (1961-62 to 1975-76): This Plan dealt with Reserved, Demarcated and Un-demarcated forests of all the areas discussed earlier, with the main object of improving the existing stock, to rehabilitate degraded un-demarcated, protected forests and to bring the same to the condition as near as possible to normal forests. It was also aimed at replacing the diseased Kail trees with Deodar, meeting the requirements of local people, including packing cases. As such the following Working Circles were constituted in this plan.

(i) The Regular Working Circle (9791.28 hac.): This circle comprised of Deodar and Kail forests, pure or mixed spruce and oak forests covering an area 9791.28 hac., which were suitable for working under the system of concentrated regeneration fellings. These forests were prescribed to be managed under Punjab Shelter Wood System. The extent of various types of forests covered by this circle was 462.91 hac. of Reserved Forests, 4992.23 hac. Demarcated and 4336.38 hac. of Un-demarcated forests.

a) Silviculture System: Mixed forests were to be worked under the modified Punjab Selection System. In irregular crops and steep slopes, selection markings were to be carried out. Pure fir forests were to be worked under true Selection system with thinnings and improvements fellings in middle aged groups. In both the cases efforts were to be made to give preference to Deodar over Kail and Kail over Spruce and Fir. Regeneration period was fixed at 30 years with rotation was fixed at 150 years, exploitable diameter at 60 cms diameter for all the conifer species. This Working Circle was divided into five periodic blocks. Definite allotment was made for P.B.I, P.B.II and P.B.V whereas P.B.III and P.B.IV were grouped together and named as P.B. I. Thinning cycle was fixed for 15 years.

(b) Result of Working

- i) The yield from P.B. I and P.B.V, was to be regulated by volume and all the trees of 40 cms diameter and above removed in regeneration felling from P.B.I and final fellings from P.B.V were to be counted towards yield.
- ii) In case of P.B. Inter yield from this PB comprised of removal of trees of 70 cms diameter and over standing over groups of young pole crop. No trees between 60 cms. and 70 cms. diameter class was to be removed unless dead, dying or diseased. It was estimated that only 50% of the mature over mature would be available and as such 50% of trees were taken into concentration for yield purposes.
- iii) No yield was prescribed from P.B.II which was to be gone over only in thinning.
- iv) The overall position of the final yield obtained from PB-I and PB IV of this Working Circle is tabulated in Table No:- 7.6

Table-7.6

Species	Prescribed yield	Yield obtained	Deviation
Deodar	21000	24613	3613
Kail	67200	80128	12928
Chil	3394	5399	2005
Fir	69720	56766	(-) 12954
Total	161314	166906	5592

From the above result it is quit clear that there was over felling in the circle in case of Deodar (+17.20%), Kail (+19.24%) and Chil (+125.52%), whereas in case Spruce and fir was (-18.58%). Although no yield was prescribed in P.B.II but 1660.68 M³ of deodar, 10524.36 M³ of Kail, 270.20 M³ of chil and 7552.40 M³ of fir was removed.

v) Cleanings and unsaleable thinning in P.B. V: As per record of CH Files, out of total area of 544.72 hac. comprising of (28.25 hac. of RF, 483.97 hac. of DPF and 32.40 hac. of UPF), cleaning and unsaleable thinning were carried out in only 138.10 hac. of area comprising of 15.39 hac. of RF and 122.71 hac. of DPF. Thus, there was a short fall of -74.64 hac.

(ii) The Selection Working Circle (15093.54 ha): All comercially workable spruce and silver fir forest either pure or mixed together with some of the deodar, kail and chil forest on slope of two steep, concentration regeneration fellings were included in this Working Circle. The extent of various types of forests covered by this circle was 14257.20 hac. of DPF and 836.32 hac. of UPF. They were further divided into two felling series (i) export felling series having 12111.52 hac. of DPF and 625.72 ha of UPF and (ii) local felling series comprising 2145.70 hac. of DPF and 21.06 hac. of UPF.

- a) **Silviculture system:** The mixed forests were to be worked out under modified Punjab Selection system. In irregular crops and steep slopes, selection marking work to be carried out. Pure fir forests were to be worked under true selection system with thinning and improvement fellings in middle aged crops. In both the cases, efforts were to be made to give preference to deodar/kail/spruce and fir. Rotation was fixed 150 years with felling cycle of 15 years.
- b) **Calculation and control of yield:** The yield was regulated by number of selection trees calculated by Smythie's formula. All the trees 60 cms. in diameter and over felled for any purpose including grant to right holders were to count towards yield. In local felling series no felling was prescribed for deodar and if any deodar was felled its yield was to be counted against kail.
- c) **Result of the working:** The prescribed felling programme in respect of export felling series and local felling series was not followed properly. The position of annual yield species wise at the end of Working Plan period 1975-76 is tabulated in Table No:- 7.7

Table-7.7

Species	Prescribed yield	Yield obtained	Deviation
Deodar	-	-	-
Kail	414	900	(-) 486
Chil		-	-
Fir	11572	15000	(-) 3428

The area wise position of the felling as compared with the table of fellings given in the Working Plan is tabulated in Table No: - 7.8

Table-7.8

Particulars	Export felling series			Local felling series		
	DPFs	UPFs	Total	DPFs	UPFs	Total
Area prescribed for fellings (hac.)	11926.03	625.72	12551.75	2145.69	210.60	2356.29
Area actually felled (hac.)	7656.12	135.60	7791.79	2145.69	40.50	2186.19
Variation	(-) 4269.91	(-) 490.05	(-) 4759.96	-	(-) 170.10	(-) 170.10

From the above result it is clear that there is an under felling of 59% in case of deodar, 62% in kail, 79% in chil and 36% in fir, in export felling series and 54% in kail, 23% in fir in case of local felling series.

(iii) The Chil Working Circle (3064.23 hac.): All pure Chil forests mentioned in Regular WC or Selection Working Circle of previous plan were allotted to this Working Circle. In addition some U.P.Fs was also included in this circle. The total area of various type of forests allotted was 107.73 hac. of Reserved Forests, 966.73 ha D.P.Fs and 1989.76 ha of U.P.Fs. There was only one felling series for the whole Working Circle.

- a) **Silviculture system:** Forest allotted to this Working Circle were to be worked under modified Punjab Shelterwood System. The rotation was fixed 120 years with four fixed periodic blocks. Regeneration period was fixed at 30 years and exploitable diameter at 60 cm.
- b) **Yield Position:** The prescribed yield consisted of final yield from P.B.I, P.B.III and P.B.IV and intermediate yield from PB-II and PB-III. The increment was not taken into consideration. No yield was prescribed for Deodar, Kail and Spruce.
- c) **Result of Working:** The yield position of this Working Circle for the Working Plan period (1961-62 to 1975-76) is tabulated in table No:- 7.9

Table-7.9

Species	Prescribed yield in M ³				Yield obtained in M ³				Deviation in M ³			
	P.B.I	P.B.IV	P.B.III	P.B.II	P.B.I	P.B.IV	P.B.III	P.B.II	P.B.I	P.B.IV	P.B.III	P.B.II
Chil	12600	6300	1680	-	6831.02	3421.60	903.56	1544.76	(-) 5768.98	(-) 2878.40	(-) 716.44	1544.76

The figures of the above table indicate that there was a deficit felling of 46% in PBI, 45% in PBII and 46% in PBIII. As such there was overall deviation of more than 10% of the prescribed yield.

- d) **Thinnings:** As per record compiled from CH files out of total area of 2278.12 hac. Comprising of 709.96 hac. of DPF and 1568.16 hac. of UPF, thinning were carried out in only 1628.50 hac. comprising of 638.28 hac. of DPF and 990.22 hac. of UPF. Thus, there was a deviation of 28.25 %.

(iv) The Plantation Working Circle (5965.65 ha): This circle mainly comprised of undemarcated forest which were mostly tree less with one exception of shawan DPF of 20.25 hac. The net area prescribed for plantation was 1518.75 ha and was divided into three planting series corresponding to the territorial jurisdiction of three ranges.

- a) **Results of the working:** Out of total area of 1518.75 ha comprising of 22.27 hac. of DPF and 1496.47 hac. of UPF aimed at for plantation work purposes, 543.10 hac. comprising of 15.12 hac. of DPF and 530.95 hac. of UPF were planted as per figures available CH files. No efforts seem to have been made for beating up, bush cutting, cleaning and early thinning. As such there is a deviation of -64.24%.

(v) The Rampur Fuel Working Circle (944.46 hac.) It comprised of such Ban oak forests as were within economic reach of Rampur town. The annual requirement of the town population at the time of preparation of Working Plan was estimated at 8000 mounds of fire wood and 2000 mounds of charcoal. This Working Circle comprises such Ban, oak forests of the Nogli valley which were within a reasonable distance of Rampur town. It consisted of 77.76 hac. of Theda C-2 (new 153) DPF and rest of 862.65 hac. of UPF. It constituted one felling series. It was estimated that out of 944.46 hac. of area only 729 hac. would contain Ban Oak and other broad leaved species.

- a) The system adopted was selection and improvement felling. The exploitable diameter was fixed at 50 cms in case of Ban and 60 cms. in case of deodar, kail, chil and spruce.
- b) **Yield position:** The yield was to be regulated by area. Annual felling coupe prescribed was of 48.60 hac. of net oak area. This was expected to produce 6583.93 qtl. of fuelwood, out of which 3557.74 qtl. was to be converted into 731.54 qtl. of charcoal.
- c) **Result of working:-**As per the record available from compartment history files not a single prescription of the Working Plan was followed.

(vi) The commercial broad leaved Working Circle (overlapping): It comprised of all the valuable species such as walnut, Maple, Birdcherry, Horsechestnut etc. and overlapped the selection and regular Working Circle. As the crop was scattered, it was not possible to access the net area. However, the gross area of this Working Circle was 18112.40 hac.

- a) **Silviculture system:** The system adopted was selection system with thinning and the rotation was fixed at 120 years and felling cycle was 15 years.
- b) **Regeneration operations:** This being an overlapping Working Circle, the artificial regeneration was restricted to moist belts not fit for raising coniferous in PBI areas of the plan and all suitable blanks of 0.4 hac. and over.
- c) **Results of the working:** As per record available from CH files not a single prescription of the Working Plan was followed.

(vii) The Protection Working Circle (10958 ha): All the precipitous areas not fit to be managed under any system, alpine pasture, alpine scrubs and areas under snow were allotted to this circle. All areas containing Kharsu oak were also allotted to this circle.

- a) **Silviculture system:** - No felling, except to meet the occasional local requirements of the villagers for timber, fuel or agricultural implements were to be permitted. All such felling was to be carried out strictly on true selection principles. In case of demand for Kharsu oak or any other species, the forest were to be worked under

selection principles and yield calculating as in the same manner as in selection Working Circle.

- b) Results of the working:** - The areas were protected; however, lopping of Kharsu oaks by Gujjars in the forests were common.

7.2.10 Tandon's Working Plan (1961-62 to 1975-76): The forests of Sarahan range which formed part of this Working Plan were covered under two Working Circles along with forests of present Kinnaur Forest Division. The discussion has therefore been limited to those two circles only, which are as under:

- (i) Wet zone Selection Working Circle Sarahan Felling Series (10,236.37 hac.):** This felling series consisted of 6427.35 hac. of DPF's and 3809.02 hac. of UPF's of Western Pandrabis's and Kochi forests of Sarahan Range.

- a) Silviculture system:** The system adopted was Punjab Selection System. The main aim was to prefer deodar over kail, chi lover spruce and spruce over fir. The exploitable diameter of all species was fixed at 60 cms. and referred to as selection trees. Felling cycle was fixed at 15 years.

- b) Results of Working:-**There had been huge over felling in this Working Plan period (1962-63 to 1975-76). The detail of the same is tabulated in table No:- 7.10

Table-7.10

Species	Prescribed yield	Yield obtained	Deviation
Deodar	14000	63263	49263
Kail	0	0	0
Chil	980	3258	2278
Fir/spruce	22400	71331	48931
Total	37380	137852	100472

It is clear from the above data that there was over felling in case of deodar and kail (351.88 %), (spruce and fir 218.44%) and (chil, 332.44%).

- c) Thinnings and improvement felling:** The total area of 4052.83 hac. comprising of 1960.20 hac. of DPF and 2092.63 hac. of UPF were prescribed for thinning and improvement fellings. As per record available, thinning and improvement fellings were carried out in 3513.37 hac. comprising of 1960.20 hac. of DPF and 3513.17 hac. of UPF. There was, thus, a deviation of -13.31%.

- (ii) Protection Working Circle (654.48 hac.)**

The forests allotted to this Working Circle and included in this Working Plan consisted of 654.48 hac. of DPF's of Sarah an felling series.

- a) **Silviculture system:** No silviculture system was prescribed as no regular fellings were to be carried out. The demand of the right holders was to be met under thinnings cum improvement fellings.

7.2.11 C.L. Sudhera's Working Plan (1978-79 to 1992-93)

This Working Plan covered the RF's, DPF's and UPF's of all the areas falling within erstwhile Kotgarh Forest Division including the jurisdiction of Rampur Forest Division. The following Working Circles were constituted in this plan.

(i) **The Chil Working Circle: (Area 9116.36 hac.) :** The forest containing chil as a pure crop or the one containing chil with 60% or more as a major component has been allotted to this Working Circle. The total area of the Working Circle is 9116.36 hac. this comprises of 1918.07 hac. of DPF and 7198.29 hac. of UPF. There was only one felling series.

- a) **Enumeration:** The growing stock and number of trees were assessed with the help of Relescope by post stratified random sampling.
- b) **Silvicultural system:** Punjab Shelter wood system with the provision of retention of compact group of well grown poles as a part of future crop. The regeneration period was fixed at 30 years with rotation as 120 years. The exploitable diameter for chil was fixed at 50 cms. d.b.h.
- c) **Control of Yield:** All the trees upto 10 cm d.b.h. and above removed from PB-I and part of Working Circle of any kind of operation were to be counted towards yield. No thinning cycle was prescribed as the chil forests were already open to very open.
- d) **Result of Working:** The position of the final yield obtained from P.B.I, P.B.IV and other P.B.s is tabulated in table No:-7.11

Table-7.11

Species	Closing deviation	Yield obtained	Cumulative Deviation
Deodar	1254	501.326	(-) 752.674
Kail	2079	2101.217	22.217
Chil	43725	6529.380	(-) 37195.62
Fir/spruce	1045	2287.971	1242.971
Total	48103	11419.894	(-) 36683.11

It is clear from the results of above table that there was no over felling in case of all the conifer species.

(ii) **Deodar and Kail Working Circle:- (Area 543.31 hac.):** All the kail and deodar forest having a pure crop of kail and deodar or with 60% or more as its component in a compartment and capable of being worked under Punjab Shelter wood system were allotted to this Working Circle. Beside this, the forest of kail and deodar worked under selection

system in respect of Saharan range mainly were also brought under this Working Circle. There was only one felling series. The growing stock was assessed with the help of relascope. The total no. of samples taken in this Working Circle were 458.

- a) **Silvicultural system:** The forests were to be managed under Punjab Shelter wood system. The forests situated on steep, precipitous and rocky sites were not prescribed to be felled except under selection felling in rare circumstances. The removal of over wood in the secondary and final fellings was to be done only after keeping in view the progress of regeneration and establishment thereof. Artificial regeneration of the forest was prescribed to be carried out in all forests immediately after main fellings.
- b) **Regeneration Period:** The regeneration period was fixed at 30 years for all the species covering in the Working Circle. Besides restocking the P.B.I areas during Working Plan period, all the unregenerated and blank areas included P.B.IV were also prescribed to be regenerated artificially.
- c) **Rotation:** Rotation was fixed at 120 years because it was economical both for deodar and kail with the division of Working Circle into four periodic block.
- d) **Calculation of yield:** The total prescribed annual yield for different species in this Working Circle was 23571 M3. The demand for right holders was also prescribed and to be met from areas prescribed for fellings. However, DFO could deviate and do some markings in UPF's also. The annual yield prescribed is tabulated in table No.:- 7.12

Table-7.12

Chil	Kail	Deodar	Fir/spruce	BL	Total
451	9372	7189	3833	2726	23571

- e) **Result of Working:-** The overall position of final yield obtained from PB's for the Working Plan period is tabulated in table No: - 7.13

Table-7.13

Species	Closing deviation	Yield obtained	Cumulative Deviation
Deodar	79079	19427.41	(-) 59651.6
Kail	103092	54802.19	(-) 48289.8
Chil	4961	615.48	(-) 4345.52
Fir/spruce	42163	24514.83	(-) 17648.2
Total	229295	99572.39	(-) 129935

The overall yield deviation in the Working Circle was prescribed upto +-(20%) in any one year but the overall variation should not exceed +-(10%). The above result shows that there was no excess felling for all the coniferous species.

(iv) Fir and Spruce Working Circle:- (Area 17476.52 hac.): All the forests of Spruce occurring either as pure crop or in a mixture containing Fir and Spruce with 60% or more as component, located on easier slopes with possibility of economic exploitation were included in this Working Circle. The whole Working Circle comprised of one felling series only. Enumeration was carried out with the help of Relascope.

a) Silvicultural system: The modified Punjab Shelter wood system was prescribed. Young crop upto 20 cm dia and 0.1 hac. in extent was to be retained as future crop. Conservative fellings were prescribed to be done on steep, precipitous, rocky forest as well as in the forests susceptible erosion and others unfit for concentrated fellings.

b) Regeneration period: The regeneration period was fixed at 30 years. Besides regenerating the P.B.I areas during Working Plan period, all the unregenerated and blank areas included P.B.IV were also prescribed to be regenerated artificially.

c) Rotation: Rotation was fixed at 120 years to produce fir and spruce above 35 cms. dbh. It was suitable for production of timber as well as packing cases and was also economical to exploit. With the rotation period of 120 years and regeneration period of 30 years, the whole Working Circle was divided into four periodic blocks.

d) Result of working: The overall position of final yield obtained from PB's for the Working Plan period is tabulated in table No: - 7.14.

Table-7.14

Species	Closing deviation	Yield obtained	Cumulative Deviation
Deodar	21032	6210.08	(-) 14821.92
Kail	133550.00	17251.51	(-) 16298.49
Chil	759	135.24	(-) 623.76
B/L	96415	1501.71	(-) 94913.29
Fir/spruce	266343	410263.20	143920.20
Total	487641	435361.74	17262.74

This is only the Working Circle where the prescription of the Working Circle was followed to some extent and concentrated regeneration fellings were carried out. The total area marked in this Working Circle is approximately 2000 Ha, whereas artificial regeneration was carried out in 200 Hac. The status of regeneration is good.

(v) Broad leaved Overlapping Working Circle (1333.65 ha): With the rapid development in all spheres, the importance of many broad leaved species, hitherto unknown, has been realized. With this view an overlapping Working Circle named as **The Broad leaved** Working Circle was created. Thus, this Working Circle comprises of all the forests containing pure crop of broad leaved species and those in which these species occur in

patches of reasonable extent of the area in the entire Working Circle except the protection Working Circle. There was only one felling series.

- a) **Regeneration Period:** The regeneration status is variable depending upon the site and species. The regeneration period was fixed at 30 years. All the blank area allotted to PBIV besides PBI was to be regenerated during the plan period.
- b) **Rotation:** Rotation was fixed at 120 years for all the species occurring in the circle. In case of Ban oak which was prescribed to be worked under coppice with standards system, the rotation of 45 years was fixed for coppiced crop and 90 years for standards. The exploitable diameter for different species was as under:-
 - (i) Ban oak coppice =20 cms
 - (ii) Ban oak standards =35 cms
 - (iii) Maple, carpinus and birdcherry =40 cms
 - (iv) Walnut, horsechestnut and other BL =50 cms
 - (v) Boxwood =20 cms
- c) **Felling Cycle:** The felling cycle was fixed at 15 years corresponding to the period of plan
- d) **Annual prescribed yield:** The growing stock of pure broad leaved forests, not included in the regular Working Circle was estimated 296191 M³. The total annual yield was prescribed from these broad leaved species was 14308 M³.
- e) **Silvicultural System:** The silvicultural system applied to this overlapping Working Circle was modified Punjab Shelter wood system. In Ban Oak forests coppice with standards system was to be applied.
- f) **Result of working:** The yield of all the species was prescribed to be control by area. All the trees removed annually were to be counted towards prescribed yield. The prescribed yield was 14308 m³. Overall position of final yield obtained from this Working Circle for the plan period is tabulated in table No: - 7.15

Table-7.15

Closing deviation	Yield obtained	Cummulative Deviation
22803 m ³	1339.05	(-) 21463.95

Thus, the result shows that there was deficit in felling in this Working Circle.

- (vi) **Fuel wood (overlapping) Working Circle:** This Working Circle was created to meet with the demand of fuel wood of the local people and those residing in nearby town and cities. All the forests prescribed for fellings, in all the Working Circles were allotted to this overlapping Working Circle. Since this Working Circle overlaps all the Working Circles, therefore, theoretically its gross area equals to the total forest area of the division.

- (i) **Felling Series:** There was only one felling series.
- (ii) **Prescribed yield:** (a) coniferous fuel wood: The total annual prescribed yield for all the coniferous put together in all the Working Circle was to the extent of 54462M3. Thus, 20% of this works out to be 10892 m3. Therefore, the yield prescribed was approximately 7262 tons. (b) Broad leaved fuel wood: -The total yield of fuel wood from broad leaved species was prescribed to 9300 m3.

Therefore, the grand total yield (both coniferous and Broad leaved) was therefore estimated to 16562 tons.

(vii) **Protection Working Circle: (Area 12800.81 hac.)** All forest which are inaccessible and from which timber can not be extracted economically due to high off road transportation costs, the forests situated on steep to precipitous slopes, and the forests, the removal of which will create erosion problem and will encourage land slide are allotted to this Working Circle.

- a) **Silvicultural system:** No silvicultural system prescribed however, these forests were to be protected against felling, fire, grazing. However, salvage marking are proposed to be allowed every 5th year.
- b) **Result of working:** Since no felling were prescribed to be done except salvage marking, however the trees removed during the plan period is tabulated in table No:- 7.16

Table-7.16

Deodar	Fir Spruce	Total
4.126	9.568	13.694

7.2.12 Working Plan of Kotgarh/ Rampur Forest Division by Sh R. K. Kapoor:

Past system of management and their results

This Working Plan dealt with the RF's, DPF's and UPF's of all the areas falling within the jurisdiction of Rampur & Kotgarh Forest Division. In conformity with objectives of management, six numbers of Working Circles namely (i) The Chil Working Circle (ii) The Deodar and Kail Working Circle (iii) The Fir and Spruce Working Circle (iv) The Oak Working Circle (v) The Plantation Working Circle (vi) The protection cum rehabilitation Working Circle were constituted under this Working Plan.

- i) **The Chil Working Circle (7192.97 ha):** This Working Circle covered all the reserved, demarcated and undemarcated protected forests, containing chil as a pure crop or forest containing chil as 60% or more in composition. The total area of this Working Circle was 7192.97 hac. including Kotgarh forest division. The main objective of management were (i) to convert irregular forests into regular one to the extent possible under the prevailing

condition.(ii) to restock the poorly stocked and blank area through artificial means. (iii) to obtain maximum yield of timber, resin on sustain basis (iv) to protect the forest from fire as well as biotic interference. There was only one felling series. Enumeration was done by stratified systematic random sampling with the help of Relascope. The total numbers of samples taken in this Working Circle were 681. The forests allotted to this Working Circle were to be managed under the Indian irregular Shelterwood system. The marking were to be done on selection principle. The rotation of 120 years was fixed with an exploitable diameter of 60 cms dbh. Regeneration period of 30 years was fixed to regenerate the area naturally supplemented with artificial regeneration. With rotation at 120 years and regeneration period of 30 years, there were four periodic blocks with specific allotment.

a) Prescribed annual yield: The yield in this Working Circle was calculated on the basis of Von Mantel's increment method, and by Hufnagel's formula. As prescribed in para 2.13.1 and 2.13.2, the P.B. wise annual yield is tabulated in table No:- 7.17

Table-7.17

Period Block	Yield in M³
P.B.I	1200
PBII	-
PBIII	-
PBIV	100
Total	1300

The annual yield was proposed not to be exceeded by 25% and was further proposed to be checked in every 5th year when the cumulative deviation should be within +-(10%).

b) Result of the Working Plan: No regeneration fellings were under taken due to ban on green felling. However, on the basis of selection felling, trees have been marked to the right holders under timber distribution scheme. In addition to this salvage marking has also been carried out. The regeneration status in forest which was worked during the plan period is satisfactory. Control burning operations were followed, fire line maintained and needles were removed from the forest floor as per availability of funds and as per recommendation of the Working Plan. As prescribed in para 2.16 of the plan the resin tapping works were carried out through H.P. State Forest Corporation, forest working division Rampur by rill method, the detail of which is given under para 4.2.3

c) The total volume removed from this Working Circle as per control forms, during the plan period including Kotgarh Forest Division as it stood on 31.3.2012 is tabulated in table No:- 7.18

Table-7.18

Species	Balance deviation as on 31-3-2011		Felling during the year in M3			Cummlative deviation as on 31-3-2012 in M3		
	PB-I	PB-IV	PB-I	PB-IV	Total	PB-I	PB-IV	Total
Deo	0	0	0	0	0	0	0	0
Kail	-170.000	0	0	0	0	-170.000	0	-170
Fir Spruce	0	0	0	0	0	0	0	0
Chil	-1030.000	-100.000	0	0	0	-1030.000	-100.000	-1130
Total	-1200.000	-100.000	0	0	0	-1200	-100	-1300
B.L	-200.136	-56.524	0	0	0	200.136	56.524	256.660
Oak	0	-119.302	0	0	0	0	119.302	119.302

- I. The above result shows that the yield position in this Working Circle as on 31-3-2012 is in deficit overall which is on account of ban on felling of green trees.
- II. No major fellings/green fellings were done in this Working Circle and only occasional TD grants were made besides salvage marking during the plan period.
- III. Plantation proposed in this Working Circle was not followed strictly. However plantations were carried out subject to availability of funds and man power.
- IV. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

ii) The Deodar and Kail Working Circle (15817.93 ha): This Working Circle includes all the deodar and kail forests having pure crop of deodar and kail or having 60% or more of each species on moderate/steep to moderate slope in composition in a compartment of all the demarcated and undemarcated protected forests. The total area of this Working Circle was 15817.93 hac. including Kotgarh forest division. The main objectives of management were to convert uneven aged forest to normal forest, to obtain maximum sustained yield of timber and to restock PBI area as possible by artificial regeneration. The enumerations results were estimated by stratified systematic random sampling method by using relascope. The total number of sample taken in this Working Circle was 1463. The forest of this Working Circle was proposed to be managed under Indian Irregular Shelter wood system. The regeneration period was fixed at 30 years for all the species occurring in this Working Circle. The rotation period at 120 years was fixed, based on age at which the trees would attain the diameter of 60 cms. dbh. The conversion period was fixed at 60 years, keeping in view the manners some of the forests were being converted in haphazard manner since 1928. With rotation at 120 years and regeneration period of 30 years, there were four periodic blocks with specific allotment. Only one felling series was prescribed.

a) **Prescribed annual yield:** The yield in this Working Circle was calculated on the basis of Von Mantel's increment method, and by Hufnagel's formula. As prescribed in para 3.17, the P.B. wise annual yield was prescribed and is tabulated in table No:- 7.19

Table-7.19

Species	PBI	PBIV	Total
Deodar	840	1500	2340
Kail	4600	4700	9300
Chil	70	130	200
Spruce	2050	1700	3750
Fir	350	800	1150
Total	7910	8830	16740

No yield was prescribed from PBII and PBIII areas but the removal there from were to be counted towards PBI.

b) **Result of the Working Plan:** No Regeneration felling have been carried out due to blanket ban on green felling. However, on the basis of selection felling tree has been marked to right holders in TD. Beside these the salvage marking has also been carried out. The cultural operation prescribed under para 3.22 of the plan were not followed during the plan.

c) The total volume removed from this Working Circle as per control forms, during the plan period including Kotgarh Forest Division as it stood on 31.3.2012 is tabulated in table No:- 7.20

Table-7.20

Species	Balance deviation as on 31-3-2011		Felling during the year in M3			Cumulative deviation as on 31-3-2012 M3		
	PB-I	PB-IV	PB-I	PB-IV	Total	PB-I	PB-IV	Total
Deo	15967.44	-19214.293	800.829	68.154	868.983	16768.267	-19146.139	-2377.872
Kail	-40670.4	-75917.509	467.091	5.594	472.685	-40203.323	-75911.915	-116115.238
Fir Spruce	21800.27	-44549.096	203.221	0	203.221	22003.494	-44549.096	-22545.602
Chil	-427.784	-2427.078	0	0	0	-427.784	-2427.078	-2854.862
Total =	-3330.487	-142107.98	1471.141	73.748	1544.889	-1859.346	-142034.228	-143893.574
B.L	-100.868	0	0	0	0	100.868	0	100.868
Oak	-2237.086	0	0	0	0	2237.086	0	2237.086

I. The above result shows that the yield position in this Working Circle as on 31-3-2012 is in deficit overall which is on account of ban on felling of green trees.

II. No major felling/green felling was carried out during the plan period. Only occasional TD grants were made besides salvage marking during the plan period.

III. Plantation proposed in this Working Circle was not followed strictly. However plantations were carried out subject to availability of funds and man power.

IV. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

iii) The Fir and Spruce Working Circle (16030.20 ha): This Working Circle includes all the forests which predominantly support fir, spruce forests having pure crop of 60% or more in composition in a compartment. These forests have been exploited during the past for packing cases. The natural regeneration in these forests is poor and the artificial regeneration is inadequate. The total area of this Working Circle was 16030.20 hac. Including Kotgarh forest division. The main objective of management was to improve the existing soil cover for water and soil conservation, to replace mature and over mature growing stock within the conversion period, to obtain maximum progressive sustain yield, to restock all the poorly stocked bland patches by natural and artificial means, to protect the forest from damages caused by various agencies. There was only one felling series and the growing stock was assessed by stratified systematic random sampling method by using relascope. The total number of sample taken in this Working Circle was 1143. The Indian Irregular Shelter wood system was followed. Conservative felling were prescribed to be done on steep and precipitous slopes. Rotation period was fixed at 120 years. Since the forests allotted to this Working Circle were in the course of conversion, therefore, the rotation period had little significance. The regeneration period was fixed at 30 years. With the rotation at 120 years and regeneration period of 30 years, the whole Working Circle was divided into four fixed periodic blocks.

a) Prescribed annual yield: The yield in this Working Circle was calculated on the basis of Von Mantel's increment method, and by Hufnagel's formula. As prescribed in para 4.13, the P.B. wise annual yield was prescribed and is tabulated in table No:- 7.21

Table-7.21

Species	PBI	PBIV	Total
Deodar	190	125	315
Kail	210	300	510
Chil	-	-	-
Spruce	2280	2000	4280
Fir	1600	1800	3400
Total	4280	4225	8505

No yield was prescribed from PBII and PBIII areas but the removal there from were to be counted towards PBI.

All the removals of all age classes and for all purposes were prescribed to be counted towards the yield. The deviation in a year was prescribed to not exceed 25% and a slab for 5 years should not exceed of 10% of the prescribed yield.

- b) Result of the Working Plan:** The total volume removed from this Working Circle as per control forms, during the plan period including Kotgarh Forest Division as it stood on 31.3.2012 is tabulated in table No:-7.22

Table-7.22

Species	Balance deviation as on 31-3-2011		Felling during the year in M3			Cumulative deviation as on 31-3-2012 in M3		
	PB-I	PB-IV	PB-I	PB-IV	Total	PB-I	PB-IV	Total
Deo	916.483	-816.618	0	0	0	916.483	-816.618	99.865
Kail	10211.885	-817.325	725.190	0	725.190	10937.075	-817.325	10119.750
Fir Spruce	24902.968	-47700.447	1891.419	0	1891.419	26794.387	-47700.447	-20906.060
Chil	22193.867	308.138	0	0	0	22193.867	308.138	22502.005
Total =	58225.203	-49026.252	2616.609	0	2617	60841.812	-49026.252	11815.560
B.L	-416.263	-33.843	0	0	0	416.263	33.843	450.106
Oak	-1042.831	-72.368	0	0	0	1042.831	72.368	1115.199

- I. The above result shows that deficit felling in case of Fir/spruce species and there was excess felling in other species in the Working Circle. However the overall deviation shows that there was excess felling in this Working Circle.
- II. No major fellings/green fellings were carried out during the plan period. Only occasional TD grants were made besides salvage marking during the plan period.
- III. Plantation proposed in this Working Circle was not followed strictly. However plantations were carried out subject to availability of funds.
- IV. The most of area could not be regenerated due to paucity of funds.
- V. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

iv) The Oak Working Circle (1356.05 ha): This Working Circle included the forests consisting of predominantly Ban oak mostly in pure patches or glades in the regular Working Circle. The Ban oak is common low level oak of moist zone and is common companion of other coniferous and miscellaneous broad leaved species. The total area of this Working Circle was 1356.05 hac. including Kotgarh forest division. The special objects of management were (i) to protect and preserve the hill sides (ii) to meet the local demand of people for fodder and fuel (iii) to improve the stocking of these forests by effective closure carrying out artificial sowing and planting. (iv) to obtain maximum progressive sustained yield. Two felling series namely Kotgarh and Rampur were formed. Stratified systematic random sampling had been done with the help of relascope. Coppice with standards Silvicultural system was prescribed. However, felling was proposed to be done only after approval from the competent authority since the Government had imposed complete

restrictions/ban on felling of oak forests. The rotation of 45 years for coppice and 90 years for standards was prescribed. The yield was prescribed to be regulated by area. Since there was a ban on felling hence no yield was prescribed. However the trees removed during the course of plan was proposed to be recorded in the control forms and the salvage removal of 55 cms of oak was prescribed to be taken as equivalent to 1 ha of yield.

- c) **Result of the Working Plan:** The general marking rules were prescribed in the oak Working Circle. Similarly, sequence of planting through artificial mean although prescribed but not followed due to paucity of funds The total volume removed from this Working Circle during the plan period including Kotgarh Forest Division as it stood on 31.3.2012 is tabulated in table No:- 7.23

Table-7.23

Species	Balance as on 31.3.2011	Felling during the year	Cumulative deviation as on 31.3.2012	Remarks
Deodar	40.078	0	40.078	The yield was prescribed by area as given under para 5.10 of the working plan
Kail	257.644	0	257.644	
Fir/spruce	76.007	0	76.007	
Chil	43.207	0	43.207	
Oak	19.25	0	19.250	
B/L	150.803	0	150.803	
Total	586.989	0	586.989	

The felling/removals shown in the above table are on account of salvage marking during the plan period. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

- v) **The Plantation Working Circle (1621.61 ha):** This Working Circle included the young plantation and other blank areas and all area which were under stocked but were suitable for raising plantation of valuable and economical important species. The total area of this Working Circle including Kotgarh division was 1621.61 hac. The special objects of management were (i) to develop and augment the forest resources of the area by afforestation of blank and scrub areas with useful/suitable species. (ii) to conserve soil and water through afforestation (iii) to raise compact plantations and to make available the valuable raw material for wood based industries. (iv) to rehabilitate the degraded tree less areas with valuable species to meet the demand of local right holders. (v) to raise poplar and other fast growing species in suitable areas. Relascope sampling had been carried out down to 10 cms dia class in all the compartments of this Working Circle having trees. Only plantation was

prescribed to be raised in this Working Circle. Since blank areas were prescribed for afforestation, therefore no felling has been prescribed.

d) Sequence of planting: The detailed range wise plantation programmes were prescribed and plantation was carried out under different scheme in Rampur Forest Division during the plan period.

e) Results of the implementation of the plan

I. The prescription and suggestions made in the Working Plan were not followed in practice due to administrative and financial problems.

II. Effective closures of the plantation were suggested but its effectiveness was not prescribed.

III. Although no yield was prescribed, yet the total volume removed from this Working Circle during the plan period including Rampur Forest Division was 431.097 m³ and the position of deviation as it stood on 31.3.2012 is tabulated in table No:- 7.24

Table No:-7.24

Species	Balance as on 31.3.2011	Felling during the year	Cummulative deviation as on 31.3.2012	Remarks
Deodar	24.778	0	24.778	Neither any yield nor any control was prescribed
Kail	69.724	0	69.724	
Fir/Spruce	22.228	0	22.228	
Chil	265.121	0	265.121	
B/L	49.246	0	49.246	
Total	431.097	0	431.097	

vi) The Protection cum rehabilitation Working Circle (11807.75 ha): This Working Circle includes all the forests which were not included in other Working Circle. Besides, all forests situated on precipitous slopes which were not fit for working under any silvicultural system had also been included in this Working Circle. The total area of this Working Circle was 11807.75 hac. including Kotgarh forest division. The main objectives of management were (i) to protect the hill sides against denudation and erosion by preserving existing forests and by enhancing the forest cover wherever feasible (ii) to improve in quality and density of existing growing stock through sowing and planting (iii) to protect the forest from indiscriminate exploitation and to preserve them as representative of ecosystem of the region (iv) to conserve the biodiversity (v) Consistent with above to meet the demand of local right holders for timber and other forest produce. No enumerations were carried out in these areas. However, the densities of each compartment have been recorded in CH files. The forest of this Working Circle was proposed to be preserved and protected. Therefore, no silvicultural system was prescribed. However, salvage markings were proposed. The estimated total

growing stock of this Working Circle was 351930 M3. The estimation of the growing stock was done on the basis of sample survey in stratified and randomly classified compartment. The culturable blanks were proposed to be restocked with local and suitable species like Deodar, Kail, Fir and Spruce, Birdcherry, Maple etc.

f) Result of the implementation of Working Plan: Though no yield was prescribed and only removals were suggested to meet the demand of right holders and salvage removal of trees i.e. dead, dying, dry and uprooted trees in the plan. The status of regeneration in this forest is very poor and artificial regeneration is also inadequate. The total volume removed from this Working Circle during the plan period including Kotgarh Forest Division as it stood on 31.3.2012 and is tabulated in table No.-7.25

Table No.-:7.25

Species	Balance as on 31.3.2011	Felling during the year	Cummulative deviation as on 31.3.2012	Remarks
Deodar	1434.632	68.436	1503.068	Neither any yield nor any control was prescribed
Kail	820.822	329.263	1150.085	
Fir/Spruce	4825.572	230.246	5055.818	
Chil	17.223	2.470	19.693	
B/L	0	119.302	119.302	
Oak	22919.684	56.524	22976.208	
Total	30017.933	806.241	30824.174	

7.2.13 Miscellaneous Regulations

By and large the prescription prescribed under miscellaneous regulations was followed during the currency of the Working Plan. The trees were granted to the right holders as per settlement record and necessary entry for the grant has been made in the form No. 12. No separate compartment or sub compartment were formed, however, the existing boundary pillars have been checked/ repaired as per availability of the budget and as per quinquennial programme prescribed in the Working Plan during the currency of the plan period. The existing fire lines were maintained and cleared according to the availability of budget. The detail of fire incidence occurred during the plan period is given in Chapter-IX, Part-II.

7.3 Past Yield: The yield removed from the various Working Circle during the plan period is given in *Appendix No-XVI, XVII, XVIII, XIX, XX and XXI*. The average out turn percentage (last four years) for working of the lots handed over to HPSFDC is given as under:

Sr. No.	Type of lot	Out turn %age
1.	Timber	45%
2.	Resin	34 qlt. Per 1000 blazes

(Source: HPSFDC Working Division, Rampur)

7.4 Past revenue and expenditure: The statement of summery of revenue and expenditure and net surplus from the forests under various schemes incurred during R.K. Kappor's plan are given in table No.-7.26

Table No.-7.26

Year	Revenue	Expenditure	Surplus
1993-94	5560788	15663314	(-) 10102526
1994-95	5307715	18667066	(-) 13359351
1996-97	15596909	24590790	(-) 8993881
1997-98	1522554	2935800	(-) 1413246
1998-99	3354938	32383627	(-) 29028689
2000-01	18234328	25398999	(-) 7164671
2001-02	9734141	21137799	(-) 11403658
2002-03	4112285	26244900	(-) 22132615
2003-04	30029874	19274254	10755620
2004-05	6946549	20219700	(-) 13273151
2005-06	8191831	26133600	(-) 17941769
2006-07	20414637	31919400	(-) 11504763
2007-08	944134	28155367	(-) 27211233
2008-09	1291231	38148506	(-) 36857275
2009-10	132856334	45706706	87149628
2010-11	10595121	46799345	(-) 36204224
2011-12	5575856	44173082	(-) 38597226

(Source: Rampur Forest Division, Rampur)

CHAPTER-VIII

STATISTICS OF GROWTH AND YIELD

8.1 General: In order to save time and money and on account of non availability of suitable field staff, no basic data was collected in the field for preparation of volume tables and for finding out the rate of growth of different species occurring in the area. It is also difficult under the current establishment and infrastructure facilities to obtain and analyze the data. However, for compilation of growth and yield statistics of various species, the following records were consulted.

- (i) Yield and statistics of growth of common Indian Timber species (Himalayan region Volume I) compiled by director of Forest Education FRI, 1967.
- (ii) Indian Forest Utilization, Volume I & Volume II, FRI publication.
- (iii) Punjab Forest Manual, Volume III.
- (iv) PIS, North zone, Shimla Forest Resources of H.P. for Kotgarh, Kullu and Seraj regions 1979.

8.2 Selection of Volume Table: It was not considered necessary to collect statistical information de-novo, since such data was collected during the preparation of Working Plan under revision. The Volume tables of Working Plan under revision are mainly based upon, project report of PIS North Zone Shimla, 1979 and were considered fit to be used for the species of this division. The data collected from this very Division was used to prepare the volume table. The average quality of Deodar in this area conforms to FRI quality class II/III. In the Working Plan under revision the data of previous ones can be satisfactorily relied upon as factors affecting the same are stable and have not changed. Local volume table as given in the plan under revision may be adopted in revised plan. The volume table for all the coniferous and broad leaved species of expiring Working Plan of R.K. Kapoor are reproduced and will be adopted in this Working Plan. The same is tabulated in table No 8.1

Table – 8.1

Volume Table/Factor- Rampur Forest Division

Species	Diameter Class									
	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above
	Volume in cum									
1	2	3	4	5	6	7	8	9	10	11
Fir	0.136	0.429	1.040	1.969	3.217	4.784	6.669	8.872	11.394	14.234

1	2	3	4	5	6	7	8	9	10	11
Spruce	0.136	0.429	1.040	1.969	3.217	4.784	6.669	8.872	11.394	14.234
Kail	0.152	0.423	0.964	1.775	2.855	4.205	5.824	7.713	9.872	12.301
Deodar	0.178	0.486	1.039	1.824	2.855	4.126	5.638	7.390	9.384	11.618
Chil	0.089	0.328	0.775	1.478	2.470	3.789	5.466	7.531	10.013	12.938
Kharsu	0.134	0.300	1.00	1.800	3.000	4.600	6.300	8.000	9.600	12.200
Mohru	0.134	0.300	1.00	1.800	3.000	4.600	6.300	8.000	9.600	12.200
Bird Cherry	0.079	0.100	0.700	1.400	2.200	3.200	4.300	5.600	6.900	9.600
Walnut	0.079	0.200	0.800	1.500	2.500	3.800	5.100	7.200	8.900	11.300
Maple	0.117	0.200	0.700	1.300	2.100	3.300	5.000	6.500	8.500	11.200
Taxus	0.104	0.234	0.467	0.821	1.310	1.945	2.734	3.685	4.803	6.094
Ban	0.134	0.313	0.657	1.201	1.974	2.996	4.285	5.857	7.723	9.894
Boxwood	0.094	0.294	0.708	1.336	2.177	3.232	4.500	5.982	7.678	9.587
Carpinus	0.094	0.294	0.708	1.336	2.177	3.232	4.500	5.982	7.678	9.587
Other B/L	0.094	0.294	0.708	1.336	2.177	3.232	4.500	5.982	7.678	9.587

The volume table/factors refer to under bark volume including cull upto a top diameter limit of 5 cm. over bark from the base of the tree for conifers. In case of B/L species (Taxus, Ban, Boxwood, Carpinus and rest of the B/L it is also inclusive of branch wood volume upto a limit of 5 cm. over bark diameter.).

8.3 Quality Class Assessments: The quality class for deodar, kail, chil, fir/spruce has been determined by measuring heights of two dominant trees of dominant species in each forests and then comparing them with those given for standard quality class in the yield table for those species. The quality class assessed has been recorded in the compartment history files.

8.4 Growth Rates: Diameter, Age, Height relationship from PIS report on forest resources of Chenab Vally Vol 1975-1976 as adopted in previous Working Plan is reproduced in table No. 8.2.

Table – 8.2
Diameter/Age/Height Relationship

Dia (cms)	Fir		Blue Pine		Deodar		Chil	
	Age Years	Height (m)	Age Years	Height (m)	Age Years	Height (m)	Age Years	Height (m)
10	-	-	-	-	-	-	-	-
20	-	-	52	16	67	17	-	-
30	95	25	66	24	79	25	62	22
40	125	28	78	29	89	30	71	27
50	153	33	89	33	100	33	79	29
60	179	38	100	35	111	35	84	30
70	201	42	111	38	122	37	89	31
80	220	45	124	40	134	38	-	-
90	238	43	136	41	144	39	-	-
100	254	49	-	-	-	-	-	-

The annual volume increment %age obtained by Forest Survey of India, Shimla for different species of Kotgarh including Rampur, Kullu, Seraj Divisions are given in table No. 8.3

Table-8.3

Species	Increment %age
Deodar	1.74
Kail	1.58
Chil	2.16
Fir	1.06
Spruce	1.20

8.5 Density: The density of the crop in each compartment has been estimated occularly and recorded in the respective compartment history files. It varies widely from 0.1 to 0.9 but average density is 0.3.

8.6 Estimation of Growing Stock: The growing stock has been estimated with the help of complete enumeration of sample compartments. Enumerations have been carried out in the selected sample forests after selecting the samples i.e. 10% sampling in PB-I & PB-IV areas and 5% in PB-II & PB-III areas. The results have been analized statistically and growing stock has been assessed. Working Circle wise total growing stock in whole of the Division is estimated as under:

(a) By Classification of Forests

- (i) Demarcated Protected Forests
- (ii) Listed Undemarcated Protected Forests

Total growing stock

(b) By each Working Circle

The Chil Working Circle

Table-8.4

Sr. No.	Species	No. of stems	Volume in m3	%age stems	%age volume
1	2	3	4	5	6
1	Deodar	6745	1863.47	1.89	0.48
2	Kail	7634	3455.09	2.14	0.90
3	Chil	290774	334701.99	81.48	86.80
4	Spruce	37	162.88	0.01	0.04
5	Shisham	123	35.64	0.03	0.01
6	Ban	24801	27954.60	6.95	7.25
7	Mohru	26	3.52	0.01	0
8	Other B.L.	21920	13319.67	6.14	3.45

1	2	3	4	5	6
9	Poplar	1093	2388.08	0.31	0.62
10	Brass (Rhododendron)	3696	1695.95	1.04	0.44
Total		356851	385580.90	100.00	100.00

The Deodar/Kail Working Circle

Table-8.5

Sr. No.	Species	No. of stems	Volume in M3	%age stems	%age volume
1	Deodar	1026470	1143829.24	36.07	26.51
2	Kail	1060737	1873726.30	37.27	43.42
3	Chil	17756	34326.12	0.62	0.80
4	Rai	362126	620181.51	12.72	14.37
5	Fir	8604	31329.73	0.30	0.73
6	Ban	194932	428940.48	6.85	9.94
7	Other B.L Species	137408	143020.40	4.83	3.31
8	Mohru	22100	21616.73	0.78	0.50
9	Walnut	1900	4900.24	0.07	0.11
10	Mapple	28	24.56	0.00	0.00
11	Taxus	8075	4631.39	0.28	0.11
12	Brass	1629	517.86	0.06	0.01
13	Kunish	601	294.94	0.02	0.01
14	Tooni	6	7.43	0.00	0.00
15	Kainth	11	2.16	0.00	0.00
16	Poplar	617	413.10	0.02	0.01
17	Khanor	1629	6781.69	0.06	0.16
18	Jamun	1363	879.73	0.05	0.02
19	Birdcherry	20	45.74	0.00	0.00
Total		2846012	4315469.35	100.00	100.00

The Fir/Spruce Working Circle

Table-8.6

Sr. No.	Species	No. of stems	Volume in M3	%age stems	%age volume
1	Deodar	133480	245086.96	5.46	5.87
2	Kail	147337	274649.29	6.02	6.58
3	Fir	676110	1288846.42	27.64	30.87
4	Rai	982430	1978923.80	40.17	47.40
5	Ban	12818	17811.16	0.52	0.43
6	Other B.L. Species	365115	260478.03	14.93	6.24
7	Kharsu	14909	5533.84	0.61	0.13
8	Walnut	8575	12664.49	0.35	0.30
9	Mohru	48582	58347.97	1.99	1.40
10	Mapple	31685	22755.50	1.30	0.55
11	Taxus	24936	9669.03	1.02	0.23
Total		2445976	4174766.49	100.00	100.00

The Oak Working Circle

Table-8.7

Sr. No.	Species	No. of stems	Volume in M3	%age stems	%age volume
1	Deodar	17	8.22	0.01	0.01
2	Kail	6091	7392.45	4.35	5.43
3	Rai	592	1985.25	0.42	1.46
4	Chil	15600	19559.88	11.14	14.37
5	Ban	50421	83651.06	36.02	61.47
6	Mapple	525	181.43	0.37	0.13
7	Other B.L. Species	66732	23309.1291	47.67	17.13
Total		139979	136087.42	100.00	100.00

8.7 Out Turn: Conversion percentages of different species as per Punjab Forest Manual are:

Table-8.8

Species	Percentage
Deodar	49
Kail	48
Chil	45
Fir/ Spruce	30

The conversion factor of solid volume, stacked volume and weight of fuel wood and miscellaneous broad leaved species are as under:

- (i) Ratio of solid volume/stacked volume= 1:2
- (ii) Air dry weight/cum solid volume=7.20 qlt.
- (iii) Air dry weight/cum stacked volume=3.60 qlt.

8.8 Enumerations: Traditionally the Himachal Pradesh Forest Department has been carrying out enumeration of trees for the estimation of growing stock and yield for the Working Plan of each forest division. The normal practice is to carry out total enumeration at the 10 cm diameter class interval with minimum diameter at 10 cm for all Working Circles where felling is to be prescribed. For other Working Circles such as protection and plantation Working Circles where no felling is envisaged no enumeration is carried out. This large scale enumeration covering entire compartments particularly in Working Circles envisaging total enumeration of all compartments is basically too capital and time intensive. Same result can be obtained by much smaller sampled enumeration using sound statistical sampling techniques thus saving a lot of government money and time which most often is a constraint with the Working Plan units. Keeping in view of the above fact and reason necessary instructions have been imparted in the working plan meeting held on 2-12-2011 under the Chairmanship Pr. CCF H.P that 10% random sampling in all the PB-I & PB-IV areas and 5%

in PB-II & PB-III areas will be carried out. Accordingly complete enumeration has been carried out in the selected forests after selecting the samples as per instructions.

The partial enumerations were carried out in all the PBs down to 10 cms dbh in all the Working Circles. All the coniferous and important broad leaved species have been included in the enumeration list. The result of the enumeration has been compiled and recorded in the compartment history files.

8.9 Stock maps: All the forests (DPFs & Listed UPFs) have been stock mapped on 4"-1 mile scale maps. Stock maps are filed with compartment history file.

CHAPTER IX

ESTIMATE OF CAPITAL VALUE OF THE FOREST

9.1 General: It is very difficult to ascertain the exact value of forests especially when intangible benefits derived from these renewable resources are taken into account. However, present capital value has been estimated on the basis of value of land, growing stock of various species and other non timber forest produce.

9.2 Estimation of capital value of land under Forests: The capital value of land has been arrived at as per order dated 28-3-2008 passed by Hon'ble Supreme Court of India in writ petition No. 202 of 1995 in which the NPV have been fixed. The value applied is an average of eco value class VI, since the forest of this division falls under this eco value. An estimated capital value of forests based on existing average value of eco class applicable for NPV for the land is also estimated. The Capital value is however, subject to variation. The capital value of forests and land as worked out is tabulated in table No: 9.1

(a) Capital value of Forest Land:

Table-9.1

Gradation of the land	Total forest area in hac.	Approximate cost of land per hac.	Total cost (Rs. in crore)
DPF	36294.4	862335	3129.79
UPF	3126.53	862335	269.61
Total	39420.9	1724670	3399.40

(b) Capital value of Growing stock: The estimated capital value of the growing stock present in the forest of Rampur Forest Division is given in the table below. The estimation has been done on the basis of rates fixed by the pricing committee for the year 2012-13 and as conveyed by the H.P. State Forest Development Corporation for the year 2012-13.

Table-9.2

Sr. No.	Species	Growing stock in m³	Royalty (in Rs. per m³)	Total value (in Rs. crores)
1	Deodar	1390787.89	5357	745.05
2	Kail	2159223.1	3096	668.50
3	Chil	388587.99	739	28.72
4	Rai	2601253.4	1123	292.12
5	Fir	1320176.15	1123	148.26
6	Shisham	35.64	2928	0.01
7	Other miscellaneous B.L.	1151839.91	300	34.56
Total		9011904.15		1917.20

9.3 Capital Value of Non-Timber Forest Produce: The main NTFP are resin, medicinal herbs, Guchi, grass etc. and the income from these minor forest produce in Rampur Forest Division is given in the following table. The average value accrued from the NTFP has been based on the average figures for the last twelve years as per information received from ranges of Rampur Forest Division and for resin HPSFDC division Rampur. Their values are tabulated in table No. 9.3.

Table-9.3

Sr. No.	Type of produce	App. Estimated value in crores
1	Resin	1.26
2	Medicinal herbs & grasses	0.01
Total		1.27

Note:- The average number of blazes in Rampur Forest Division is 36577 Nos. The average yield per section is 47.74 qtl in Rampur Forest Division is given in table No. 9.4.

Table-9.4

Average No. of blazes	No. of Average section	Average yield (qtl.)	Total yield(qtl)
36577	37	47.74	1766

Anticipating a consistent annual yield of 1800 qtl and an average price of Rs. 7000 per qtl. The revenue expected during the plan period comes to about Rs. 12600000 (1.26 crores).

9.4 Total Capital Value of the Forests: Total capital value of the forests works out to be Rs. 5317.87 and summarized in table No. 9.5.

Table-9.5

Sr. No.	Capital Value of	App. Estimated value in crores
1.	Land	3399.40
2.	Growing stock	1917.20
3	NTFP	1.27
Total		5317.87

The above estimate of the capital value of forests includes only tangible benefits such as; production of wood, medicinal herbs grasses etc. It does not include in direct benefits like their significant role in water conservation, stabilization of terrain, influences on local climate and rainfall, aesthetic value and the benefits conferred on agriculture, socio economic support for rural communities. It is not possible to reckon these values in monetary terms.

CHAPTER-I

BASIS OF PROPOSALS

1.1 Introduction: The forests constitute an assemblage of versatile natural resources. Forest resources are a vital component to sustain life support system on the earth being the major natural resources and these resources have been exploited by human race since the beginning of civilization. Mankind's indiscriminate use of natural resources in the course of development has led to serious environmental problems.

The forests of Himachal Pradesh are very important, being an integral part of Himalayan ecosystem. The forests of Himachal Pradesh are not only of importance for the State, but have also a strong influence on the ecology, environment, watershed, climate and bio-sphere of neighboring States of Punjab, Haryana, Chandigarh, Delhi and Rajasthan. The forest cover of Himalayas not only regulates the rainfall in the neighboring states but also ensures snow fall in higher mountains and maintain ecological balance. A reduction in the forest cover of the State of Himachal Pradesh will prevent the formation of glaciers and snow, resulting in less water in rivers and lakes and adverse effects on climate, ecology, environment and agriculture production besides harnessing of Hydro Electric Projects in the State of Himachal Pradesh. The forests of Himachal Pradesh have undergone a sea change in the past few decades and are presently under great stress. They have been venerated as an entity but over used as resources. Forestry in the present time has undergone many changes. The focus of management has shifted from production forestry to conservation of biological diversity. Non timber forest produce has become the forefront of forestry management. The role of local people in protection and management of forests through the joint forest management has taken a formal shape. The decentralized planning process for area specific forest management approach has resulted in formulation of micro plans in pursuance of the Constitutional 73rd Amendment Act, 1992. Watershed development approach is also gaining importance in planning and implementation of natural resource management programme.

1.1.1 National Policy, 1952

The National Policy of India, as notified vide Government of India No. 13-1/52-p dated 12th May 1952, was based on the following paramount needs:

- i) The need for evolving a system of balanced and complementary land use, under which each type of land is allotted to that form of use under which it would produce the most and deteriorated the least.
- ii) The need for checking:

- (a) Denudation in mountainous regions on which depends the perennial water supply of river systems whose basin constitute the fertile core of the country.
 - (b) The erosion progressing along the tree less banks of the great rivers leading to ravine formation and on vast stretches of undulating waste lands depriving the adjoining fields of fertility.
 - (c) The invasion of sea sands on coastal tracts, and the shifting of sand dunes more particularly in the Rajputana desert.
- iii) The need for establishing tree lands where ever possible for the amelioration of physical and climatic conditions promoting the general well being of the people.
- iv) The need for ensuring progressively increasing supplies of grass for cattle, small wood for agricultural implements and in particular of firewood and to get increased quantity of cattle dung for manure to step up food production.
- v) The need for sustained supply of timber and other forest produce required for defense, communication and industry.
- vi) The need for the realization of maximum annual revenue n perpetuity consistent with the fulfillment of the needs enumerated above. To fulfill the aforesaid needs, the following broad principles have been defined in the National Forest Policy.
 - (a) To ensure the full protective influence of the forests on the soil, water regime and the physical and climatic factors of the locality.
 - (b) To meet the domestic and agricultural requirements of the local population without subordination of the national interest or the interests of future generations.
 - (c) To combat the indiscriminate extension of agriculture over the forest lands.
 - (d) To regulate and control grazing.
 - (e) To conserve forest resources in perpetuity.
 - (f) To provide protection to the wild life.

1.1.2 National Forest Policy of 1988

The forests policy of 1952 was revised in 1988. The principal aim of the new policy is maintenance of environmental stability and ecological balance through preserving the natural forests. Derivation of direst economic benefit has been subordinated to this principal aim. The policy, for the first time, has given emphasis to the involvement of people, including women, in the protection and development of forests. The salient features of the Forest Policy of 1988 are:

- i) Setting of a national goal to have a minimum of one third of the total land area of the country under forest or tree cover.
- ii) Initiating need-based and time-bound programme for afforestation and tree planting on all degraded and denuded lands with emphasis on participatory forestry and common property management.
- iii) Increasing productivity of forests through scientific management, based on management plans to be approved by the Government.
- iv) Rights and concessions of the rural people, including that of grazing, to be in accordance with the carrying capacity of the forests; the rights and concessions enjoyed by the tribal and other poor people living within and around forest to be fully protected; minor forest produce and construction timber to be the first charge on forest produce.
- v) Greater emphasis on forest protection and wild life conservation in all management plans.
- vi) Strengthening of forest extension, forestry education and research.
- vii) Supply of forests produce to industries at concessional prices to cease, no forest based enterprise, except at the cottage level, to be permitted in future unless it has been first cleared with regard to assured availability of forest produce; forest based enterprises to raise their own material requirement by establishing direct relationship with individual farmers;
- viii) Creating a massive people's movement with the involvement of women for achieving objectives of the policy.

1.1.3 Himachal Forest Policy

Himachal Pradesh Government has formulated a Forest Policy for the Pradesh vide No. Fts (8)17-5/10 dated 3rd September, 1980. Important features of this policy are as under:

- i) To have 50% of the geographical area of the state under forest by 2000 AD and to raise this percentage to 60% ultimately.
- ii) Felling to be carried strictly in accordance with the prescriptions of sectioned Working Plans and all kinds of removals from the forests to be counted against the prescribed yield.
- iii) Felling to be followed by regeneration.
- iv) No felling upto 30 m on either side of the roads.
- v) All forest areas to be properly demarcated.
- vi) Forests and Revenue Settlements to be taken up simultaneously and the right to be defined and regulated by an Act of Legislation.

- vii) The requirement of local right-holders to be met with judiciously keeping in view the conditions of forests.
- viii) There being hardly any scope for further extension of agriculture, the people should be encouraged to adopt some alternative professions.
- ix) Transfer of areas under reserved, demarcated protected forests and plantations for non-forestry purposes to be totally banned.
- x) Management of water sheds to be given due importance.
- xi) The methodology of planting and standards of protection to be improved to reduce mortality percentage.
- xii) The vast blank stretches in the productive waste lands to be afforested under Social Forestry Programme with appropriate involvement and cooperation of the people especially youth and school children.
- xiii) Planting of fast growing fuel and fodder species to be preferred near habitations to meet the requirements of the local people.
- xiv) Steps to be taken to reduce cattle population rationally, fixing norms of grazing under comprehensive legislation.
- xv) To promote tourism along with improvement of forest vegetation.
- xvi) Shooting of big and small game should be banned in the Pradesh for the development of Wild Life. Game sanctuaries should be established and properly managed all over the State.
- xvii) No lease for the extraction of minerals to be granted without the prior consent of Forest Department.
- xviii) Research facilities to be created in the Forest Department to solve problems of applied nature.
- xix) Co-ordination between the Forest, Animal Husbandry, Agriculture and other concerned Deptt. Will be increased to improve cattle breeds augment fodder development, improve pasture land and promote more livelihood opportunities.
- xx) Watershed programmes will also give due emphasis to grazing and pasture lands.
- xxi) Cropping patterns will be reviewed in the context of climate changes especially for judicious use of water and forest resources in the hill context.

The government of Himachal Pradesh has developed the Forest Sector Policy and Strategy 2005 in consonance with the Government of India Policy guidelines and by making important amendments to the previous HP Forest Policy 1980. The salient features of the **HP Forest Sector Policy & Strategy, 2005** are:-

- i) Conserve and improve the status of natural resources in the state, especially forests wildlife and biodiversity through effective watershed management practices.
- ii) Conserve and manage forests scientifically, contemporarily and incorporating the best practices from within and outside the state, for the present and future generations, and to increase their value- historical, culture, religious, economic and aesthetic – for communities and the environment on a sustainable basis.
- iii) Strive for livelihood security of forest department communities through protection of rights to forest goods and services.
- iv) Establish and support an integrated governance system that effectively involves all stakeholders in protecting, conserving, using, managing and restoring forests and other natural resources of the State.
- v) Strive towards an appropriate land use in the state especially in the context of sustainable forest management, focusing on the primary land use sectors such as agriculture, animal husbandry and those related to infrastructure development.
- vi) Strengthen the capacity for research, training, extension, education and awareness of government and non-government institutions, related to her forest sector.
- vii) Apply the best scientific information, resources, management practices and strategies available to implement the forest sector policy and create a mechanism to periodically review the policy keeping in view the changing circumstances and needs.

The detail HP Forest sector policy & strategy, 2005 on forestry, wildlife watershed, Bio-diversity conservation etc. are available on Govt. of H.P. Forest Department web site www.himachal.nic.in.

1.2 Supreme Court on Green Felling and Regeneration

The T.N. Godavarman case attracted significant attention when on 12-12-1996 the Apex Court with order ‘Suspended’ the felling of trees in all forest except in accordance with the Working Plans of the State Governments which were approved by the Central Government. The land mark orders passed by the Apex Court in an effort to save the fast diminishing forest cover of the country against the greedy and wanton plundering of its natural resources, on 15-01-1998, the Hon’ble Supreme Court held that Working Plan for all forest divisions shall be prepared by the State Government and get approval from the Govt. of India. Forest working shall be carried out strictly in accordance with the approved prescriptions of the Working Plans (*See Appendix No.-LI*).

On 12-5-2001, the Apex Court laid down detailed guidelines for the felling of trees from forest areas as well as non-forest areas including plantation. As per the order the felling of trees from forest areas could be allowed only as per the approved Working Plan/scheme,

whereas the felling of trees from non forest area could be allowed only as per detailed guidelines which are prepared by the State Govt. with the concurrence of the Central Government. This order, together with the order of the Apex Court on 15-1-1998 forms the guidelines for felling of trees (*See Appendix No.-LII*). The highlights of the order in T.N. Godavarman case dated 12-5-2001 were:

- i) Felling of trees from forest shall be only in accordance with Working Plans/schemes or felling schemes approved by the Ministry of Environment and Forests.
- ii) Such Working Plans/schemes shall also be needed for felling of trees from any non-Govt. forest areas including land which is required to be treated as “forest” as the decision of the Apex Court on 12-12-1996.
- iii) While implementing the Working Plans/schemes approved by the Central Govt., the State Govt. or the concerned authority shall ensure that no felling is done unless and until sufficient budgetary provisions exist for the regeneration of such areas.
- iv) For felling of trees from non forest areas, including plantations on concerned State Govt. which will come in force only after concurrence from the MOEF, Govt. of India.
- v) The Guidelines/Rules shall also include provisions for penalties and mode of disposal in respect of any felling done in violation of such rules/guidelines.
- vi) Till such guidelines/Rules become effective no felling from any area other than that under approved Working Plans/schemes or felling schemes shall be permitted.
- vii) The schemes are to be prepared within a period of three months and the MOEF has to take a decision on the same within a period of one month of the date of receipt.

For the State of Himachal Pradesh, the Hon’ble Supreme Court’s order dated 12-12-1996 held that there will be no felling of trees permitted in any forest, public or private. This ban will not affect felling in any private plantation comprising of trees planted in any area which is not a “forest”, and which has not been converted from an earlier “forest”. This ban will not apply to permits granted to the right holders for their bonafide personal use (*See Appendix No.-XLIX*).

Again, immediately two questions arise for consideration in the Hon’ble Supreme Court in T.N. Godavarman Thirumulpad V. Union of India, IA 424 in WP (c) No. 202/95 dated 8-1-2001. One is with regard to the implementation of the Working Plans in so far as felling is concerned and the Second is with regard to the regeneration of forests. It is quite obvious that the two activities must co-exist. There cannot be felling without regeneration because that will over a period of time only result in the forests vanishing. There has been shortfall with regard to the regeneration and as a result thereof forest cover is depleting. That

shortfall has to be made up and for the future such felling has to be done which will ensure that there is at least no further depletion of the forest cover, and the targets for increase in forest cover, as contemplated in the Working Plans, are met. In other words, regeneration should be commensurate with the felling, and to the extent stipulated in the Working Plan.

Keeping in view of the aforesaid reason and the National Working Plan code, MOEF, Govt. of India, June, 2004, the present Working Plan has been revised thoroughly notwithstanding the present moratorium on green felling the revised Working Plan includes all regular Working Circles prescribing yield and felling cycles/felling series depending on the condition of the forests in each Working Circles. This green felling in any forest or in public forest will be allowed/carried out strictly in accordance with the approved prescription of the Working Plan subject to the decision of the Hon'ble Supreme Court against the H.P. Govt. filed an affidavit before the Apex Court on 21-2-1997 and the Apex Court has directed on 14-2-2000 that the State Govt. not to give effect to any notification for the commencement of silviculture operation. It has been reported in the Press that the State of Himachal Pradesh has passed some orders lifting the ban on felling of trees. It is further submitted that by order dated 12-12-1996 of the Hon'ble Supreme Court, felling of trees in any forest, public or private, has been banned & this order has not been varied so far. The amicus curiae, therefore, submitted that if there is any order issued by the State of Himachal Pradesh giving permission to the felling of trees, that would amount to contravention of the Apex court's order dated 12-12-1996 and would, therefore, be bad in law. On consequent upon by issuing notice the Hon'ble Supreme Court made clear that if any such order has been passed, the operation of the same shall remain stayed till further orders by this court. However, no order has been obtained from the Hon'ble Supreme Court on the basis of the affidavit filed in pursuant to the orders dated 14-2-2000 by the State Govt. till date. In **H.P. State Forest Corporation Ltd. V/s Ram Lal & Others, LPA No. 152/2007 dated 28-5-2008** (See *Appendix No. LIII*) the H.P. High Court also held that:

- i) There shall be no felling of any tree in any forest area in the State of Himachal Pradesh whether private or State Forest except in accordance with the orders given by the Apex Court.
- ii) The reports of the Committees appointed under the General Directions of the Apex Court given in its order dated 12-12-1996 require the approval of the Apex Court.
- iii) Report of the committee constituted in pursuant to direction No. 3 in respect of specific directions given to the State has to be complied by the State without any further orders from the Apex Court {i.e. the Expert Committee was to fix the qualitative and quantitative norms for felling of fallen trees, diseased trees and dry

standing timber. However, directions had been issued that the State shall ensure that the trees shall be removed in accordance with the norms}.

- iv) The State Government is entitled either departmentally or through the State Forest Corporation to remove fallen trees or fell and remove diseased trees and dry standing timber except from areas notified under Section 18 or Section 35 of the Wild Life (Protection) Act or any other Act banning such felling or removal of trees.
- v) The State Government or any other authority executing a project shall be entitled to remove and fell trees in case permission has been taken under the provisions of the Forest (Conservation) Act and other laws applicable thereto.
- vi) That felling of trees in all forests shall remain suspended except in accordance with the Working Plans of the State Government approved by the Central Government.

Therefore, it is suggested that any felling of trees in PB-I & IV of each Working Circles i.e. regeneration felling and final felling there should first be compulsory Afforestation/Artificial regeneration, the felling permission would be based upon the extent of regeneration of forest undertaken and not the other way round strictly in accordance with the approved prescription of the Working Plan.

And felling of trees in PB-II & III of each working circles would be solely silvicultural operation not commercial felling i.e. improvement felling, thinning & tending operation etc so as to ensure that the regeneration commensurate with the felling of trees strictly in accordance with the approved prescription of the working plan. These fellings are necessary for management of forests to enhance the productivity, density and health of existing stock as it does not involve any type of commercial felling. Logging ban would affect the natural regeneration of species which needs open sunlight for their establishment and growth. This may also affect the forest biodiversity as closed canopies not allow shrubs and herbaceous species to come up. Thus forest will cease regenerating themselves and will decay due to congestion, root competition, lack of opening and entire eco-system shall be adversely affected. For the last 15 years of Working plan period no periodic blocks (PBs) areas have been marked for felling or any sort of improvement felling and thinning of forest crops hygienically required in PBs is carried out as per working plan's prescription due to moratorium on green felling. If this process is not halted, then retrogressions set in and the forests will not be able to survive for posterity and this retrograde step will be against the concept of sustainable management of forest. To develop and protect forest, a scientific management is necessary so as to enhance productivity, density and health which requires to be properly safeguarded for providing sustained benefits to the entire community as enjoined in Articles 48A and 51 A (g) of the Constitution of India.

1.3 Objectives of management

General objectives of management of forests of Rampur forest division are as under:-

- i). To preserve the hill sides against denudation and erosion so as to ensure equitable flow of water in the streams and rivers that originate from these hills.
- ii). To improve moisture regime of soil, maintain water table and recharge ground water through watershed management.
- iii). To fulfill the bonafide domestic and agricultural requirements of the local people especially for timber, fuel, grass and grazing and other forest produce subject to the silvicultural carrying capacity of the forests.
- iv). To conserve, sustain, protect and improve the quality and stocking of the existing forests and regeneration as near normal as possible through participatory forest management.
- v). To ensure systematic development and exploitation of Non Timber Forest Produce that is found in the tract and to increase their productivity by artificial means wherever possible.
- vi). To identify fauna which is getting extinct or dwindling fast in numbers and suggest measures aiming at conservation & rehabilitation of natural habitat along with combating man-animal conflict.
- vii). To increase the size of carbon sinks so as to reduce green house effect.
- viii). To protect the Ban oak forests from indiscriminate exploitation and to preserve these as representative eco-system of the region.
- ix). To consistent with above, to obtain maximum sustained annual yield of timber and other forest produce.
- x). Measures for conservation of biodiversity and genetic resource available in different types of forest eco-systems will be developed and promoted.
- xi). To protect & detect encroachment and illegal mining on forest land through effective enforcement of law and rules.
- xii). To raise wild fruit trees plantations to augment the food base to wild animals and birds including potential bio-fuel specialize promoted.
- xiii). Nature based tourism will be promoted in Forest areas having such potential and Eco-tourism societies as another institutional mechanisms will be established for sustaining it.
- xiv). Survey, measurement and demarcation with boundary/ pillars of remaining undemarcated/new demarcated forest and their entry in revenue records will be

completed within five years. Entries of forest already declared as protected forests in revenue records will be revisited and confirmed.

- xv) Appropriate educational, extension and training programmes to create great awareness of the causes and ill effects of forest fires will be undertaken and people participation will be encouraged and motivated to reduce fire incidences in pursuance of the Constitutional 73rd Amendment 1992 and right and duties enshrined in Article 51A (g) of the Constitution of India read with Section 79(1) of Indian Forest Act, 1927.

1.4 Methods of Treatment to be adopted

To achieve the above objectives of management, the following treatment and methodology will be followed:

- i) All the conifer forests which are on comparatively moderate slopes will be managed under Indian Irregular Shelter wood System. The mode of regeneration will be both natural and artificial ensuring the completion of regeneration of the blank areas within the currency of plan and there shall be no felling of tree in any forest area except in accordance with the orders given by the Apex Court.
- ii) The riparian zones among the most diverse, productive, vulnerable, habitat and perform several critical ecological functions. The habitat use pattern in this system by the people is often unsustainable hence the riparian zones are constantly under threat. No fellings along the bank, nalla or streams or riparian zone will be allowed and necessary preventing measures will be taken during the plan period.
- iii) To conserve and improve the status of natural resources and bio-diversity through effective water shed management practices.
- iv) All Ban oak forests and open crop of broad leaved species which were subjected to indiscriminate hackings in the past and require rest for recuperation will be protected from further degradation through effective closure notification under Section 30 (b) of Indian Forest Act, 1927.
- v) All poorly stocked and blank forests will be re-afforested by planting suitable species to meet local demand of fuel, fodder, timber and demand of forest based industries.
- vi) Participation of community will be ensured in the process of management, protection and conservation through the concept of Joint Forest management and under Article 51 A (g) of the Constitution of India.
- vii) Working with the local communities to maintain ecological balance for the preservation and improvement of wild life especially in and outside the protected area.

- viii) Soil conservation works with focus on water shed management in a planned manner, where ever necessary will be undertaken to protect hill side/slopes from further denudation & erosion through vegetative manner.
- ix) Survey, measurement & demarcation of forest land will be ensured under the provision of the HP Land revenue Act, 1954 and construction of Boundaries/Pillars would be taken place in planned manner.
- x) Encroachment on forest land will be detected and prosecuted in planned manner in pursuance of the HP High Court order in Yoginder Singh V State of HP Cr. PM (M) No. 1299/2008 dated 20.5.2011 and 29.3.2012.

1.5 Constitution of Working Circles

Keeping in view the objects of managements out lined above, the following Working Circles have been constituted:

1. The Chil Working Circle.
2. The Deodar- Kail Working Circle.
3. The Fir/Spruce Working Circle.
4. The Protection Working Circle.
5. The Oak Working Circle
6. The Plantation (overlapping) Working Circle
7. The NTFP (overlapping) Working Circle
8. The Forest Protection overlapping Working Circle (Fire, Illicit felling, Encroachment, Illegal mining and Poaching etc.).
9. The Joint Forest Management (overlapping) Working Circle
10. The Wild life Management (overlapping) Working Circle

The areas suggested to be constituted in these Working Circles are tabulated in table No: 1.1.

Table 1.1

Sr. No.	Name of WC	Protected Forest (Area in Hac.)		Total
		DPF	Listed UPF's	
1	Chil	3054.6365	869.1100	3923.7465
2	Deodar/Kail	9621.7402	967.5100	10589.2502
3	Fir/Spruce	13891.9643	106.5100	13998.4743
4	Oak	273.8473	637.4600	911.3073
5	Protection	9442.4822	0	9442.4822
6	Plantation	9.7200	545.9400	555.6600
Total		36294.3905	3126.5300	39420.9205

- 1.5.1 The Chil Working Circle:** This Working Circle includes all DPFs and UPFs containing Chil as pure crop or 60% of Chil as major species. The defective resin tapping during the past and wind damage has turned these areas to blank. The forests are uneven aged and contain all the age classes. It is also found mixed with other species in some areas. These forests shall be worked under Punjab shelter wood System. Regeneration will be obtained naturally, supplemented with artificial regeneration. More stress shall be laid on regenerating the felled/open areas with in the shortest possible time and to regenerate the areas allotted to P.B.I fully within the regeneration period of 30 years.
- 1.5.2 The Deodar Kail Working Circle:** This Working Circle consists of most valuable and important forests of Deodar and Kail having more than 60% of deodar and kail on easy slopes/ground having small admixture of spruce and fir in the upper reaches and small quantity of Chil in the lower region. These forests are not even aged and generally contain all age classes more or less intimately mixed up except in the areas regenerated during the past. More stress shall be laid on regenerating the felled/open areas with in the shortest possible time and to regenerate the areas allotted to P.B.I fully within the regeneration period of 30 years. The forests will be managed under Punjab shelter wood System. The emphasis will be laid on natural regeneration supplemented with artificial regeneration. No discrimination will be made between different species coming up naturally in the felled areas.
- 1.5.3 The Fir Spruce Working Circle:** All the forests containing predominately Fir and Spruce with little admixture of deodar and Kail at the low elevation and broad leaved species along nalla and depressions has been allotted to the Working Circle. The forest shall be worked under Punjab Shelter wood System. Due to heavy fellings in the past for apple packing cases, most of the forest allotted to this Working Circle gives a look of PB-I area. Fellings done in the past in the majority of the areas have not been followed by regeneration. Emphasis will be laid to regenerate PB-I areas by artificial means as quickly as possible with in the regeneration period of 30 years in a time bound manner. The conversion of uneven aged crop to even age will continue.
- 1.5.4 The Protection Working Circle:** This Working Circle includes all the coniferous, broad leaved forests which lies on precipitous and difficult terrain and can not be managed under Shelter wood System and thus not included in the other working circles described. These forests are mainly situated on difficult, steep and precipitous slopes where concentrated fellings are not advisable due to environmental hazards and

regeneration problems. The blanks and other degraded areas are to be rehabilitated by planting species suitable to the area.

1.5.5 The Oak Working Circle: The forests containing Oak species either in pure patches or glades either in the above regular Working Circles have been included in this Working Circle. Since there is ban on green fellings of Oak trees, felling will be carried out only after obtaining the approval of competent authority. Silvicultural system will be coppice with standard.

1.5.6 The Plantation (overlapping) Working Circle: This Working Circle includes areas which are devoid of vegetation, having open crop or have young plantations or crop which still requires protection, blank area and poorly stocked but are suitable for raising plantation of value-able and economically important species. The plantations raised in UPFs in the past which are not fully established are also included in this circle. The special objectives of management of this Working Circle are:

- (i) To develop and augment the forests resources of the area by afforestation of blank and scrub areas with suitable species.
- (ii) To conserve soil and water through afforestation.
- (iii) To rehabilitate degraded forests.
- (iv) To assess the old plantations and derive critical conclusions there in.
- (v) To eradicate Invasive Alien Species from forest ecosystem and restore their productivity and biodiversity values

1.5.7 The NTFP (overlapping) Working Circle: This is an overlapping Working Circle and is constituted to ensure systematic development and exploitation of non timber forest produce species that occur or can be introduced in this division. It will include all the areas which have high potential for raising NTFP through natural or artificial regeneration techniques. The main non timber forest produce found/extracted in the division are Resin, Medicinal plants, grass.

1.5.8 The Forest Protection Overlapping Working Circle (Fire, Illicit felling, Encroachment, Illegal mining & Poaching etc.): This is an overlapping Working Circle and is constituted to address the forest protection problems like (Fire, Illicit felling, Encroachment, boundary pillars, Illegal mining, Poaching etc.) in this division. This Working Circle includes the areas of all the other Working Circles. The forest areas which are vulnerable to encroachments, status of damage reports, progress in prosecution/ compounding, disposal of seized timber and illicit felling etc. along with their future strategies are also discussed in detail under this Working Circle.

1.5.9 The JFM (overlapping) Working Circle: This Working Circle includes the forest areas near to the habitations, where active participation of local people have been taken in the past along with potential new areas. Involvement of rural communities living close to forests in protection and management of forest resources is enshrined in the National Forest Policy 1988. The experience gained from various projects like social forestry umbrella project, DFID, Sanji Van Yojna etc. have been incorporated to enlist the potential panchayat/villages where JFPM approach can be successfully implemented. The selected forests areas are mostly UPFs/DPFs situated near to habitations that have become degraded, the UPFs and waste land that are in small bits, honeycombed, surrounded by cultivation and are left out after demarcation and settlement.

This Working Circle also lays emphasis on man-forest interface and channelizing human resources for conservation of forests and vice versa. People of the division depend on ban oak forests for fodder on a large scale. In the process, most of these oak forests have been lopped with high intensity leaving the oak trees at the verge of perishing. It is therefore suggested in this Working Circle about the needs of these people and sustainable utilization of oak forest of fodder with active participation of local communities.

1.5.10 The Wild Life Management (overlapping) Working Circle: This Working Circle is constituted for emphasizing the necessity of conservation of wildlife and collection of information for better management of wild life. The whole tract has a variety of wild animals and birds since the forests are distributed from low elevation to the high snow bound areas. The provisions of the wild life protection act, 1972 are to be enforced and the man animal, conflict reduced. Therefore, this Working Circle overlaps all other Working Circles.

1.6 Working Circle, their area and distribution: The detail of forests, demarcated and un-demarcated allotted to various Working Circles along with their areas are given in *Appendix No.-V & VI*. The total area in hac, Working Circle wise and their distribution range wise is tabulated in table No: 1.2

Table-1.2

Sr. No.	Name of Range	DKWC (hac.)	FSWC (hac.)	CWC (hac.)	PWC (hac.)	OWC (hac.)	Pl.WC (hac.)	G. Total (hac.)
1	Nankhari	3135.3900	2799.3100	588.0500	0	16.2000	157.9500	6696.9000
2	Bahli	1372.5381	4796.7102	1462.4834	2442.0367	253.3217	0	10327.0901
3	Rampur	2152.1507	219.9496	1719.1073	6235.9241	641.7856	387.9900	11356.9073
4	Sarahan	3929.1714	6182.5045	154.1058	764.5214	0	9.7200	11040.0231
	Total	10589.2502	13998.4743	3923.7465	9442.4822	911.3073	555.6600	39420.9205

1.7 Reasons for Constitution of Working Circle: The coniferous forests are silviculturally suited for regeneration under a system of concentrated regeneration felling and the overriding factor for allotting those workable areas as lie on comparatively easy ground to deodar and Kail Working Circle Chil Working Circle and fir Working Circle for regeneration under the system is necessity for closure against grazing. Even otherwise, too, it is silvicultural treatment rather than the species and such of the forests as on largely on moderate the slopes are conveniently suited to treatment under a system of concentrated regeneration fellings. The experience during the past Working Plan has been that the Punjab Shelter wood System along with supplementing the natural regeneration by artificial means combined with closure of areas under regeneration has been most successful. The experience of managing the over mature fir forests under clear felling system has proved the failure because of immense weed growth that comes up after the opening up of the forests under clear felling system.

The separate Working Circle for deodar, Kail, Chil and fir spruce have been created on the basis of physiographic, growing stock, managerial requirements to meet specific objectives as enlisted in detail in the respective chapter ahead.

The fellings are to be linked with the pace of regeneration. Sufficient nursery should be raised in advance before carrying out the regeneration felling.

1.8 Blocks and Compartments: All the forests have been divided into compartments and sub-compartments based on the natural features, composition of crop and treatment required. No further division is required. Invariably the natural features like ridges, nallas and path etc. form the boundaries. The nomenclature/numbering of the forests have been changed with the addition of new DPFs from the existing UPFs and revision of the Kapoor's plan has revised separately for Kotgarh and Rampur division. The range wise detail of newly constituted DPFs is given in Appendix No-II.

1.9 Enumerations: As given in the Chapter-VIII under paragraph 8.8 sampled enumerations has been carried out in all the PBs. Accordingly complete enumerations has been carried out in the selected sampled forests after selecting the samples i.e. 10% random sampling in PB-I & PB-IV areas and 5% in PB-II & PB-III areas. The results have been analyzed statistically and growing stock has been assessed. The results of enumerations are given in Appendix No.-VIII to XI. The growing stock has been assessed by random sampling and is given in Appendix No.-XII to XV.

1.10 Stock Mapping: The stock maps of all the forests have been taken from survey sheets 4" = 1 miles scale and have been placed in the respective compartment history file. The

detailed manual for collection of field data including stock mapping is given in Appendix No.-LIX.

1.11 Felling series: There will be only one felling series i.e. Sutlej felling series conforming to the territorial jurisdiction of Rampur forest Division.

1.12 Period of Working Plan and necessity for intermediate revision

During the year 2008-09 to 2011-12 all operations/activities have been carried out as per APO. No felling except that of salvage removal of forests has been carried out in compliance of the Hon'ble Supreme Court's order dated 12-12-1996. Felling of trees or clearance of forest land in execution of projects has been carried out strictly in conformity with Forest (Conservation) Act, 1980. Hence, period of 4 years has been treated as interim period and regularized. The period of Working Plan is 15 years from 2013-14 to 2028-29 during the period the prescription of this Working Plan will come into force w.e.f. 01-04-2013. The effective period of the plan shall 15 years. No necessity of intermediate revision is anticipated until and unless there is any major changes in Administrative Policy and in compliance of the Hon'ble Supreme Court's order or natural calamity on large scale.

CHAPTER II

THE CHIL WORKING CIRCLE

2.1 General Constitution: This Working Circle includes all the demarcated and undemarcated protected forests which predominantly contain the pure chil or the one containing chil as 60% or more in composition have been including in this Working Circle. In these forests natural regeneration is no problem and these forests can be economically exploited.

2.2 General Character of Vegetation: The forests included in this Working Circle mainly conform the Champion and Seths type 9/c 1 (Himalayan Sub-tropical pine forests) and the general description of the crop has been described in Chapter II of Part I of the present Working Plan. The Chil generally occurs between 1000 meter to 2000 meter elevation. It gradually overlaps the tropical dry mixed deciduous forest at lower elevation and giving way to temperate forest above. The principal specie is *Pinus roxburghii* (Chil) which occurs in pure and gregarious form and constitutes stable sub climax due to biotic factors. The crop is generally irregular and mature trees are few and widely scattered where pure quartzite formation occurs, as is noticeable near Pashada, Brauni and Badhal in Rampur and Sarahan ranges respectively. In the recently raised established chil plantations the crop is even aged.

Kail and sprinkled deodar makes its appearance in the upper reaches and is sometimes extended into chil areas. Admixture of other species occurs along the upper limits as well as the lower streams and damp ravines. The common associates are *Quercus incana* (Ban oak), *Pyrus pashia* (Kainth), *Rhododendron arboretum* (Brass), *Lyonia ovalifolia* (Anyar) and occasional trees of *Cornus capitata* and *Albizzia procera*. The associates may occur either in light admixture or occasionally form an under storey in pine forests. *Pinus wallichiana* (Kail) makes its appearance in the upper most reaches and is sometimes found extending into Chil as may be noticed in Brawni forest C.55. A peculiar association is rarely noticeable in Gaura forests, Sarahan Range, where owing to the heavy rain fall on cool Northern aspect, Spruce comes fairly low up to 1800m and may be found growing along with Chil, pine and Kail. This phenomenon however, is not wide spread. The defective tapping of trees for extraction of resin and uprooting of trees by wind have caused vast destruction to the crop. The natural regeneration of Chil occurs purely in some areas.

2.3 Special objects of Management: Without prejudice to general objects of managements, the special objects of managements of the forest allotted to this Working Circle are:

- (i) Gradual conversion of irregular stock to normal stock thus to build up growing stock to the extent possible under the prevailing conditions.
- (ii) To improve the existing soil covers for water and soil conservation.
- (iii) To restock the poorly stocked and blank areas through artificial means.
- (iv) To obtain the maximum possible yield of timber and resin on sustained basis.
- (v) To tend the existing stand properly so as to progress generally in the direction of normal forest by obtaining normal growing stock, normal age class distribution and normal regeneration.
- (vi) To protect the forests from fires as well as biotic interferences.

2.4 Area statement: The total area of this Working Circle is **3923.7465 hac.** and works out to be 9.95% of the total area of the division. The range wise distribution of these forests is given in table No. 2.1.

Table 2.1

Name of Range	DPF	UPF	Total in hac.
Nankhari	40.5000	547.5500	588.0500
Bahli	1140.9234	321.5600	1462.4834
Rampur	1719.1073	0	1719.1073
Sarahan	154.1058	0	154.1058
Total	3054.6365	869.1100	3923.7465

The forest wise detail of specific allotment is given in *Appendix No.-IV*.

2.5 Block and Compartment: No change in the existing compartments and sub compartments has been made. The compartments and sub compartments have been numbered systematically both for DPFs and listed UPFs which was necessitated due to creation of new DPFs and revision of the present plan.

2.6 Felling Series: One Felling series has been formed i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Rampur forest Division.

2.7 Analysis and valuation of the crop: Except for the converted crop during the period of previous plans (before the ban on green felling) the crop is irregular having all the age classes in the same areas. The converted crop, however, is generally well stocked. The crop is even aged in the recently raised yield plantation. Admixture of other species also occurs. The common associates are *Quercus incana*, *Rhododendron*, *Pieris ovalifolia*, *Pyrus pashia*, *Bauhinia*, *Albizzia* species etc. The associates occur either in light admixture or occasionally

may form the under storey. The sprinkled Deodar and Kail also occurs in the upper reaches with Chil.

2.7.1 Stock Map:- The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

2.7.2 Density:- The crown density of each compartment have been estimated ocularly and has been recorded in respective compartments history files. The average density of the crop varies from 0.2 to 0.6

2.7.3 Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub compartment has been indicated in the compartment history files.

2.7.4 Age Classes: -The crop is very irregular. There is predominance of middle class. The overall age condition is as under:-

Table 2.2

	Young, 10-29 cms	Middle aged, 30-59 cms	Mature & over Mature 60 & above cms.
Stems	183362	142451	31036
Volume	37221.91	194365.58	153993.41

2.7.5 Enumerations: As given in the Chapter-VIII under paragraph 8.8 complete enumerations of random sampled compartments has been done by sampling 10% of PB-I & PB-IV areas and 5% PB-II & PB-III areas. The results have been analyzed statistically and growing stock has been assessed. The results of enumerations are given in Appendix No-VIII. The growing stock has been assessed by random sampling and is given in Appendix No-XII.

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Species wise No. and Volume in cubic mts. (Estimated growing stock) for Chil Working Circle

Table 2.3

P.B.-I Area= 935.2116 hac.												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Chil	20233	14004	12119	13279	7983	4395	3257	766	458	94	76589
	Volume in m3	1800.72	4593.46	9391.95	19626.99	19717.22	16653.30	17802.40	5771.29	4588.96	1215.06	101161.36
2	Deodar	1116	413	4	19	11	8	8	0	0	0	
	Volume in m3	198.5941	200.825501	3.903062	34.259794	32.1749	30.9991	42.35893	0	0	0	543.12
3	Kail	1540	811	368	240	34	11	4	0	0	0	3009
	Volume in m3	234.11	343.23	354.89	426.74	96.52	47.39	21.88	0.00	0.00	0.00	1524.76
4	Ban	19	105	274	120	94	64	53	11	0	4	744
	Volume in m3	2.52	32.92	180.17	144.37	185.39	191.33	225.36	66.01	0.00	37.17	1065.22
5	Mohru	26	0	0	0	0	0	0	0	0	0	26
	Volume in m3	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.52
6	Other B.L Species	473	402	282	180	113	83	49	38	41	23	1683
	Volume in m3	44.49	118.17	199.47	240.90	245.34	267.11	219.76	224.72	317.27	216.08	2093.32
Total trees		23407	15736	13047	13839	8234	4560	3370	815	500	120	83628
Total Volume m3		2283.96	5288.61	10130.39	20473.27	20276.65	17190.13	18311.75	6062.01	4906.23	1468.31	106391.30
P.B.-II Area= 870.5118 hac.												
1	Chil	16439	12369	16945	15565	15154	7586	4667	471	177	82	89456
	Volume in m3	1463.06	4057.08	13132.28	23005.43	37431.32	28742.74	25507.34	3550.20	1775.51	1063.15	139728.11
2	Kail	1514	908	195	0	0	0	0	0	0	0	2617
	Volume in m3	230.08	384.18	187.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	801.88
3	Deodar	3828	1254	0	0	0	0	0	0	0	0	5082
	Volume in m3	681.30	609.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1290.85
Total trees		21780	14532	17139	15565	15154	7586	4667	471	177	82	97154
Total Volume in m3		2374.44	5050.81	13319.89	23005.43	37431.32	28742.74	25507.34	3550.20	1775.51	1063.15	141820.83

P.B.-III Area= 1060.0186 hac.												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Chil	16600	17782	16370	7836	4136	1458	788	628	113	5	65715
	Volume in m3	1477.40	5832.39	12686.92	11581.25	10215.75	5525.73	4306.09	4732.19	1126.89	60.67	57545.27
2	Kail	9	0	0	0	0	0	0	0	0	0	9
	Volume in m3	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43
3	Ban	3883	2701	1819	1041	816	117	94	84	56	0	10612
	Volume in m3	520.28	845.42	1195.37	1250.26	1610.65	351.23	401.87	494.37	434.58	0.00	7104.03
4	Poplar	70	38	127	230	263	192	174	0	0	0	1093
	Volume in m3	6.612	11.029	89.640	306.978	571.677	621.384	780.762	0.000	0.000	0.000	2388.082
5	Brass	52	66	14	0	0	0	0	0	0	0	131
	Volume in m3	4.85	19.30	9.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.110
6	Other B.L Species	3512	2387	1702	1121	830	103	70	80	38	9	9852
	Volume in m3	330.152	701.729	1205.159	1497.300	1806.909	333.425	316.525	476.870	288.033	89.912	7046.016
	Total trees	24126	22973	20033	10227	6044	1871	1125	792	206	14	87413
	Total Volume in m3	2340.720	7409.870	15187.045	14635.789	14204.982	6831.763	5805.251	5703.428	1849.501	150.582	74118.930
P.B.-IV Area= 1058.0045 hac.												
1	Chil	20860	20617	10430	3326	1861	1005	534	243	101	37	59014
	Volume in m3	1856.516	6762.321	8083.147	4915.678	4596.690	3808.867	2920.953	1829.300	1010.292	483.488	36267.254
2	Deodar	56	26	0	4	0	0	0	0	0	0	86
	Volume in m3	9.978	12.713	0.000	6.816	0.000	0.000	0.000	0.000	0.000	0.000	29.507
3	Kail	785	691	419	52	30	7	11	0	4	0	1999
	Volume in m3	119.284	292.436	403.473	92.864	85.352	31.428	65.292	0.000	36.891	0.000	1127.020
4	Spruce	0	0	15	4	4	4	4	0	7	0	37
	Volume in m3	0	0	15.546	7.358	12.022	17.878	24.922	0.000	85.158	0.000	162.883
5	Ban	3008	3419	2100	1618	867	516	845	508	206	359	13446
	Volume in m3	403.106	1070.248	1379.814	1943.345	1711.410	1545.040	3618.914	2976.686	1587.332	3549.458	19785.354
6	Brass (Rhododendron)	1570	1162	478	220	56	26	22	11	7	11	3565
	Volume in m3	147.535	341.686	338.659	294.562	122.031	84.545	100.898	67.064	57.385	107.479	1661.843
7	Shisham	101	11	4	0	4	4	0	0	0	0	123
	Volume in m3	9.484	3.296	2.646	0.000	8.135	12.078	0.000	0.000	0.000	0.000	35.639
8	Other B.L. Species	5273	3229	1073	471	135	67	60	37	26	15	10385
	Volume in m3	495.649	949.249	759.336	629.066	292.873	217.402	269.061	223.545	200.847	143.305	4180.333
	Total trees	31652	29156	14518	5695	2956	1629	1476	800	351	422	88656
	Total volume in m3	3041.553	9431.949	10982.621	7889.688	6828.514	5717.238	7000.041	5096.595	2977.905	4283.731	63249.834

Table- 2.4

Yield Calculation Table Growing Stock in PB-I & PB-IV												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Chil	41093	34621	22549	16605	9844	5400	3791	1009	559	131	135603
	Volume in m3	3657.24	11355.78	17475.10	24542.67	24313.92	20462.17	20723.36	7600.59	5599.25	1698.55	137428.61
2	Deodar	1172	439	4	23	11	8	8	0	0	0	1664
	Volume in m3	208.57	213.54	3.90	41.08	32.17	31.00	42.36	0.00	0.00	0.00	572.62
3	Kail	2325	1503	787	293	64	19	15	0	4	0	5008
	Volume in m3	353.39	635.67	758.36	519.61	181.88	78.82	87.17	0.00	36.89	0.00	2651.78
4	Spruce	0	0	15	4	4	4	4	0	7	0	37
	Volume in m3	0.00	0.00	15.55	7.36	12.02	17.88	24.92	0.00	85.16	0.00	162.88
5	Ban	3027	3525	2374	1738	961	580	897	519	206	363	14189
	Volume in m3	405.62	1103.17	1559.98	2087.72	1896.80	1736.37	3844.27	3042.69	1587.33	3586.63	20850.58
6	Mohru	26	0	0	0	0	0	0	0	0	0	26
	Volume in m3	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.52
7	Brass (Rhododendron)	1570	1162	478	220	56	26	22	11	7	11	3565
	Volume in m3	147.54	341.69	338.66	294.56	122.03	84.55	100.90	67.06	57.38	107.48	1661.84
8	Shisham	101	11	4	0	4	4	0	0	0	0	123
	Volume in m3	9.48	3.30	2.65	0.00	8.14	12.08	0.00	0.00	0.00	0.00	35.64
9	Other B.L. Species	5746	3631	1354	651	247	150	109	75	67	37	12068
	Volume in m3	540.14	1067.42	958.81	869.97	538.21	484.51	488.82	448.26	518.12	359.39	6273.65
	Total trees	55059	44892	27565	19534	11190	6190	4846	1615	851	542	172284
	Total volume in m3	5325.51	14720.56	21113.01	28362.96	27105.17	22907.36	25311.80	11158.61	7884.13	5752.04	169641.14

Table- 2.5
General Abstract Growing Stock in all PBs

Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Chil	74131	64772	55864	40006	29134	14445	9246	2109	849	218	290774
	Volume in m3	6597.70	21245.25	43294.30	59129.35	71960.98	54730.64	50536.79	15882.98	8501.64	2822.37	334701.99
2	Deodar	4999	1694	4	23	11	8	8	0	0	0	6745
	Volume in m3	889.87	823.09	3.90	41.08	32.17	31.00	42.36	0.00	0.00	0.00	1863.47
3	Kail	3848	2411	981	293	64	19	15	0	4	0	7634
	Volume in m3	584.90	1019.84	945.98	519.61	181.88	78.82	87.17	0.00	36.89	0.00	3455.09
4	Spruce	0	0	15	4	4	4	4	0	7	0	37
	Volume in m3	0.00	0.00	15.55	7.36	12.02	17.88	24.92	0.00	85.16	0.00	162.88
5	Ban	6910	6226	4194	2779	1777	697	991	604	262	363	24801
	Volume in m3	925.91	1948.59	2755.35	3337.98	3507.45	2087.60	4246.14	3537.06	2021.91	3586.63	27954.60
6	Mohru	26	0	0	0	0	0	0	0	0	0	26
	Volume in m3	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.52
7	Brass (Rhododendron)	1621	1228	492	220	56	26	22	11	7	11	3696
	Volume in m3	152.38	360.99	348.62	294.56	122.03	84.55	100.90	67.06	57.38	107.48	1695.95
8	Shisham	101	11	4	0	4	4	0	0	0	0	123
	Volume in m3	9.48	3.30	2.65	0.00	8.14	12.08	0.00	0.00	0.00	0.00	35.64
9	Poplar	70	38	127	230	263	192	174	0	0	0	
	Volume in m3	6.612	11.029	89.640	306.978	571.677	621.384	780.762	0.000	0.000	0.000	
10	Other B.L. Species	9258	6018	3056	1772	1077	253	179	155	105	47	21920
	Volume in m3	870.29	1769.15	2163.97	2367.27	2345.12	817.93	805.35	925.13	806.15	449.30	13319.67
Total trees		100966	82396	64737	45327	32389	15647	10638	2879	1235	639	356851
Total volume in m3		10040.67	27181.24	49619.95	66004.17	78741.46	58481.87	56624.38	20412.24	11509.14	6965.77	385580.90

2.7.5 Total growing stock per hac. Works out as under:-

Table- 2.6

P.B.	Area in hac.		No. & Vol. of conifers in cums	No. & Vol. of B.L. in cums	No. & Vol./ha of conifers in cums	No. & Vol/ha of B.L. in cums	Total No. & vol/ha in cums
I	935.2116	No.	81175	2453	87	3	89
		Vol.	103229.24	3162.07	110.38	3.38	114
II	870.5118	No.	97154	0	112	0	112
		Vol.	141820.83	0	162.92	0	163
III	1060.0186	No.	65725	21688	62	20	82
		Vol.	57546.7	16572.23	54.29	15.63	70
IV	1058.0045	No.	61137	27519	58	26	84
		Vol.	37586.66	25663.17	35.53	24.26	60
Total	3923.7465	No.	305191	51660	318	49	367
		Vol.	340183.43	45397.47	363.11	43.27	406.38

Contd. p-153

2.8 Silvicultural System: The forest allotted to this Working Circle shall be managed under the Punjab shelter Wood System with the provision of retention of compact group of well grown poles as a part of future crop. No felling will be done on steep, precipitous and rocky patches and the blanks will be regenerated through afforestation with Chil. The marking will be done on selection principal along steep slopes, nallas and broken ground. Efforts will be made to regenerate the area naturally with effective closure. Artificial planting will only resorted where natural regeneration fails to come up in a reasonable time.

2.9 Choice of species: Chil should be given preference in the natural zone but other species coming up naturally shall not be sacrificed for the craze of pure tree. Where Chil can not be established easily, the species best suited to the locality shall be favoured.

2.10 Regeneration period: Regeneration period is fixed at 30 years. Besides regenerating P.B.I areas, all the blank areas included in the P.B.IV shall be regenerated artificially depending upon availability of funds. Efforts will be made to regenerate the area naturally supplemented with artificial planting.

2.11 Rotation period: The rotation is fixed at 120 years in this Working Circle. This period of 120 years is reasonable and economical for resin tapping and production of sizes of timber fit for all market demands. The general quality class of the tract is II/III FRI.

2.12 Exploitable diameter: Exploitable diameter fixed is 60 cm dbh being the most suited to yield better out turn in the form of sleeper size which fetches better price in the market. This is, however, a size to be aimed at, for the converted crop whereas the existing crop has such a large preponderance over mature stock that the exploitable size is only of academic interest.

2.13 Felling cycle

The felling cycle of 15 years corresponding to the period of plan will be adopted.

2.14 Division into periodic blocks: With the rotation of 120 years and regeneration period of 30 years, the area of the whole Working Circle has been divided into 4 periodic Blocks as P.B.I, P.B.II, P.B.III, PB-IV. As the crop is generally of younger age classes with very few middle aged mature trees, so PBs can not be divided on text book pattern. Yet every attempt is made to allot areas as to fit in PBs depending on dia classes available. The allotment is discussed as under:-

2.14.1 PB-I : It includes the un-felled areas of expired plan and other most suitable as far as the maturity of crop is concerned and those areas that remained understock and where regeneration is either still progressing or has not come at all. The forests with generally blanks & having majority of mature trees are allotted to this PB. No fellings were generally done in the plan under revision in PB-I. Some closures for artificial regeneration were,

however done in PB-I areas. All such areas have been put in PB-I. No change is made in PB-I area of the plan under revision. The distribution of number of trees and volume per hac. is given in table No. 2.7.

Table-2.7
Species wise distribution of number of trees and volume per hac.

Circle P.B.-I Area= 935.2116 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Chil	Trees per hac.	22	15	13	14	9	5	3	1	0	0	82
	Vol per hac.	1.93	4.91	10.04	20.99	21.08	17.81	19.04	6.17	4.91	1.30	108.17
Deodar	Trees per hac.	1	0	0	0	0	0	0	0	0	0	2
	Vol per hac.	0.21	0.21	0.00	0.04	0.03	0.03	0.05	0.00	0.00	0.00	0.58
Kail	Trees per hac.	2	1	0	0	0	0	0	0	0	0	3
	Vol per hac.	0.25	0.37	0.38	0.46	0.10	0.05	0.02	0.00	0.00	0.00	1.63
Ban	Trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	Vol per hac.	0.00	0.04	0.19	0.15	0.20	0.20	0.24	0.07	0.00	0.04	1.14
Mohru	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other B.L Species	Trees per hac.	1	0	0	0	0	0	0	0	0	0	2
	Vol per hac.	0.05	0.13	0.21	0.26	0.26	0.29	0.23	0.24	0.34	0.23	2.24
Total trees per hac.		25	17	14	15	9	5	4	1	1	0	89
Total volume per hac.		2.44	5.65	10.83	21.89	21.68	18.38	19.58	6.48	5.25	1.57	113.76

2.14.2 PB-II

Forests, in which there is preponderance of maturing trees, have been allotted to this periodic block. No change is made in PB-II areas of the plan under revision. The distribution of number of trees and volume per hac. is given in table No. 2.8.

Table-2.8
Species wise distribution of number of trees and volume per hac.

P.B.-II Area= 870.5118 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Chil	Trees per hac.	19	14	19	18	17	9	5	1	0	0	103
	Vol per hac.	1.68	4.66	15.09	26.43	43.00	33.02	29.30	4.08	2.04	1.22	160.51
Kail	Trees per hac.	2	1	0	0	0	0	0	0	0	0	3
	Vol per hac.	0.26	0.44	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92
Deodar	Trees per hac.	4	1	0	0	0	0	0	0	0	0	6
	Vol per hac.	0.78	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48
Total trees per hac.		25	17	20	18	17	9	5	1	0	0	112
Total volume per hac.		2.73	5.80	15.30	26.43	43.00	33.02	29.30	4.08	2.04	1.22	162.92

2.14.3 PB-III: The forests carrying pole to middle aged crops with few scattered matured and maturing trees has been allotted to this PB, as in plan under revision. No change has been

made therein. The distribution of number of trees and volume per hac. is given in table No. 2.9.

Table-2.9
Species wise distribution of number of trees and volume per hac.

P.B.-III Area= 1060.0186 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Chil	Trees per hac.	016	17	15	7	4	1	1	1	0	0	62
	Vol per hac.	1.39	5.50	11.97	10.93	9.64	5.21	4.06	4.46	1.06	0.06	54.29
Kail	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ban	Trees per hac.	4	3	2	1	1	0	0	0	0	0	10
	Vol per hac.	0.49	0.80	1.13	1.18	1.52	0.33	0.38	0.47	0.41	0.00	6.70
Brass	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Poplar	Trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	Vol per hac.	0.01	0.01	0.08	0.29	0.54	0.59	0.74	0.00	0.00	0.00	2.25
Other B.L Species	Trees per hac.	3	2	2	1	1	0	0	0	0	0	9
	Vol per hac.	0.31	0.66	1.14	1.41	1.70	0.31	0.30	0.45	0.27	0.08	6.647
Total Trees per hac.		23	22	19	10	6	2	1	1	0	0	82
Total Vol per hac.		2.21	6.99	14.33	13.81	13.40	6.44	5.48	5.38	1.74	0.14	69.922

2.14.4 PB-IV: All the compartment having young poles with scattered mother trees have been allotted to PB-IV as in the plan under revision. No change has been made therein. The species wise distribution in different classes is given in table No. 2.10.

Table-2.10
Species wise distribution of number of trees and volume per hac.

P.B.-IV Area= 1058.0045 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Chil	Trees per hac.	20	19	10	3	2	1	1	0	0	0	56
	Vol per hac.	1.75	6.39	7.64	4.65	4.34	3.60	2.76	1.73	0.95	0.46	34.28
Deodar	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Kail	Trees per hac.	1	1	0	0	0	0	0	0	0	0	2
	Vol per hac.	0.11	0.28	0.38	0.09	0.08	0.03	0.06	0.00	0.03	0.00	1.07
Spruce	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.00	0.08	0.00	0.15
Ban	Trees per hac.	3	3	2	2	1	0	1	0	0	0	13
	Vol per hac.	0.38	1.01	1.30	1.84	1.62	1.46	3.42	2.81	1.50	3.35	18.70

1	2	3	4	5	6	7	8	9	10	11	12	13
Brass (Rhododendron)	Trees per hac.	1	1	0	0	0	0	0	0	0	0	3
	Vol per hac.	0.14	0.32	0.32	0.28	0.12	0.08	0.10	0.06	0.05	0.10	1.57
Shisham	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.03
Other B.L. Species	Trees per hac.	5	3	1	0	0	0	0	0	0	0	10
	Vol per hac.	0.47	0.90	0.72	0.59	0.28	0.21	0.25	0.21	0.19	0.14	3.95
Total Trees per hac.		30	28	14	5	3	2	1	1	0	0	84
Total Vol per hac.		2.87	8.91	10.38	7.46	6.45	5.40	6.62	4.82	2.81	4.05	59.78

2.14.5 General abstract of areas allotted PB wise

The PB wise allotment of the areas to different Ranges is given in the table No. 2.11.

Table- 2.11

Sr. No.	Name of Range	Forest category	Chil WC				
			PBI	PBII	PBIII	PBIV	Total
1	Nankhari	DPF	0	0	40.5000	0	40.5000
		Listed UPF	140.5300	72.4900	237.3300	97.2000	547.5500
		Total	140.5300	72.4900	277.8300	97.2000	588.0500
2	Bahli	DPF	301.8235	0	439.1308	399.9691	1140.9234
		Listed UPF	52.2400	0	162.0000	107.3200	321.5600
		Total	354.0635	0	601.1308	507.2891	1462.4834
3	Rampur	DPF	440.6181	798.0218	181.0578	299.4096	1719.1073
		Listed UPF	0	0	0	0	0
		Total	440.6181	798.0218	181.0578	299.4096	1719.1073
4	Sarahan	DPF	0	0	0	154.1058	154.1058
		Listed UPF	0	0	0	0	0
		Total	0	0	0	154.1058	154.1058
Total DPF			742.4416	798.0218	660.6886	853.4845	3054.6365
Total Listed UPF			192.7700	72.4900	399.3300	204.5200	869.1100
Grand Total			935.2116	870.5118	1060.0186	1058.0045	3923.7465

2.15 Calculation of yield: The yield has been calculated by volume for PB-I and PB-IV. Increment has been ignored for the reasons safety against fire and natural calamities and to serve as emergency reserve. No yield has been prescribed from PB-II as a safe guard and to build up the growing stock to be treated in next PB-I.

2.15.1 Yield from PB-I areas: The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in five numbers of PBI areas. Yield has been calculated for PBI areas. The abstract showing the enumeration result of class wise and species wise of PBI areas are given in *Annexture No.VIII*.

2.15.1.1 Yield calculation: Theoretically, the entire growing stock except that of mother trees above 47 cms in dia should be available during the plan period. Since compact group of

poles shall be retained as advance growth and some trees will also be left on broken ground, only part of II and III/IV class trees will be further restricted as some trees shall have to retain as emergency reserve and as fire insurance trees. The trees standing on blanks or over patches where regeneration has not established shall also be not available. Therefore, the yield on the basis of silvicultural availability is calculated as under:-

$$Y = \frac{C1V1 + C2V2 + C3V3}{P}$$

Where V1, V2 and V3 are the volumes of I class, II class trees and III and IV class respectively.

P=Length of regeneration period i.e. 30 years.

C1, C2, C3 are the constants representing percentage of I class, II class and III class and IV class trees respectively estimated to be available for felling during the regeneration period. The values of constants of C1, C2, C3 have been fixed as under after detailed examination of forests during field inspections. It is observed during field inspection that only 10% of V, IV and III classes and 20% of II and 30% of I class trees would be available for fellings. These figures are arrived at after analysis number of stems per hac. also.

C1= Constant representing the fraction of volume of V, IV and III class trees available for felling during the regeneration period. C1 has been taken as 0.1

C2= Constant representing the fraction of volume of IIA & IIB class trees available for felling during period. C2 has been taken as 0.2

C3= Constant representing the fraction of volume of IA above class trees available for felling during period. C3 has been taken as 0.3

V1= Volume of trees of V, IV & III class trees of chil/conifer.

V2= Volume of trees of II class trees of chil/conifer.

V3= Volume of trees of I class trees of chil/conifer.

P= Plan period which is 15 years.

$$(CHIL) Y = \frac{0.1 \times 15786.13 + 0.2 \times 39344.22 + 0.3 \times 46031.01}{15} = 1550 M^3$$

$$(KAIL) Y = \frac{0.1 \times 932.227 + 0.2 \times 523.2695 + 0.3 \times 69.26714}{15} = 15 M^3 \text{ or say } 0m^3$$

$$(DEODAR) Y = \frac{0.1 \times 403.3227 + 0.2 \times 66.4347 + 0.3 \times 73.35803}{15} = 5 M^3 \text{ or say } 0m^3$$

2.15.2 Yield from PB-II: Fellings in this block shall be confined to removal of dead and uprooted trees only. In order to safe guard the future yield, no major fellings are prescribed and therefore, no yield has been calculated for this periodic block. Complete enumeration of random sampled compartments taking well defined topographic areas, as a full compartment, sub compartment or part thereof, as unit for measurement in this PB has been done. All the trees in such units down to 10 cms dbh were enumerated. The results of enumeration were statistically analyzed and are given in table No. 2.12

Table 2.12

Sr. No.	Items	Particulars
1.	Total area of periodic block	870.5118 Hac.
2.	Area enumerated	201.28
3.	Percentage of area covered	23.12%
4	Number of units measures	3
5	Mean volume per Hac.	162.92 M3

The detail of enumeration done in the sample areas are given in *Appendix No.-VIII*.

2.15.3 Yield from PB-IV Area: Complete enumeration down to 10 cms dbh has been carried out in six numbers of selected samples and with an area of **283.1187 hac**. The abstract of growing stock is given in *Appendix No.-XII*. The calculation of yield has based on the total volume of trees in PB-IV. Increment has not been taken into account. All the I and II class trees do not warrant their intension in this periodic block and as such can be removed during the plan period. Silviculturally, it is not possible to remove all such trees. Trees standing on precipitous and broken ground have to retain. Besides this some I and II class trees will have to be kept as fire insurance and national emergency reserves. Similarly the II class trees standing amongst the patches of advance growth will not always be available for fellings. This being so, it has been estimated that only 75% of the volume of I and II class trees can be removed during the Working Plan period. In addition to this another 10% volume of trees 20 cms to 40 cms dbh will be available under thinnings. The annual yield of different species is accordingly fixed as under: -

$$\text{Annual Yield (AY)} = \frac{V_1 \times 75/100 + V_2 \times 10/100}{P}$$

Where V1 is volume of I & II class trees.

V2 is volume of III & IV class trees.

P is plan period which is 15 years

$$\text{Annual yield for Chil (AY)} = \frac{19565.27 \times 75\% + 14845.47 \times 10\%}{15} = 1077 \text{ M}^3 \text{ or say } 1070 \text{ M}^3$$

$$\text{Annual yield for Kail (AY)} = \frac{311.827 \times 75\% + 695.908 \times 10\%}{15} = 20 \text{ M}^3 \text{ or say } 0 \text{ M}^3$$

$$\text{Annual yield for Deo (AY)} = \frac{6.82 \times 75\% + 12.713 \times 10\%}{15} = 0.4 \text{ M}^3 \text{ or say } 0 \text{ M}^3$$

2.16 Intermediate yield from PB-III: The forests of this block with exception of Chil plantations raised artificial are quite open. The demand of right holders used to be in variably met from the forests of this periodic block before imposition of ban on green fellings. There will be no volume control of yield from thinning since there is hardly any scope of thinnings. Hence no green fellings are prescribed. The removals will, however, count toward the yield of PB-I.

In this PB complete enumeration of randomly selected compartments has been done. All the trees in such units down to 10 cms dbh were enumerated. The results of enumeration were statistically analyzed and are given in table No. 2.13.

Table 2.13

Sr. No.	Items	Particulars
1.	Total area of periodic block	1060.0186 hac.
2.	Area enumerated	226.0523 hac.
3.	Percentage of area covered	21.33%
4	Number of units measures	4
5	Mean volume per Hac.	69.92 M ³

The detail of enumeration done in the sample areas are given in *Appendix No.-VIII*.

2.17 Total Annual prescribed Yield: The total Annual prescribed yield from the forests of this Working Circle is prescribed as under. However, the yield from PBIII as mentioned above will not be available for commercial sales.

Table 2.14

Species	PBI	PBIV	Total
Chil	1550 m ³	1070 m ³	2620 m ³
Kail	0m ³	0 m ³	0 m ³
Deodar	0 m ³	0 m ³	0m ³
Total	1550 m³	1070 m³	2620 m³

2.18 Control of Yield: All the removals of whatever nature down upto V class shall count towards yield of this Working Circle. It is indeed impossible that the removal of various species in a particular year will conform to or equalize the prescribed yield for each species.

In actual practice this is ruled out. It is, therefore, imperative that the marking in the forests should be carried out strictly on silvicultural principles. However, yield will be shown by species in the control forms and deviation statement. The deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield. Felling in the PBI areas will depend on the progress of regeneration. It is therefore most essential that critical survey of felled PBI areas is carried out annually so as to assess the progress of regeneration. It is observed and revealed that regeneration is not keeping pace with the felling. Further fellings should be discontinued or deferred till such time by which regeneration in the felled PBI areas gain momentum.

2.19 Yield relation to CAI: The annual increment percentage (CAI) is already given in para 8.3 of Part I. Base on these the yield is compared to the increment is given in table No. 2.15

Table 2.15

Species	Total Standing Volume (cum)	Increment %age	Annual Increment	Annual Yield	Prescribed Yield %age
Chil	334702	2.16	7230	2620 m³	36
Kail	3455.09	1.58	55	0 m³	0
Deodar	1863.47	1.74	32	0 m³	0
Total	340021	5.48	18633	2620 m³	36

2.20 Method of Executing the Felling

2.20.1 In PB-I Areas

The technique of regeneration marking is given in CCFs, Technical Order No. 2 of the Volume III and detail of marking rules are also contained in Punjab Forest leaflet No. 11 and must be carefully studied by the marking of officer. The detailed treatment map of forest indicating the type of marking carried out shall be prepared and posted in compartment history file. The marking must be aimed at obtaining the maximum natural regeneration. The following general principles are however laid down for guidance of marking officer:

- (i) In seeding fellings, the number of seed bearers retained will be 20-30 healthy, clean boled and vigorously growing trees of Chil per hac. in cooler aspect and more on warmer slopes and 30 to 40 trees per hac. in unfavorable locations particularly on the hot and dry exposed spruce in low elevation will be retained as seed bearers. These trees should invariably be II A to I A diameter classes uniformly spaced all over the areas. This number however will vary depending upon the steepness of the slopes, altitude aspect.

- (ii) Seed bearers should be as evenly distributed as possible. However, quality of seed bearers should not be compromised for the sake of spacing. The seed bearer should be of good quality trees with clean boles, healthy with vigorous growth and possessing well develop crowns.
- (iii) In conformity with the distance consideration as far as possible seed bearers shall be left on Spurs and ridges and not in depressions for better seed dispersal.
- (iv) No marking will be done on slopes exceeding 70%.
- (v) Compact group of healthy poles upto 40-60 cms. dbh and not less than 0.1 hac. in extent will be retained as advance growth/future crop. It must be clearly understood and remembered that the diameter fixed for retention applies to the diameter at the time of first marking ie seedling felling. Once a group is retained it shall not be opened up for regeneration in the subsequent years. Vigour and condition of pole crop must determine its retention rather than its extent.
- (vi) Marking in patches upto 5 hac. in extent of species other than Chil in this working circle shall be done according to the marking rules prescribed for Working Circle under which the species is being managed in this Working Circle.
- (vii) Before under taking any forest for seeding felling it should be ensured that the nursery stock is ready to replace the fellings immediately after the timber has been extracted from the forest. To achieve this objective nursery should be raised two to three years in advance in the vicinity of the area to be under taken for fellings. In case neither the nursery has been raised nor stock is available, no markings/fellings shall be done and the yield for the particular year should be considered as obtained.
- (viii) Regeneration survey will be carried out in all the felled areas and the success of regeneration will be revised every 5th year. In case the regeneration is not keeping pace with the felling, further fellings shall not be carried out.
- (ix) The secondary felling will be carried out keeping in view the progress of regeneration and when the seedlings have attained height of over two meters. The Number of trees retained during the seeding fellings shall reduce to 50% during secondary fellings.
- (x) The final fellings shall be carried out when average height of new crop exceeds three meters and the crop has been subjected to at least three control burnings.
- (xi) Groups of pole crop retained as part of future crop shall be thinned.
- (xii) Only selection-cum-improvement marking will be carried out in 10 m wide belt on either side of main roads for road protection.
- (xiii) In case of serious fires, heavy wind damage in PB-I areas under exploitations, marking should be revised.

- (xiv) All IV class and over trees of broad leaved species will be marked for felling to extend chil unless same are required to be retained for protection purpose.
- (xv) Marking should be carried out by an officer not below the rank of F.R. and at least 50% of the marking should be checked by a Class-I Gazetted officer.

2.20.2 In PB-II & PB-III Areas: No felling of any kind and magnitude will be done in PB-II and PB-III areas in order to safeguard future yield. However, salvage marking of dead, uprooted trees will be done to clear these forests from fire hazards and improvement of the crop. The yield removed from these PBs shall be counted for yields towards the yield of the Working Circles.

2.20.3 In PB-IV Areas: All overwood leaving 2-3 trees per hac. as fire insurance shall be removed in these areas where the regeneration has been fully established. These fellings will therefore conform more or less to final fellings. Beside this, the thinning in patches of advance growth are to be done. The following general principles are laid down for the guidance of marking officer:

- (i) No attempt should be made to obtain or induce regeneration. The marking should aim at freeing the established regeneration by removing the overwood. Thus, first and second class trees standing over the established regeneration will be marked.
- (ii) All solitary II and III class trees standing amongst young crop and which are likely to develop into wolf trees shall be marked.
- (iii) Thinnings in a group of poles and patches of advance growth retained shall be carried out wherever necessary.
- (iv) All marked trees likely to damage young crop under wealth should be lopped before felling.
- (v) Broad leaved trees should not be marked unnecessarily on the pretext of improvement fellings. These should, however be lopped where found suppressing the young crop.

2.20.4 Thinning: A thinning consists lessening the crowded condition of the crowns of the best trees in a canopy so as to favour their development. The main aim of thinning will be to assist the elite trees by providing them optimum growing space.

According to the British Commonwealth Forest Terminology Part-I Empire Forestry Association, London, 1953 thinning means “Thinning is a felling made in an immature stand for the purpose of improving the growth and form of the trees that remain without permanently breaking the canopy.”

Thinning is done to regulate the distribution of growing space for the purpose of improving the growth and form of tree that are left. The object of thinning is to distribute growth potential of site amongst the trees retained, increase the net yield of timber and money

from a stand, obtain earlier returns from capital invested in a stand, produce different smaller size of timber which can meet a different object of management, maintain hygienic conditions in the stand, obtain timber of the desired quality and mechanical strength, and to ensure decomposition of raw humus in temperate forests.

Thinning vary with the nature of the crop and the methods of thinning used in regular crops are different from that used in irregular crops. In present plan thinning will be carried out in accordance with the principles of thinning laid down in Punjab Forest Leaflet No. 1, 1A and book Principles and Practices of silviculture by L.S. Khanna. The crops to be thinned fall mainly in the categories discussed in the following paragraphs.

- i) Pure Deodar crops.
- ii) Pure Kail crops.
- iii) Mixed Deodar crops and Kail crops.
- iv) Deodar or Kail mixed with Spruce.

2.20.4.1 Thinning in pure *Deodar* crop:- Selective and increment thinnings as discussed above will be carried out in deodar crops. In young crops, spacing equal to four times the girth will be quite suitable. In crops beyond pole stage, C/D grade thinning will be carried out.

2.20.4.2 Thinning in pure *Kail* crop:- Kail crop suffers severely from snow damage if not properly thinned in its early stages. The thinning should be light in the early stages, so that the boles get cleaned. Light and frequent thinnings should, therefore, be the rule in early stages. After the boles have been cleaned of their side branches, the intensity of thinning should be increased and should be heavier than in case of deodar. In young pole crops, the thumb rule will be to have the spacing in feet equal to one and a half times the average diameter in inches. Beyond pole stage, D grade thinning should be carried out.

2.20.4.3 Thinning in Mixed Crops of *Kail* and *Deodar*:- Thinning in mixed crops require greater skill and will depend upon the type of mixture. Fore carrying out thinnings in usual types of Deodar-Kail mixtures met with in these forests, the following general principles are laid down:-

- i) In even-aged stands, where the mixture is by single trees of deodar and kail, the thinning will be carried out as in pure deodar crop favouring deodar over kail.
- ii) Where the mixture is by groups, each group will be thinned in the same way as pure stands of that crop. Along the periphery of these groups where kail and deodar grow mixed, thinning will be done as in deodar crop favouring deodar over kail.
- iii) Isolated kail trees, standing over compact groups of promising saplings or poles of deodar, will be removed and deodar will be encouraged to fill up the gaps created by

felling of kail. But where deodar poles or saplings are already suppressed and are not likely to respond to the opening, kail trees should not be marked to free such suppressed deodar.

2.20.4.4 Thinning in Mixed Crops of Deodar or Kail with Spruce:- In deodar-spruce mixed crops, thinning will be carried out to favour deodar and to suit its silvicultural requirements. Spruce will be treated in the same way as kail in deodar-kail mixture. In mixed crop of kail and spruce, thinning will be carried out strictly in accordance with the silvicultural requirement of the crop, treating kail and spruce alike and removing inferior trees of either species for the benefit of better individuals.

2.20.4.5 Necessity

- i) Thinnings are made not only to increase increment but also as a measure of fire protection; woods which are well thinned at an early date and which are free from an excess of suppressed and inflammable material are much less subject to fire damage than unthinned crops.
- ii) In areas under concentrated regeneration (i.e. PB I and the youngest PB under the shelter wood system) early and repeated thinning are so important for the optimum development of the crop that periodical thinning must be carried out even though the disposal of the cut material involves expenditure of considerable sums of money. Thinning promotes not only diameter but height increment also.
- iii) The frequency of thinning can not be rigidly prescribed as it depends upon the species; kail closes up in shorter time than deodar and thus requires shorter thinning interval. The aim should be to prevent crowding rather than to await it and then thin the crop.
- iv) Crown thinning can be carried out in PB II areas to ensure optimum space for the crowns of elite trees by removing their competitors and also the dominated trees which press the crowns of the elites strongly upwards and restrict their growth.

2.21 Table of felling: The following tabular statement gives the order of fellings in PB-I and PB-IV areas:-

Table 2.16

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	5	6	7
2013-14	-	-	-	-	-	-
2014-15	Nankhari	Bhadral (DPF)	29 a	40.50	P.B.I	Seedling felling
2015-16	Bahli	Kandreri (DPF)	61	69.66	P.B.I	-do-
2016-17	Bahli	Kateri (DPF)	105	29.97	P.B.I	Seedling felling
2017-18	Rampur	Kareri (DPF)	99	56.29	P.B.I	Seedling felling
2018-19	Rampur	Darshal (DPF)	101	77.76	P.B.I	Seedling felling
2019-20	Bahli	Khanotu (NDPF)	17	40.1297	P.B.I	Seedling felling

1	2	3	4	5	6	7
2020-21	Rampur	Tauni	110 a	68.44	P.B.I	Seedling felling
2021-22	Rampur	Barauni Lower	111 b	132.84	P.B.I	Seedling felling
2022-23	Bahli	Kuban	108	42.52	P.B.I	Seedling felling
2023-24	Rampur	Jogni Upper (DPF)	44	45.5751	P.B.I	Seedling felling
2024-25	Bahli	Mandli (NDPF)	23	35.3032	P.B.I	Seedling felling
2025-26	Rampur	Brauni (NDPF)	30	59.713	P.B.I	Seedling felling
2026-27	Bahli	Khanoutu	106	60.75	P.B.IV	Final felling
2027-28	Rampur	Jogni Lower (NDPF)	45	42.1317	P.B.IV	Final felling

2.22 Subsidiary Silvicultural Operations, Cleaning and Thinning: Following subsidiary silvicultural operations are prescribed:-

(I) Subsidiary Silvicultural Operations in PB-I

The following subsidiary operations will be carried out soon after the fellings in this Periodic block.

- (a) Removal of unfit and inferior stems of different species left in exploitation areas will be removed as fuel wood.
- (b) Felling refuse will be disposed off in accordance with the instructions laid down in Punjab Forest leaflet No. 6.
- (c) Bushes and weeds competing with the regeneration will be cleared off from the regeneration area.
- (d) All debris lying on ground shall be cleared to provide a clean bed for new crop to come up and also to reduce the fire hazards.
- (e) The villagers should be encouraged to collect the left out material from the sold lot, so as to reduce the cost.
- (f) Unfit refuse should be burnt under control which will provide a clean bed and also act as stimulant to boost up regeneration.
- (g) These operations shall be carried out in winter only and in the presence of Range Officer to avoid accidental fires.

2.22.1 Artificial Regeneration: No doubt the judicious manipulations of canopy will induce natural regeneration provided the closure is effective. The natural reproduction, however, depends upon good seed year which may not synchronize with the year of fellings. Thus, if only natural regeneration is relied upon, there is a danger of the area being invaded by weeds and bushes. In view of these impediments, artificial sowing and planting will be taken up immediately after fellings. It will also assist the regeneration in those areas. The artificial regeneration will also be carried out in areas which are partially stocked or are blank and in PB-IV areas. For artificial regeneration the following points should be kept in mind:

- (i) The Chil seedling should be raised in polythene bags. They should be at least nine month old at the time of planting and plants should be at least 20 cms in height and possess good vigour. Planting should be done with the onset of monsoons. In areas located above 1500 m elevations, winter planting may also be carried out but it should be done to the minimum extent as it has been observed in the field that the monkey damage is more severe during winter planting.
- (ii) Collection of seeds and raising of seedling in the nurseries should be scientifically or carefully done as success depends on the state of plants, planted in the field.
- (iii) The seeds should be soaked in cold water at least 24 hours before sowing it in the nurseries.
- (iv) Before planting and sowing the area should be closed to grazing by fencing.
- (v) The adoption of the proper technique and the time bound program for planting is a must.

The closed area should be well protected and to ensure regeneration of PB-I areas.

2.22.2 Planting Programme: The planting program has been given in the plantation (overlapping) Working Circle.

2.22.3 Bush cutting/weeding: Bush cutting is carried out lightly so as to afford seed bed as well as protection against drought to the young seedlings. Weeding is an essential and most important activity that young regeneration should be properly weeded by freeing it from thick grasses and over head shade of bushes. The cut material should be disposed off by using it in interlacing of barbed wire fencing or by burring it safely outside the plantation area to reduce fire hazards.

2.22.4 Cleaning: It should be carried out in the early stages of plantations and should be continued till the area is suitable for thinnings, so as to produce healthy stems and minimize fire hazards. The cut material should be collected in open place or nalas and burnt unless required by the right holders.

2.23 Resin Tapping: Till 1984 the resin tapping was being done by French cup and lip method. By this method serious loss of timber was observed partly due to the inherent hacking action involved in the use of freshening tools i.e. adze which makes it difficult to control the depth of the blaze and partly due to carelessness on the part of tapper in use of the tools. Strong wind and forest fire caused serious damage/loss to the trees tapped by this method. The butt end log of 6 feet length of the trees used to yield no timber. FRI and college of Dehradun developed a modern method of resin tapping called Rill Method which was introduced in H.P. in the year 1984 when about 21000 resin blazes were tapped under this method in district Kangra. Encouraged by the results more and more number blazes were

brought under this method and finally in 1991 complete Switching over to this method was done.

The resin tapping works in Himachal Pradesh were handed over by the HP Forest Department to HP State Forest Corporation Ltd. during 1975-76 vide H.P. Govt. Notification No. 10-26/72 Ft. dated 30-5-1975.

2.23.1 Factor affecting the Resin Tapping: The factors affecting the resin yield are the Temperature, Rainfall and Humidity. A positive effect of air temperature and Soil temperature or both on resin yield has been observed in different species and of this soil temperature has more significant effect. Both soil temperature and air temperature affect the sapwood temperature of the pine trees and lowering the temperature near tree. Resin yield is influenced by fluctuations of temperature, the optimum yield being obtained at 26.7⁰C and above, below a critical temperature of 25.6⁰C, the yield decreases significantly. Elevation and aspect also influence the temperature and hence play a vital role in the yield of Resin from any locality. Resin yield is maximum during the month of May-June when the temperature is maximum. Resin Blazes on the Southern side of the tree give better yield than those away from the Sun, Due to rise in humidity, the resin yield decreases from August to mid September and again increased from mid September to mid November.

2.23.2 Methodology of Resin Tapping: The method of resin tapping in vogue is the Rill method which will continue till further orders of the competent authority. The specification in the Rill method is as under:-

2.23.3 Preparatory step for Resin Tapping

2.23.3.1 Trappable Diameter: In view of the health of tree and yield of resin thereof the trappable diameter for resin tapping was revised from time to time. Investigation revealed that the yield of resin decreases as the diameter decreases and mortality of the trees increases. According to the latest directions of Pr CCF HP the trappable diameter for Rill method is 35 cm for new trees and 30cm for that tree which were under tapping as per old directions. According to the normal practice of resin tapping by Rill method, the minimum size of trees for tapping is 30 cm in diameter in case of trees already under tapping and 35 cm for new crop. Investigation revealed that the yield of resin decreases as the diameter decreases and mortality of the trees increases. It was predicted that highest yield of resin could be obtained from trees of 45.4 cm diameter.

2.23.3.2 Enumeration

As per Resin Tapping Manual under Section-II titled “Enumerations” the practice of enumerating tapping areas after four years should be continued till the revised instructions/directions are issued by the Pr.C.C.F H.P. During the time of such enumeration

new crop, which has attained tappable diameter should be included for tapping. The trees for enumeration are selected as under:-

- i) Large scale Chil plantations have been raised in the past. Some of these plantations have attained tappable diameter and some are becoming fit for tapping year after year. At the time of enumerations such plantations should be gone over and should be included for tapping, if the trees have attained tappable diameter.
- ii) Chil trees, which have been tapped. 70% or more of the girth at breast height will not be allowed to have fresh channels. Such trees can however be tapped in height. Chil blazes in large number (say one section) shall be discontinued only after a joint inspection by ACF and SDM concerned or as per directions of Pr. CCF (HP).
- iii) The trees which have no space for tapping vertically or laterally should be deleted. Health of trees should overweigh the revenue earning consideration as contained in Himachal Pradesh technical order Vol IV by Sh. M.P. Gupta, IFS Himachal Pradesh. The joint inspection as given in Resin Tapping Manual is mandatory if the crop needs rest or tree are to be deleted and the same is to be got approved from the CCF Rampur Forest Circle after the joint inspection is done by concerned AM of HPSFC and RO of Forest Department in case the SDM or ACF is not posted.
- iv) Area having very scattered tappable trees (less than 8 trees per hac.) should normally not be taken up for tapping.
- v) As trees marked for felling are ordinarily to be tapped to death, the marking of such trees should be done as far as possible before the resin enumeration is carried out.
- vi) **Number of Blazes per tree:-** There will be one blaze per tree (enumerated for resin tapping) in the light continuous tapping for heavy tapping the idea is to put as many blazes as possible leaving at breast height at least 7.5 cm of un tapped bark between two channels.
- vii) **Punch marking:** -Every tree enumerated for tapping shall be serially numbered and the number of blazes indicated like 567/2001. The upper figure showing the serial number of tree/blaze and the lower figure showing the year of enumeration. The unit of Enumeration will be the compartment (or sub compartment where it exists.). For marking these numbers the bark is smoothened on the north side of the tree at about 1.5 mts. from the ground and the number are punched with 3 cm figure punches.
- viii) **Tools:** The list of tools required for resin with its specification is listed under the Himachal Pradesh Forest Manual technical order Vol IV by MP Gupta, IFS, CCF. The field functionaries should be well acquainted with the specification of these tools so that the tapping by Rill method is done as per its methodology.

2.23.3.3 Time of Enumeration

Re-enumeration work when done must be taken in hand immediately after tapping season is over viz by 15th of November and completed by the 31st December. When the enumeration is done in a forest for the first time, this work can be taken in hand earlier and finished by 1st of December. One forest Guard with three labourers can enumerate 400 trees a day. For enumeration of blazes to be tapped under heavy tapping, marking of trees must be completed during the summer.

2.24 Method of Resin Tapping

i) Cup and lip method

French cup and lip method was used for resin tapping of pine trees in India since inspection. In this method the surface where channel/blaze is to be cut is made smooth by scrapping the dead bark over a width of 15 cm and to a height of 5 cm over that part of tree which will be lapped during the year leaving 6 mm hunches of bark. The position of the channel is then marked. The total length of the channel to be tapped in one season is 48 cm (including 10 cm length of the channel from the ground used for hanging the cup at the beginning and 38 cm in subsequent years. A maximum depth 2.5 cm is recommended but the tapper makes much deeper blazes with the hope of getting more resin. Till 1991 this method was used for tapping on Govt. and private land. This method has been replaced by Rill Method on Govt. Lands and private land.

ii) Rill method

In India Rill method was introduced by FRI in 1976. In HP Rill method of resin tapping was introduced on an experimental scale in 1984, when 21000 blazes were tapped under this method in District Kangra and was gradually extended to other areas. Finally in 1991, HP State Frost Corporation switched over to Rill method of tapping in the entire state. The specification in the Rill method is as under:-

i) Bark shaving: -

Shaving bark= 45x 30 cm

Bark to be left in the shaved area= 2 mm

ii) Marking with Blaze frame and centre grove marking:-

Distance from ground level= 15 cm

Length = 38 cm Width = 20 cm

iii) Centre grove cutting

Depth= 4mm

Width= 7-9 mm

- iv) **Fixing the lip and resin pot** Lip should be fixed with the help of two bullock shoes nails Pot= 2 cm below the midpoint of the lip
- v) **Size of Rills**
Average width of rills = 6 to 7 mm
Depth of rill = 2 mm
Number of rills in a season = 32
Distance between two channels = 7.5 cm
Width of bark between rills = 5mm
- vi) **Angle of Rill** = Angle of Rill with the Central groove – 40 degrees.
- vii) **Freshening of Rill:-** Freshening of rill is done with the help of acid i.e. Nitric acid (spl gravity 425) 35 Ltr. Suphuric acid (sp gravity 1.840) 2.5 Ltr.
- viii) **Spacing between the Channel:** = 7.5 cm
- ix) **Maximum height to which a tree should be tapped:** about 2.10 m for five year. New channel should be started on 6th year.
- 9 Resin Collection.** In the collection of Resin from resin blazes, the pot should be removing from the tree and the resin should be poured into the collection Balti.
- 10 Resetting of crop.** During summer season the Chil area catch fire and the blazes are burnt. In such areas resetting of crop becomes necessary. Beside this the damage bill can also be raised against HPSFDC for unlawful activities after required joint inspection. The resin tapping in burnt blaze is stopped and new blaze is made. The new blaze is tapped at height in such a way that length tapped does not exceed 38 cm. Next year the old blaze is continued for tapping.
- 11 Time Schedule for Resin Tapping is tabulated in table No. 2.17.**

Table 2.17

Time Schedule for Resin Tapping		
Sr. No.	Component	Time Schedule
1	2	3
1.	Enumeration	16 th November to 31 st December
2.	Deletion of resin blazes/Forest kept on rest or handing over lots to HPSFC	Before 15 th March
3.	Crop setting	15 th February to 15 th March.
4.	Tapping season.	15 th March to 15 th November.

1	2	3
5.	Final scraping of resin	1 st Nov. to 15 Nov. in colder area 16 Nov to 30 th Nov. in warmer areas
6.	Preparation of damage bills Joint inspection	End of December

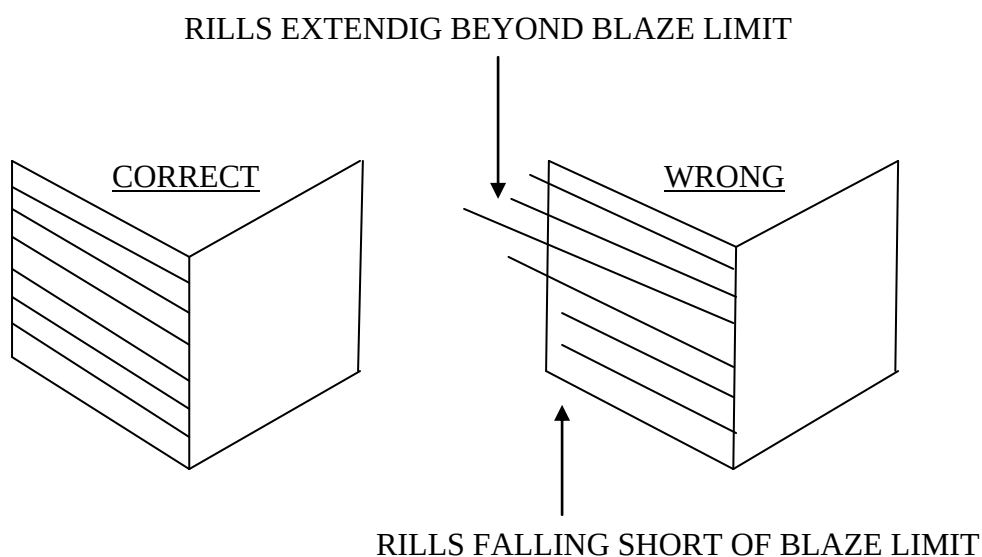


Figure 1 (a) showing rills extending beyond and falling short of blaze frame.

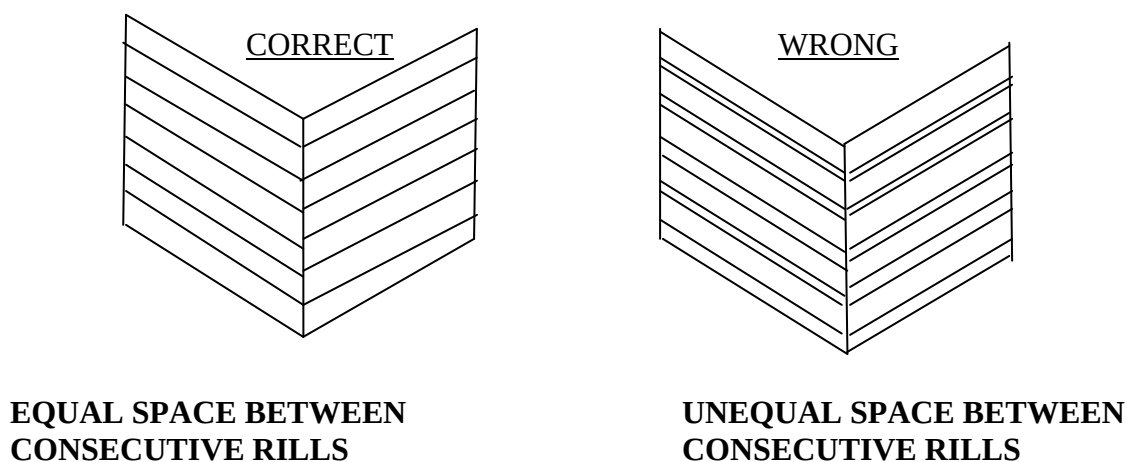


Figure 1 (b) showing equal and unequal space between the consecutive rills.

2.24.1 Do and don't

- i) The approved Resin Manual and directions issued by the Pr CCF HP from time to time thereof is to be followed strictly.
- ii) Time schedule for the process of resin tapping should be followed.
- iii) The Rill methods require skilled labour and appropriate tools listed in the approved manual which should be ensured by the field functionaries.

- iv) The specification of stimulant and its application during resin tapping should be strictly followed. It should be known by the labour that the acid mixture does not help in manufacturing the resin in any way but it is used to open the ducts of the resin. The over dose of the acid can harm the health of the tree.
- v) Health of trees should overweigh the revenue earning consideration.
- vi) Specific protective and preventing measures should be made against fire for resin tapping areas.
- vii) The operation of resin tapping and record maintained thereof should be monitored by the field functionaries regularly taking appropriate action for violation if any.
- viii) The healing process of the tapped blazes should also be monitored by field functionaries during the inspection of the resin tapping area.

2.24.2 Crop setting

Crop setting must be completed between 15 February and 15 March every year. Freshening is repeated at weekly interval. In the collection of Resin from resin from resin blazes, the pot should be removed from the trees and the resin should be poured into the collection Balti. The complete method of tapping has been explained in H.P. Forest Manual Vol. IV at Page No. 68 to 81.

The HPSFDC has now adopted rill method for the extraction of resin form the Chil trees. The old method of cup and lip has caused heavy damage to the Chil trees. The pace of healing and occlusion is very slow. The forests, from which the resin was extracted through cup and lip method forest, should be given rest for a period of five year for recovering and healing. The yield of resin is fixed 35 qlt per thousand blazes so that there is no over exploitation of Chil trees and to avoid their drying up. At present rill method of resin tapping is being followed. The standards of tapping as developed by FRI are not being maintained in the field. The notable deviations are as under:-

- (i) The length and width of blazes is often more than 38 cm and 20cm, respectively.
- (ii) The depth of rills is more than prescribed 2mm.
- (iii) The distance between two rills is not always as per standards and quite often the rills inter-mingle with each other because the labour does not use the guide with the knife.
- (iv) The proportion of nitric and sulphuric acid in the solution to be applied to the rills is not as per guidelines. The amount of sulphuric acid is kept more than required and excessive quantity of acid solution is applied in order to extract more resin.
- (v) The minimal distance between two parallel resin blazes is not being maintained at 3 inch. In some trees no distance has been left between two blazes. The trees are being practically girdled and no cambium is left for healing up in future.

The above defects in the resin tapping are causing immense damage to the chil trees. The first three defects are exposing more than required surface area of trees. This leads to increase in fire hazards. The excessive application of acid solution and more proportion of sulphuric acid causes drying of the Chil trees, sometimes as early as after 3-4 years of starting resin tapping. The last defect caused long term damage to the Chil trees. In the absence of any healing distance between two blazes there is little healing if after several years of tapping.

The field staff should be made conversant with the standards of Rill method. They should be asked to report the defective tapping as soon as it is detected in the field. They should also raise damage bills immediately and should not wait till the end of tapping season.

2.25 Other Regulations

2.25.1 Fire Protection: The Chil forests are vulnerable to risk of fire. The whole Working Circle will be under strict vigil against fire hazard by adopting various means like control burning, cleaning of fire line, construction of contour path and inspection path and by employing fire watchers especially during fire seasons. Most of the damage from fires occurs during pre-monsoon summer months of April to June when lot of inflammable material is present on the forest floor. Incendiary forest fires are very common and as such the forests are required to be strictly protected from these. The forests floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds, needles and grass. The fire lines, inspection paths and bridle paths should be kept clean of needles especially during summer season. Fire watcher should be employed during dry month's relations with the local protection of the forest from fire. Besides this maintaining cordial relations with the local people and educating them properly with regard and to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the Constitution of India read with Section 79 of the Indian Forest Act, 1927.

The detail description is given in the Forest Protection (overlapping) Working Circle under Chapter No. IX. However, the following fire protection measures are prescribed:-

a) Direct Measures

- i) Maintenance of existing fire lines:** All existing fire lines should be maintained by control burning and bush cutting during winters.
- ii) Cleaning of roads and paths:** All roads and paths criss- crossing forests should be kept swept clean so that there is no inflammable material. Labour be engaged under MGNREGA scheme.
- iii) Timely completion of forest extraction operations:** Extraction operations in all govt. and private forest must be completed within the contractual period.

- iv) **Control burning along roads and paths:** A belt of 1.5 m width on up hill side and 3 m width on the down hill side of every road should be control burnt annually during winter.
- v) **Application of IFA 1927:** Provision of Section 33 of IFA- 1927 concerning right holders in case of fires should be applied strictly. Habitual and mischievous offenders should, however, be dealt with under Section 435 of IPC or under the provision of Prevention of Damage to Public Property Act, 1984.
- vi) **Salvage operations:** The salvage removals should be carried out timely and regularly to exclude fire hazards.
- vii) **Disposal of felling refuse:** Immediately on close of felling operations, felling refuse should be collected and control burnt at safe points inside or out side the operations areas so that fire hazards are eliminated.
- viii) **Publicity:** Sign boards carrying educative slogans and warnings should be displayed at conspicuous points all over for information of the general masses.
- ix) **Maintenance of fire record:** All fires should be properly documented. A detailed fire report in prescribed proforma along with location map in respect of every fire should be submitted by R.Os to DFO within a week. A fire cases register should be maintained by R.Os. The methodology for assessment of fire loss developed by CCF Forest Protection, Bilaspur should be followed strictly.
- b) **Indirect Measures:** With the object of preventing fires by winning the goodwill of right holders and general public living in the vicinity of forests, should meet their reasonable demands for fuel, grazing and grass cutting etc.

2.25.2 Right Holder Requirements: Demand of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and rest of the demand of right holders will be met from the forest as per the provision of Forest Settlement Report, 1921 subject to silvicultural principles. No trees should be marked from PB-I area after the marking of seedling fellings have been done till the regeneration is fully established. All the trees marked to meet out the demand of the right holders shall count towards the prescribed yield.

2.25.3 Closures: All PB-I areas should be closed immediately after felling work is over. The duration will be about 15-20 years or till such lesser period when plants attain the height of more than 3 mts., Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927 well in time.

2.25.4 Grazing and grass cutting: The grass cutting will be prohibited in all the PB-I areas after the commencement of regeneration operations till the young crop is beyond the damage

i.e. 75 cms and above. The grass cutting shall be allowed under strict supervision in order to avoid damage to the young seedlings. Grazing shall be strictly prohibited in the regeneration areas during the closure period as notified under Section 30 (b) of the Indian forest Act, 1927.

2.25.5 Demarcation of Forests: Pucca Masonary boundary pillars/construction of boundary pillars as per latest instructions issued by Pr.C.C.F. H.P. vide letter No. Fts. Engg.(design) 98/Vol-III dated 19-10-2012 shall be put along the boundary of demarcated and undemarcated protected forest indicating the straight line distance between two conjunctive pillars and noting forward and backward bearings at each boundary pillar. The boundary pillar numbers will be engraved on the pillars when cement plastering is fresh. After white washing the number will be painting black.

2.25.6 Regeneration Survey: The regeneration survey of felled PB-I areas shall be carried out as per para No. 32-33 of the National working plan code every III year to assess the progress of regeneration, as the progress of regeneration is directly linked with felling.

CHAPTER III

THE DEODAR-KAIL WORKING CIRCLE

3.1 General Constitution: This Working Circle includes all the demarcated and undemarcated protected forests having Deodar and Kail as principle species or the crop having 60% or more of these species as its component in a compartment situated on comparatively easier/moderate to steep slopes. This Working Circle covers an area of **10589.2502 hac.**

3.2 General Character of Vegetation: The detailed description of the forests are given and described in the Chapter II Part- I. The forest of this Working Circle falls under type Group 12 (Himalayan Moist Temperate Forest) and sub type 9/c_{1b} of the forest types given by *Champion and Seth*. The overall condition of the crop varies from young to middle and few mature trees. The natural regeneration in these forests especially of kail is very good, compared to deodar except in the areas where the incidence of grazing is very high. The small scattered patches of other species like Spruce, Chil, Broad leaved and in rare cases Fir species interrupts the purity of the vegetation and it is not practicable to isolate them in each and every compartment, even though effort have been made to do so. Ever since the introduction of scientific management in these forests Deodar has been the prized species. In some areas fire has created blanks. Selective and indiscriminate fellings by right holders has also caused extensive damage to these forests. Infections of blue pine trees near habitations with *Tremetes pinii fungus* and an angiosperm parasite *Arceuthobium minutissimum* are very common.

The crop is generally uneven aged except for those forests which have been successfully regenerated over the past under various Working Plans. The crops are fairly stocked except on a steep ground and habitation where unsilvicultural marking have created large gaps due to heavy pressure of TD marking. The Deodar forest in the track conform II/III of the FRI quality classes.

3.3 Special objects of Management: Without prejudice to general objects of managements of the forests, the special objects of managements of this Working Circle are:

- (i) To progressively convert the irregular/uneven aged stock into more or less even aged/normal stock and thus to build up growing stock to the extend possible under the prevailing conditions.
- (ii) To improve the existing condition of crop with selective and specific treatments.
- (iii) To regenerate the PB-I areas as speedily as possible by resorting to artificial regeneration wherever necessary.

(iv) To obtain the maximum possible sustained yield of timber without further denuding/worsening the condition of vegetation.

(v) To protect the forests from fires as well as biotic interferences.

3.4 Area Statement: The total area of this Working Circle **10589.2502hac.** which works out to be **26.86%** of the total area of the division. The range wise distribution of these forests is given in table No. 3.1.

Table 3.1

Name of Range	DPF	UPF	Total in hac.
Nankhari	2604.4600	530.9300	3135.3900
Bahli	1106.8681	265.6700	1372.5381
Rampur	2152.1507	0	2152.1507
Sarahan	3758.2614	170.9100	3929.1714
Total	9621.7402	967.5100	10589.2502

The forest wise detail of specific allotment is given in *Appendix No.-IV.*

3.5 Block and Compartment: The compartments and sub compartments remains unchanged from the Kapoor's Working Plan under revision. The compartments and sub compartments have been numbered systematically both for DPFs and listed UPFs which was necessitated due to creation of new DPFs and revision of the present plan.

3.6 Felling Series: There will be one felling series i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Rampur forest Division.

3.7 Analysis and Valuation of the Crop: Except for the converted crop during the period of previous plans (before the ban on green felling) the crop is irregular having all the age classes in the same areas. The converted crop, however, is generally well stocked having more or less represented almost generally in mixtures and some times as pure crops of Deodar and Kail separately. Spruce and Fir are found in the higher reaches of the compartment bearing Deodar and Kail. Chil is also found mixed with Kail and Deodar in the lower extremities of the compartments of this Working Circle. The broad leaved species are confined to depressions and along nallas.

(i) Stock Maps: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

(ii) Density: The crown density of each compartment has been estimated ocularly and has been recorded in respective compartment history files. The average density of the crop varies from 0.4 to 0.6

(iii) Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub compartment has been indicated in the compartment history files.

(iv) Age Classes: The crop is very irregular. All age classes are represented and the crop is seldom uniform over large areas.

(v) Enumerations: As given in the Chapter VIII under paragraph 8.8 complete enumerations of random sample compartments has been done by sampling 10% of PB-I & PB-IV areas and 5% of PB-II & PB-III areas. The results have been analyzed statistically. The results of enumerations are given in *Appendix No-IX*. The growing stock has been assessed by random sampling and is given in *Appendix No-XIII*.

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Table- 3.2
Species wise No. and Volume in cubic mts. (Estimated growing stock) for Deo/Kail Working Circle

P.B.-I Area= 2590.1439 hac.

Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	17496	24409	13119	11590	7096	4494	2569	1157	445	295	82669
	Volume in m3	3114.29	11862.6633	13630.878	21139.899	20259.8927	18540.478	14485.964	8548.4648	4175.0179	3424.4245	119181.97
2	Kail	96551	66764	43657	36755	19087	13264	9260	5450	2564	1529	294880
	Volume in m3	14675.70	28241.18	42084.97	65240.08	54492.13	55774.38	53928.20	42036.81	25309.67	18812.80	400595.91
3	Chil	44	0	0	17	11	17	0	0	0	0	89
	Volume in m3	3.96	0.00	0.00	24.66	27.47	63.22	0.00	0.00	0.00	0.00	119.31
4	Spruce	59996	38295	27278	26055	11023	9399	7886	5261	2681	2797	190671
	Volume in m3	8159.44	16428.76	28369.57	51302.16	35459.70	44963.31	52591.71	46675.93	30542.43	39817.62	354310.62
5	Fir	712	273	1791	1335	1235	1296	706	706	122	256	8431
	Volume in m3	96.81	116.91	1862.39	2628.07	3971.77	6199.08	4710.26	6266.22	1394.05	3641.37	30886.93
6	Ban	15310	16740	14448	14693	5072	5667	3520	2586	1073	339	79449
	Volume in m3	2051.59	5239.52	9492.59	17646.40	10012.03	16978.38	15084.64	15146.37	8289.41	3356.46	103297.41
7	Mohru	2909	2770	990	345	122	44	44	6	11	22	7263
	Volume in m3	389.75	830.87	989.92	620.65	367.05	204.66	280.29	44.49	106.78	271.39	4105.85
8	Walnut	89	156	378	495	184	228	161	100	39	50	1880
	Volume in m3	7.03	31.14	302.54	742.44	458.81	866.46	822.52	720.75	346.47	565.59	4863.76
9	Mapple	6	6	6	6	6	0	0	0	0	0	28
	Volume in m3	0.65	1.11	3.89	7.23	11.68	0.00	0.00	0.00	0.00	0.00	24.56
10	Taxus	2686	2597	918	545	423	395	417	56	28	11	8075
	Volume in m3	279.36	607.73	428.53	447.46	553.69	767.99	1140.36	204.94	133.56	67.78	4631.39
11	Brass	701	601	267	56	6	0	0	0	0	0	1629
	Volume in m3	65.87	176.58	189.00	74.30	12.11	0.00	0.00	0.00	0.00	0.00	517.86
12	Kunish	145	267	150	17	11	0	11	0	0	0	601
	Volume in m3	13.59	78.48	106.31	22.29	24.21	0.00	50.05	0.00	0.00	0.00	294.94
13	Tooni	0	0	0	6	0	0	0	0	0	0	6
	Volume in m3	0.00	0.00	0.00	7.43	0.00	0.00	0.00	0.00	0.00	0.00	7.43

1	2	3	4	5	6	7	8	9	10	11	12	13
14	Kainth	6	6	0	0	0	0	0	0	0	0	11
	Volume in m3	0.52	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
15	Khanor	33	44	72	117	273	261	261	311	195	61	1629
	Volume in m3	3.14	13.08	51.19	156.03	593.25	844.79	1176.23	1863.01	1494.50	586.48	6781.69
16	Jamun	200	506	439	139	56	11	6	6	0	0	1363
	Volume in m3	18.82	148.79	311.06	185.75	121.07	35.95	25.03	33.27	0.00	0.00	879.73
17	Poplar	150	217	178	33	6	11	11	11	0	0	617
	Volume in m3	14.11	63.77	126.00	44.58	12.11	35.95	50.05	66.54	0.00	0.00	413.10
18	Other B.L. Species	25232	25143	19359	13180	4955	2853	2736	1852	1157	634	97101
	Volume in m3	2371.79	7392.00	13706.22	17609.02	10787.39	9220.81	12312.83	11078.25	8881.61	6078.10	99438.03
Total trees		222265	178792	123050	105382	49563	37940	27590	17502	8314	5995	776392
Total Volume m3		31266.42	71234.22	111655.04	177898.44	137164.36	154495.45	156658.14	132685.03	80673.50	76622.03	1130352.65
P.B.-II Area= 2661.4552 hac.												
1	Deodar	52777	28463	38347	26329	28892	22095	12286	9273	665	300	219426
	Volume in m3	9394.25	13832.90	39842.53	48024.80	82485.44	91163.21	69266.32	68528.77	6237.23	3487.40	432262.86
2	Kail	93525	60646	51051	78624	53656	30049	33158	18600	20154	5703	445166
	Volume in m3	14215.81	25653.05	49212.89	139557.02	153187.24	126357.64	193113.97	143461.45	198964.41	70155.94	1113879.42
3	Spruce	10163	16145	12682	23971	13733	3838	1705	161	750	482	83630
	Volume in m3	1382.16	6926.19	13189.57	47198.69	44178.67	18360.59	11367.64	1426.68	8550.40	6866.76	159447.35
4	Chil	804	225	107	139	0	0	11	11	11	0	1308
	Volume in m3	71.56	73.84	83.08	205.98	0.00	0.00	58.60	80.74	107.34	0.00	681.14
5	Mohru	1801	4009	4320	2166	2434	75	32	0	0	0	14837
	Volume in m3	241.34	1202.83	4320.34	3897.95	7300.62	345.20	202.62	0.00	0.00	0.00	17510.89
6	Ban	8898	11139	9005	13797	5800	10324	12607	7858	9305	4621	93354
	Volume in m3	1192.33	3486.36	5916.39	16570.44	11448.72	30930.04	54021.99	46024.77	71865.12	45715.30	287171.456
7	Other B.L. Species	4395	3195	4846	3120	2980	3731	1211	322	332	161	24293
	Volume in m3	413.17	939.24	3430.71	4167.85	6488.07	12057.66	5451.34	1923.89	2551.66	1541.65	38965.2329
Total trees		172363	123821	120358	148146	107494	70112	61010	36224	31218	11267	882013
Total Volume in m3		26910.62	52114.41	115995.50	259622.72	305088.75	279214.34	333482.47	261446.29	288276.18	127767.06	2049918.35

P.B.-III Area= 2820.5258 hac.												
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	111171	107777	42263	30620	13261	7826	4432	915	176	88	318529
	Volume in m3	19788.494	52379.575	43911.297	55850.948	37860.331	32292.092	24988.061	6758.569	1650.422	1021.665	276501.454
2	Kail	26663	17025	24429	16972	5505	1812	704	1372	1530	299	96310
	Volume in m3	4052.75	7201.50	23549.75	30125.39	15716.56	7617.46	4097.21	10580.96	15105.37	3677.87	121724.80
3	Spruce	422	598	668	0	492	158	106	18	0	0	2462
	Volume in m3	57.41	256.53	695.06	0.00	1584.22	757.25	703.75	156.04	0.00	0.00	4210.264
4	Ban	440	616	2726	809	440	176	0	0	0	0	5206
	Volume in m3	58.92	192.67	1791.03	971.65	867.95	526.92	0.00	0.00	0.00	0.00	4409.14
5	Other B.L. Species	211	475	827	633	0	0	0	0	0	0	2146
	Volume in m3	19.839	139.610	585.245	845.894	0.000	0.000	0.000	0.000	0.000	0.000	1590.589
Total trees		138907	126490	70913	49034	19698	9972	5241	2304	1706	387	424653
Total Volume in m3		23977.406	60169.886	70532.386	87793.874	56029.058	41193.729	29789.023	17495.561	16755.791	4699.534	408436.25
P.B.-IV Area= 2517.1253 hac.												
1	Deodar	136960	149920	51898	43492	15439	4660	2348	889	224	15	405845
	Volume in m3	24378.97	72860.94	53921.61	79329.30	44078.86	19228.04	13237.43	6572.32	2098.35	177.13	315882.95
2	Kail	83930	64567	31920	13091	11313	9224	5976	2765	1398	198	224381
	Volume in m3	12757.30	27311.88	30771.05	23237.04	32297.42	38786.37	34806.89	21323.51	13796.67	2438.04	237526.16
3	Spruce	33485	19078	11394	11846	3242	2699	1560	1149	910	0	85363
	Volume in m3	4554.02	8184.42	11849.65	23325.15	10430.57	12909.88	10404.84	10189.82	10364.92	0.00	102213.28
4	Fir	5	10	46	30	51	25	0	5	0	0	173
	Volume in m3	0.69	4.36	47.57	60.04	163.49	121.56	0.00	45.09	0.00	0.00	442.80
5	Chil	0	650	4543	5600	2561	1616	915	269	203	0	16359
	Volume in m3	0.00	213.36	3521.08	8277.37	6326.51	6123.34	5000.10	2028.45	2035.45	0.00	33525.66
6	Ban	1758	2195	6225	1204	1575	1016	767	356	910	915	16923
	Volume in m3	235.62	687.17	4090.14	1446.53	3109.89	3045.15	3288.25	2083.58	7025.47	9050.67	34062.47
7	Birdcherry	0	0	0	5	10	5	0	0	0	0	20
	Volume in m3	0.00	0.00	0.00	7.11	22.36	16.26	0.00	0.00	0.00	0.00	45.74
8	Walnut	5	0	5	0	5	5	0	0	0	0	20
	Volume in m3	0.40	0.00	4.07	0.00	12.71	19.31	0.00	0.00	0.00	0.00	36.48
9	Other B.L. Species	8411	3949	1499	10	0	0	0	0	0	0	13869
	Volume in m3	790.61	1160.93	1061.43	13.58	0.00	0.00	0.00	0.00	0.00	0.00	3026.55
Total Trees =		264555	240369	107530	75280	34197	19251	11567	5433	3644	1128	762954
Total volume =		42717.61	110423.06	105266.59	135696.13	96441.81	80249.91	66737.50	42242.77	35320.86	11665.85	726762.10

Table- 3.3
Yield Calculation Table Growing Stock in PB-I & PB-IV

Species wise No. and Volume in cubic mts.(Estimated growing stock) for Deo/Kail WC P.B.-I & P.B. IV												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	154456	174328	65017	55082	22535	9154	4917	2046	669	310	488515
	Volume in m3	27493.26	84723.607	67552.49	100469.199	64338.756	37768.521	27723.39	15120.789	6273.3643	3601.55328	435064.93
2	Kail	180480	131331	75577	49846	30399	22488	15236	8215	3961	1728	519261
	Volume in m3	27432.99	55553.06	72856.02	88477.11	86789.54	94560.75	88735.09	63360.32	39106.34	21250.85	638122.08
3	Chil	44	650	4543	5617	2572	1633	915	269	203	0	16448
	Volume in m3	3.96	213.36	3521.08	8302.03	6353.98	6186.55	5000.10	2028.45	2035.45	0.00	33644.97
4	Spruce	93481	57373	38672	37901	14265	12097	9446	6410	3590	2797	276034
	Volume in m3	12713.46	24613.18	40219.21	74627.31	45890.28	57873.19	62996.56	56865.75	40907.35	39817.62	456523.90
5	Fir	717	283	1836	1365	1285	1321	706	711	122	256	8604
	Volume in m3	97.50	121.27	1909.95	2688.11	4135.26	6320.64	4710.26	6311.31	1394.05	3641.37	31329.73
6	Ban	17069	18935	20674	15898	6647	6683	4288	2942	1983	1254	96373
	Volume in m3	2287.22	5926.69	13582.73	19092.93	13121.93	20023.53	18372.88	17229.95	15314.88	12407.14	137359.88
7	Mohru	2909	2770	990	345	122	44	44	6	11	22	7263
	Volume in m3	389.75	830.87	989.92	620.65	367.05	204.66	280.29	44.49	106.78	271.39	4105.85
8	Walnut	94	156	383	495	189	233	161	100	39	50	1900
	Volume in m3	7.43	31.14	306.60	742.44	471.52	885.77	822.52	720.75	346.47	565.59	4900.24
9	Mapple	6	6	6	6	6	0	0	0	0	0	28
	Volume in m3	0.65	1.11	3.89	7.23	11.68	0.00	0.00	0.00	0.00	0.00	24.56
10	Taxus	2686	2597	918	545	423	395	417	56	28	11	8075
	Volume in m3	279.36	607.73	428.53	447.46	553.69	767.99	1140.36	204.94	133.56	67.78	4631.39
11	Brass	701	601	267	56	6	0	0	0	0	0	1629
	Volume in m3	65.87	176.58	189.00	74.30	12.11	0.00	0.00	0.00	0.00	0.00	517.86
12	Kunish	145	267	150	17	11	0	11	0	0	0	601
	Volume in m3	13.59	78.48	106.31	22.29	24.21	0.00	50.05	0.00	0.00	0.00	294.94
13	Tooni	0	0	0	6	0	0	0	0	0	0	6
	Volume in m3	0.00	0.00	0.00	7.43	0.00	0.00	0.00	0.00	0.00	0.00	7.43

1	2	3	4	5	6	7	8	9	10	11	12	13
14	Kainth	6	6	0	0	0	0	0	0	0	0	11
	Volume in m3	0.52	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
15	Poplar	150	217	178	33	6	11	11	11	0	0	617
	Volume in m3	14.11	63.77	126.00	44.58	12.11	35.95	50.05	66.54	0.00	0.00	413.10
16	Khanor	33	44	72	117	273	261	261	311	195	61	1629
	Volume in m3	3.14	13.08	51.19	156.03	593.25	844.79	1176.23	1863.01	1494.50	586.48	6781.69
17	Jamun	200	506	439	139	56	11	6	6	0	0	1363
	Volume in m3	18.82	148.79	311.06	185.75	121.07	35.95	25.03	33.27	0.00	0.00	879.73
18	Birdcherry	0	0	0	5	10	5	0	0	0	0	20
	Volume in m3	0.00	0.00	0.00	7.11	22.36	16.26	0.00	0.00	0.00	0.00	45.74
19	Other B.L Species	33643	29092	20858	13191	4955	2853	2736	1852	1157	634	110970
	Volume in m3	3162.40	8552.93	14767.65	17622.60	10787.39	9220.81	12312.83	11078.25	8881.61	6078.10	102464.58
Total trees		486820	419161	230581	180662	83760	57190	39157	22934	11958	7123	1539346
Total Volume m3		73984.03	181657.28	216921.64	313594.57	233606.17	234745.37	223395.64	174927.81	115994.36	88287.88	1857114.75

Table- 3.4
General Abstract
Growing Stock in all PBs

Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	318405	310568	145627	112031	64688	39075	21635	12234	1509	698	1026470
	Volume in m3	56676.00	150936.08	151306.32	204344.952	184684.53	161223.83	121977.77	90408.131	14161.021	8110.61823	1143829.24
2	Kail	300668	209001	151057	145442	89560	54349	49098	28187	25646	7730	1060737
	Volume in m3	45701.55	88407.60	145618.66	258159.51	255693.34	228535.85	285946.27	217402.73	253176.12	95084.66	1873726.30
3	Spruce	104066	74116	52023	61872	28490	16093	11256	6588	4341	3280	362126
	Volume in m3	14153.03	31795.91	54103.84	121826.00	91653.16	76991.03	75067.95	58448.47	49457.75	46684.38	620181.51
4	Fir	717	283	1836	1365	1285	1321	706	711	122	256	8604
	Volume in m3	97.50	121.27	1909.95	2688.11	4135.26	6320.64	4710.26	6311.31	1394.05	3641.37	31329.73
5	Chil	849	876	4651	5756	2572	1633	925	280	214	0	17756
	Volume in m3	75.52	287.21	3604.16	8508.01	6353.98	6186.55	5058.70	2109.19	2142.80	0.00	34326.12
6	Ban	26406	30689	32405	30504	12887	17183	16895	10800	11288	5875	194932
	Volume in m3	3538.46	9605.72	21290.16	36635.02	25438.59	51480.50	72394.87	63254.71	87180.01	58122.44	428940.48

1	2	3	4	5	6	7	8	9	10	11	12	13
7	Mohru	4710	6779	5310	2510	2556	120	77	6	11	22	22100
	Volume in m3	631.09	2033.70	5310.26	4518.60	7667.67	549.86	482.91	44.49	106.78	271.39	21616.73
8	Walnut	94	156	383	495	189	233	161	100	39	50	1900
	Volume in m3	7.43	31.14	306.60	742.44	471.52	885.77	822.52	720.75	346.47	565.59	4900.24
9	Mapple	6	6	6	6	6	0	0	0	0	0	28
	Volume in m3	0.65	1.11	3.89	7.23	11.68	0.00	0.00	0.00	0.00	0.00	24.56
10	Taxus	2686	2597	918	545	423	395	417	56	28	11	8075
	Volume in m3	279.36	607.73	428.53	447.46	553.69	767.99	1140.36	204.94	133.56	67.78	4631.39
11	Brass	701	601	267	56	6	0	0	0	0	0	1629
	Volume in m3	65.87	176.58	189.00	74.30	12.11	0.00	0.00	0.00	0.00	0.00	517.86
12	Kunish	145	267	150	17	11	0	11	0	0	0	601
	Volume in m3	13.59	78.48	106.31	22.29	24.21	0.00	50.05	0.00	0.00	0.00	294.94
13	Tooni	0	0	0	6	0	0	0	0	0	0	6
	Volume in m3	0.00	0.00	0.00	7.43	0.00	0.00	0.00	0.00	0.00	0.00	7.43
14	Kainth	6	6	0	0	0	0	0	0	0	0	11
	Volume in m3	0.52	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
15	Poplar	150	217	178	33	6	11	11	11	0	0	617
	Volume in m3	14.11	63.77	126.00	44.58	12.11	35.95	50.05	66.54	0.00	0.00	413.10
16	Khanor	33	44	72	117	273	261	261	311	195	61	1629
	Volume in m3	3.14	13.08	51.19	156.03	593.25	844.79	1176.23	1863.01	1494.50	586.48	6781.69
17	Jamun	200	506	439	139	56	11	6	6	0	0	1363
	Volume in m3	18.82	148.79	311.06	185.75	121.07	35.95	25.03	33.27	0.00	0.00	879.73
18	Birdcherry	0	0	0	5	10	5	0	0	0	0	20
	Volume in m3	0.00	0.00	0.00	7.11	22.36	16.26	0.00	0.00	0.00	0.00	45.74
19	Other B.L Species	38249	32761	26531	16943	7935	6584	3948	2174	1489	795	137408
	Volume in m3	3595.41	9631.78	18783.61	22636.34	17275.46	21278.47	17764.17	13002.14	11433.27	7619.75	143020.40
Total trees		798090	669473	421853	377842	210952	137274	105408	61463	44882	18777	2846012
Total Volume m3		124872.06	293941.58	403449.53	661011.16	594723.99	555153.44	586667.13	453869.66	421026.32	220754.47	4315469.35

Contd. p-185

Table- 3.5
Statistically analysis of enumeration results:

Sr. No.	Particulars	PB-I	PB-II	PB-III	PB-IV
1.	Total area of the PB	2590.1439 M ³	2661.4552 M ³	2820.5258 M ³	2517.1253 M ³
2.	Area enumerated	456.75 hac	210.60 hac	160.37hac	495.30 hac
3.	Percentage of area covered	17.63 %	7.91%	5.69%	19.68%
4.	No. of units measured	7 No.s	4 No.s	3 No.s	8 No.s
5.	Mean volume per hac.	436.41 M ³	770.22 M ³	144.81 M ³	288.73 M ³

3.8 Silvicultural System: The forests allotted to this Working Circle shall be managed under the Punjab shelter Wood System. This system permits retention of compact group of well grown poles over certain minimum area and also permits selection management over on steep slopes thus bringing in an element of irregularity in the final crop. Therefore, this system is also called as Irregular Shelter wood System. This system allows fellings according to the nature of ground and permits of a certain degree of irregularity by avoiding sacrifice of immature pole crops which is retained as advance growth. On broken and steep terrain liable to erosion, marking conform to selection principles. Removal of over wood in secondary and final felling will be done only after keeping in view the progress of regeneration and establishment thereof. Natural regeneration will be supplemented by artificial regeneration.

3.9 Choice of Species: The coniferous species most suited to the locality will be favoured. In depressions which is generally unsuitable for conifers, suitable broad leaved species will be planted. The species perfectly suited to the locality will be preferred and shall get preference over all other species. Economically both Deodar and Kail are important species but Kail is more susceptible to fire damage and is often damaged by fire. It is also lopped heavily and is more prone to fungus attack which renders the timber of Kail trees unsuitable for use. Therefore, all reasonable attempts must be made to increase the proportion of Deodar. This can also be done at the time of cleaning, thinning and improvement fellings. However, the Deodar should never be tried on hot southern aspects and exposed ridges in its zone which is best suited for Kail. Similarly, on moist locations and along nalas or in the area occupied by Spruce and Fir, Deodar should never be tried for introduction. The detailed suitability and treatment map of the area should be prepared before taking up sowing and planting.

3.10 Regeneration Period: The results of past management shows that the period of 30 years or more is enough to regenerate any PB-I areas. Therefore, regeneration period of 30 years has been adopted for this Working Circle. Besides restocking P.B.I areas, during the Working Plan period, all the un-regenerated and blank areas included in the P.B.IV shall also be regenerated artificially depending upon availability of funds. Efforts will be made to regenerate the area naturally, supplemented with artificial planting.

3.11 Rotation Period: The rotation period is fixed at 120 years because it is economical both for Deodar and Kail. For production of structural timber in demand, the exploitable diameter of 60 cms dbh is best suitable size and therefore, the exploitable diameter to 60 cms dbh has been fixed.

3.12 Exploitable Diameter: Exploitable diameter fixed is 60 cm dbh being the most suited to yield better out turn in the form of sleeper size which fetches better price in the market.

3.13 Felling Cycle: The felling cycle of 15 years corresponding to the period of plan will be adopted.

3.14 Division into Periodic Blocks: With the rotation of 120 years and regeneration period of 30 years, the area of the whole Working Circle has been divided into four periodic Blocks as P.B.I, P.B.II, P.B.III and PB-IV. Definite areas have been allotted to each periodic block. The forests included in this Working Circle are in conversion stage and the crop is irregular/uneven aged with preponderance of lower classes, so PBs can not be divided on text book pattern. Yet every attempt is made to allot areas as to fit in PBs depending on dia classes available. The allotment is discussed as under:-

3.14.1 PB-I (2590.1439 hac.):

It consists of those areas which has not been felled during the previous plan for regeneration and consists of the areas which are mature and ready for harvesting. It also consists of those areas that remained understock during the previous plan and where regeneration is either still progressing or has not come at all. The forests with generally blanks & having majority of mature trees are allotted to this PB. No fellings were generally done in the plan under revision in PB-I due to complete moratorium on green fellings. However, only salvage markings and green felling under FCA cases were carried out during the period of Working Plan under revision. No change is made in PB-I area of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 3.6

Table- 3.6
Species wise distribution of number of trees and volume per hac.

		P.B.- I Area										
Species		Diameter Class										Total
		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Deodar	No. of trees per hac.	7	9	5	4	3	2	1	0	0	0	32
	Volume in m3	1.20	4.58	5.26	8.16	7.82	7.16	5.59	3.30	1.61	1.32	46.01
Kail	No. of trees per hac.	37	26	17	14	7	5	4	2	1	1	114
	Volume per hac.	5.67	10.90	16.25	25.19	21.04	21.53	20.82	16.23	9.77	7.26	154.66
Chil	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.05
Spruce	No. of trees per hac.	23	15	11	10	4	4	3	2	1	1	74
	volume per hac.	3.15	6.34	10.95	19.81	13.69	17.36	20.30	18.02	11.79	15.37	136.79
Fir	No. of trees per hac.	0	0	1	1	0	1	0	0	0	0	3
	volume per hac.	0.04	0.05	0.72	1.01	1.53	2.39	1.82	2.42	0.54	1.41	11.92
Ban	No. of trees per hac.	6	6	6	6	2	2	1	1	0	0	31
	volume per hac.	0.79	2.02	3.66	6.81	3.87	6.55	5.82	5.85	3.20	1.30	39.88
Mohru	No. of trees per hac.	1	1	0	0	0	0	0	0	0	0	3
	volume per hac.	0.15	0.32	0.38	0.24	0.14	0.08	0.11	0.02	0.04	0.10	1.59
Walnut	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.00	0.01	0.12	0.29	0.18	0.33	0.32	0.28	0.13	0.22	1.88
Mapple	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Taxus	No. of trees per hac.	1	1	0	0	0	0	0	0	0	0	3
	volume per hac.	0.11	0.23	0.17	0.17	0.21	0.30	0.44	0.08	0.05	0.03	1.79
Brass	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.03	0.07	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Kunish	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.01	0.03	0.04	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.11
Tooni	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kainth	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poplar	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.01	0.02	0.05	0.02	0.00	0.01	0.02	0.03	0.00	0.00	0.16
Khanor	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.00	0.01	0.02	0.06	0.23	0.33	0.45	0.72	0.58	0.23	2.62
Jamun	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.01	0.06	0.12	0.07	0.05	0.01	0.01	0.01	0.00	0.00	0.34
Other BL species	No. of trees per hac.	10	10	7	5	2	1	1	1	0	0	37
	volume per hac.	0.92	2.85	5.29	6.80	4.16	3.56	4.75	4.28	3.43	2.35	38.39
No. of trees per hac.		86	69	48	41	19	15	11	7	3	2	300
Total volume per hac.		12.07	27.50	43.11	68.68	52.96	59.65	60.48	51.23	31.15	29.58	436.41

3.14.2 PB-II (2661.4552 hac.)

Forests, having preponderance of age classes, approaching maturity, have been allotted to this periodic block. No change is made in PB-II areas of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 3.7

Table- 3.7
Species wise distribution of number of trees and volume per hac.
Circle

P.B.-II Area= 2661.4552 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Deodar	No. of trees per hac.	20	11	14	10	11	8	5	3	0	0	82
	volume in m3 per hac.	3.53	5.2	14.97	18.04	30.99	34.25	26.03	25.75	2.34	1.31	162.42
Chil	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume in m3 per hac.	0.03	0.03	0.03	0.08	0	0	0.02	0.03	0.04	0	0.26
Kail	No. of trees per hac.	35	23	19	30	20	11	12	7	8	2	167
	volume in m3 per hac.	5.34	9.64	18.49	52.44	57.56	47.48	72.56	53.9	74.76	26.36	418.52
Spruce	No. of trees per hac.	4	6	5	9	5	1	1	0	0	0	31
	volume in m3 per hac.	0.52	2.6	4.96	17.73	16.6	6.9	4.27	0.54	3.21	2.58	59.91
Ban	No. of trees per hac.	3	4	3	5	2	4	5	3	3	2	35
	volume in m3 per hac.	0.45	1.31	2.22	6.23	4.3	11.62	20.3	17.29	27	17.18	107.9
Mohru	No. of trees per hac.	1	2	2	1	1	0	0	0	0	0	6
	volume in m3 per hac.	0.09	0.45	1.62	1.46	2.74	0.13	0.08	0	0	0	6.58
Other B.L. Species	No. of trees per hac.	2	1	2	1	1	1	0	0	0	0	9
	volume in m3 per hac.	0.16	0.35	1.29	1.57	2.44	4.53	2.05	0.72	0.96	0.58	14.64
No. of trees per hac.		65	47	45	56	40	26	23	14	12	4	331
Total volume in m3 per hac.		10.11	19.58	43.58	97.55	114.63	104.91	125.3	98.23	108.32	48.01	770.22

3.14.3 PB-III (2820.5258 ha)

The forests having preponderance of middle aged crops with few scattered matured and maturing trees have been allotted to this PB. No change has been made in the plan under revision. The distribution of number of trees and volume per hac. are tabulated in table No. 3.8

Table- 3.8
Species wise distribution of number of trees and volume per hac.

Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Ban	No. of trees per hac.	0	0	1	0	0	0	0	0	0	0	2
	volume per hac.	0.02	0.07	0.64	0.34	0.31	0.19	0.00	0.00	0.00	0.00	1.56
Deodar	No. of trees per hac.	39	38	15	11	5	3	2	0	0	0	113
	volume per hac.	7.02	18.57	15.57	19.80	13.42	11.45	8.86	2.40	0.59	0.36	98.03

1	2	3	4	5	6	7	8	9	10	11	12	13
Kail	No. of trees per hac.	9	6	9	6	2	1	0	0	1	0	34
	volume per hac.	1.44	2.55	8.35	10.68	5.57	2.70	1.45	3.75	5.36	1.30	43.16
Spruce	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.02	0.09	0.25	0.00	0.56	0.27	0.25	0.06	0.00	0.00	1.49
Other B.L Species	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.01	0.05	0.21	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.56
No. of trees per hac.		49	45	25	17	7	4	2	1	1	0	151
Total volume per hac.		8.50	21.33	25.01	31.13	19.86	14.60	10.56	6.20	5.94	1.67	144.81

3.14.4 PB-IV (2517.12.53 hac.)

All the compartments carrying established young pole crop with scattered mother trees, un-regenerated forests and areas requiring immediate restocking have been allotted to PB-IV as in the plan under revisions no change has been made therein. The species wise distribution in different classes is tabulated in table No. 3.9

Table- 3.9
Species wise distribution of number of trees and volume per hac.

P.B.-IV Area= 2517.1253 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Deodar	No. of trees per hac.	54	60	21	17	6	2	1	0	0	0	161
	volume per hac.	9.69	28.95	21.42	31.52	17.51	7.64	5.26	2.61	0.83	0.07	125.49
Kail	No. of trees per hac.	33	26	13	5	4	4	2	1	1	0	89
	volume per hac.	5.07	10.85	12.22	9.23	12.83	15.41	13.83	8.47	5.48	0.97	94.36
Spruce	No. of trees per hac.	13	8	5	5	1	1	1	0	0	0	34
	volume per hac.	1.81	3.25	4.71	9.27	4.14	5.13	4.13	4.05	4.12	0.00	40.61
Fir	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.02	0.02	0.06	0.05	0.00	0.02	0.00	0.00	0.18
Chil	No. of trees per hac.	0	0	2	2	1	1	0	0	0	0	6
	volume per hac.	0.00	0.08	1.40	3.29	2.51	2.43	1.99	0.81	0.81	0.00	13.32
Ban	No. of trees per hac.	1	1	2	0	1	0	0	0	0	0	7
	volume per hac.	0.09	0.27	1.62	0.57	1.24	1.21	1.31	0.83	2.79	3.60	13.53
Birdcherry	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.02
Walnut	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01

1	2	3	4	5	6	7	8	9	10	11	12	13
Other B.L. Species	No. of trees per hac.	3	2	1	0	0	0	0	0	0	0	6
	volume per hac.	0.31	0.46	0.42	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.20
No. of trees per hac.		105	95	43	30	14	8	5	2	1	0	303
Total volume per hac.		16.97	43.87	41.82	53.91	38.31	31.88	26.51	16.78	14.03	4.63	288.73

3.14.5 General abstract of areas allotted PB wise:

The PB wise allotment of the areas to different Ranges is tabulated in table No: 3.10

Table – 3.10

Sr. No.	Name of Range	Forest category	Deo/Kail WC				
			PBI	PBII	PBIII	PBIV	Total
1	Nankhari	DPF	874.7600	340.6000	618.4000	770.7000	2604.4600
		Listed UPF	63.5800	332.0900	48.1900	87.0700	530.9300
		Total	938.3400	672.6900	666.5900	857.7700	3135.3900
2	Bahli	DPF	313.9174	82.7923	408.3722	301.7862	1106.8681
		Listed UPF	81.0000	0	113.8000	70.8700	265.6700
		Total	394.9174	82.7923	522.1722	372.6562	1372.5381
3	Rampur	DPF	405.4000	822.7532	580.8136	343.1839	2152.1507
		Listed UPF	0	0	0	0	0
		Total	405.4000	822.7532	580.8136	343.1839	2152.1507
4	Sarahan	DPF	753.4765	1010.3197	1050.9500	943.5152	3758.2614
		Listed UPF	98.0100	72.9000	0	0	170.9100
		Total	851.4865	1083.2197	1050.9500	943.5152	3929.1714
Total DPF			2347.5539	2256.4652	2658.5358	2359.1853	9621.7402
Total Listed UPF			242.5900	404.9900	161.9900	157.9400	967.5100
G. Total			2590.1439	2661.4552	2820.5258	2517.1253	10589.2502

3.15 Calculation of Yield: The yield has been calculated by volume separately for PB-I and IV on the basis of enumeration results. Increment has been ignored for the reason of safety against fire and other natural calamities and to reserve as emergency reserve. The yield from PB-I and PB-IV has been designated as final yield and that from PB- III as intermediate yield.

3.15.1 Yield from PB-I areas:- The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in seven numbers of PB-I areas and the details are given in the *Appendix No.-IX*. The abstract showing the growing stock of class wise and species wise of PB-I areas is tabulated in table No. 3.11

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Table-3.11
Species wise No. and Volume in cubic mts. (Estimated growing stock) for Deo/Kail Working Circle

P.B.-I Area= 2590.1439 hac.												
Sr. No	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	17496	24409	13119	11590	7096	4494	2569	1157	445	295	82669
	Volume in m3	3114.29	11862.66	13630.878	21139.899	20259.8927	18540.478	14485.964	8548.4648	4175.0179	3424.4245	119181.97
2	Kail	96551	66764	43657	36755	19087	13264	9260	5450	2564	1529	294880
	Volume in m3	14675.70	28241.18	42084.97	65240.08	54492.13	55774.38	53928.20	42036.81	25309.67	18812.80	400595.91
3	Chil	44	0	0	17	11	17	0	0	0	0	89
	Volume in m3	3.96	0.00	0.00	24.66	27.47	63.22	0.00	0.00	0.00	0.00	119.31
4	Spruce	59996	38295	27278	26055	11023	9399	7886	5261	2681	2797	190671
	Volume in m3	8159.44	16428.76	28369.57	51302.16	35459.70	44963.31	52591.71	46675.93	30542.43	39817.62	354310.62
5	Fir	712	273	1791	1335	1235	1296	706	706	122	256	8431
	Volume in m3	96.81	116.91	1862.39	2628.07	3971.77	6199.08	4710.26	6266.22	1394.05	3641.37	30886.93
6	Ban	15310	16740	14448	14693	5072	5667	3520	2586	1073	339	79449
	Volume in m3	2051.59	5239.52	9492.59	17646.40	10012.03	16978.38	15084.64	15146.37	8289.41	3356.46	103297.41
7	Mohru	2909	2770	990	345	122	44	44	6	11	22	7263
	Volume in m3	389.75	830.87	989.92	620.65	367.05	204.66	280.29	44.49	106.78	271.39	4105.85
8	Walnut	89	156	378	495	184	228	161	100	39	50	1880
	Volume in m3	7.03	31.14	302.54	742.44	458.81	866.46	822.52	720.75	346.47	565.59	4863.76
9	Mapple	6	6	6	6	6	0	0	0	0	0	28
	Volume in m3	0.65	1.11	3.89	7.23	11.68	0.00	0.00	0.00	0.00	0.00	24.56
10	Taxus	2686	2597	918	545	423	395	417	56	28	11	8075
	Volume in m3	279.36	607.73	428.53	447.46	553.69	767.99	1140.36	204.94	133.56	67.78	4631.39
11	Brass	701	601	267	56	6	0	0	0	0	0	1629
	Volume in m3	65.87	176.58	189.00	74.30	12.11	0.00	0.00	0.00	0.00	0.00	517.86
12	Kunish	145	267	150	17	11	0	11	0	0	0	601
	Volume in m3	13.59	78.48	106.31	22.29	24.21	0.00	50.05	0.00	0.00	0.00	294.94

1	2	3	4	5	6	7	8	9	10	11	12	13
13	Tooni	0	0	0	6	0	0	0	0	0	0	6
	Volume in m3	0.00	0.00	0.00	7.43	0.00	0.00	0.00	0.00	0.00	0.00	7.43
14	Kainth	6	6	0	0	0	0	0	0	0	0	11
	Volume in m3	0.52	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
15	Poplar	150	217	178	33	6	11	11	11	0	0	617
	Volume in m3	14.11	63.77	126.00	44.58	12.11	35.95	50.05	66.54	0.00	0.00	413.10
16	Khanor	33	44	72	117	273	261	261	311	195	61	1629
	Volume in m3	3.14	13.08	51.19	156.03	593.25	844.79	1176.23	1863.01	1494.50	586.48	6781.69
17	Jamun	200	506	439	139	56	11	6	6	0	0	1363
	Volume in m3	18.82	148.79	311.06	185.75	121.07	35.95	25.03	33.27	0.00	0.00	879.73
18	Other B.L Species	25232	25143	19359	13180	4955	2853	2736	1852	1157	634	97101
	Volume in m3	2371.79	7392.00	13706.22	17609.02	10787.39	9220.81	12312.83	11078.25	8881.61	6078.10	99438.03
Total trees		222265	178792	123050	105382	49563	37940	27590	17502	8314	5995	776392
Total Volume m3		31266.42	71234.22	111655.04	177898.44	137164.36	154495.45	156658.14	132685.03	80673.50	76622.03	1130352.65

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Calculation of the yield has been based on the volume of the trees of 40 cms dbh and over. Increment has been ignored. From the management point of view and theoretically the entire growing stock except the mother trees above 40 cms diameter should be available during the plan period. Since a compact group of poles shall be retained as advance growth and some trees will be left on broken and steep grounds, only a part of II and III/IV class trees will be available. Similarly, the yield from I and II class trees will be further restricted as some trees have to be retained as emergency reserve and fire insurance trees. The trees standing on blanks or over patches where regeneration has not established shall also be not available. Therefore, the yield on the basis of silvicultural availability is calculated as under:-

$$Y = \frac{C1V1 + C2V2 + C3V3}{P}$$

Where V1, V2 and V3 are the volumes of I class, II class trees and III and IV class trees respectively.

P= Plan period i.e. 15 years.

C1, C2, C3 are the constants representing percentage of I class, II class and III class and IV class trees respectively estimated to be available for felling during the regeneration period. The values of constants of C1, C2, C3 have been fixed as under after detailed examination of forests during field inspections. These figures are arrived at after analysis number of stems per hac. Also and is tabulated in table No. 3.12

Table – 3.12

Species	No. of trees in PB-I	Proportion of trees	No. of seed bearer to be retained/ ha	No. of seed bearer to be retained/ hac. on proportionate basis	Total Trees to be retained over 2590.1439 ha	Existing No. of trees class I, & II	No. of trees available for removal I, & II	Proportionate no. of Class I & II class available
Deodar	82669	14	30	4	10879	27645	16767	0.14
Kail	294880	51	25	13	33024	87908	54884	0.46
Chil	89	0	20	0	0	44	44	0.00
Spruce	190671	33	25	8	21369	65101	43732	0.37
Fir	8431	2	50	1	2590	5656	3066	0.03

The above proportion is based on purely theoretical consideration. This combined with field observations gives following well suiting proportions.

Deodar = 0.1
Kail = 0.5
Spruce = 0.4
Fir = 0.1
Chil = 0.1

This was in respect of IIA and above classes. Field inspections indicate that 60% of V, IV and III classes' trees will also be available for felling.

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1+C2V2}{P}$$

C1= Constant representing the fraction of volume of V, IV and III class trees available for felling during the regeneration period. C1 has been taken as 0.6 for all species.

C2= Constant representing the fraction of volume of IIA & above class trees available for felling during period. C2 has been taken as 0.1, for Deodar, Kail, Chil, Spruce and Fir respectively.

(Deodar) V1= Volume of trees of V, IV & III class trees of conifers = 28607.83 M³

V2= Volume of trees of II class and above trees of conifers = 90574.14 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1xV1 + C2 \times V2}{P}$$

$$Y = \frac{0.6 \times 28607.83 + 0.1 \times 90574.14}{15} = 1748.14 \text{ or say } 1750 \text{ M}^3$$

(Kail) V1= Volume of trees of V, IV & III class trees of conifers = 85001.85 M³

V2= Volume of trees of II class and above trees of conifers = 315594.1 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1xV1 + C2 \times V2}{P}$$

$$Y = \frac{0.6 \times 85001.85 + 0.1 \times 315594.1}{15} = 5504.035 \text{ or say } 5500 \text{ M}^3$$

(Chil) V1= Volume of trees of V, IV & III class trees of conifers = 3.96 M³

V2= Volume of trees of II class and above trees of conifers = 115.348 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1xV1 + C2 \times V2}{P}$$

$$Y = \frac{0.6 \times 3.96 + 0.1 \times 115.348}{15} = 0.93 \text{ or say } 0 \text{ M}^3$$

(Rai) V1= Volume of trees of V, IV & III class trees of conifers = 52957.76 M³

V2= Volume of trees of II class and above trees of conifers = 301352.87 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1 \times V1 + C2 \times V2}{P}$$

$$Y = \frac{0.6 \times 52957.76 + 0.1 \times 301352.87}{15} = 4127.33 \text{ or say } 4100 \text{ M}^3$$

(Fir) V1= Volume of trees of V, IV & III class trees of conifers = 2076.103 M³

V2= Volume of trees of II class and above trees of conifers = 28810.83 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1 \times V1 + C2 \times V2}{P}$$

$$Y = \frac{0.6 \times 2076.103 + 0.1 \times 28810.83}{15} = 275.12 \text{ or say } 275 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B.I:

Table – 3.13

Sr. No.	Species	Annual yield
1	Deodar	1750 m ³
2	Kail	5500 m ³
3	Chil	0 m ³
4	Rai	4100 m ³
5	Fir	275 m ³
Total		11625 m³

3.15.2 Yield from PB-II: Strictly speaking, no felling should be carried out in this PB as the growing stock is to be enriched and it is the future PB-I. However, realistically, removals on account of salvage caused by fires, land slides/slips or wind thrown only can and do occur. These removals have to be counted for in order to safe guard the future yield, no major fellings are prescribed and therefore, no yield has been calculated for this periodic block. Complete enumeration by the method of random samplings taking well defined topographic

areas in this PB has been done. All the trees in such units down to 10 cms dbh were enumerated in four numbers of PB-II areas. The results of enumeration were statistically analyzed and are given below:

Table – 3.14

Sr. No.	Items	Particulars
1.	Total area of periodic block	2661.4552 m ³
2.	Area enumerated	210.60 hac
3.	Percentage of area covered	7.91%
4	Number of units measures	4 No.s
5	Mean volume per Hac.	770.22 m ³

The detail of enumeration done in the sample areas are given in *Appendix No.-IX*.

3.15.3 Intermediate yield from P.B.III

Most of the forests of this block with exception of Deodar and Kail plantations raised artificial are generally open. The demand of right holders used to be in variably met from the forests of this periodic block before imposition of ban on green fellings. With the improvement in socio economic condition of the people on account of development of horticulture and other cash crops, the demand for timber has also increased correspondingly and is likely to increase further year after year. There will be no volume control of yield from thinning since there is hardly any scope of thinning except in Deodar plantations. Hence no green fellings are prescribed. The removals will, however, count toward the yield of PB-I.

As given in the Chapter-VIII under paragraph 8.8 complete enumeration of random sampled compartments has been done by sampling 10% of PB-I & PB-IV areas and 5% PB-II & PB-III areas. The results have been analyzed statistically and growing stock has been assessed. All the trees in such units down to 10 cms dbh were enumerated in three numbers of PB-III areas. The results of enumeration were statistically analyzed and is tabulated in table No. 3.15

Table – 3.15

Sr. No.	Items	Particulars
1.	Total area of periodic block	2820.5258 m ³
2.	Area enumerated	160.37 hac
3.	Percentage of area covered	5.69%
4	Number of units measures	3 No.s
5	Mean volume per Hac.	144.81 m ³

The detail of enumeration done in the sample areas is given in *Appendix No-IX*.

3.15.4 Yield from PB-IV Area: Complete enumeration down to 10 cms dbh has been carried out in eight numbers of samples and with an area of 495.30 hac. As given in the Chapter-VIII under paragraph 8.8 complete enumeration of random sampled compartments has been done

by sampling 10% of PB-I & PB-IV areas and 5% PB-II & PB-III areas. The results have been analyzed statistically and growing stock has been assessed. All the trees in such units down to 10 cms dbh were enumerated in eight numbers of PB-IV areas. The results of enumeration were statistically analyzed and is tabulated in table No. 3.16

Table – 3.16

Sr. No.	Items	Particulars
1.	Total area of periodic block	2517.1253 m ³
2.	Area enumerated	495.30 hac
3.	Percentage of area covered	19.68%
4	Number of units measures	8 No.s
5	Mean volume per Hac.	288.73 m ³

The abstract of growing stock is tabulated in the table No 3.17

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Table – 3.17

Species wise No. and Volume in cubic mts.(Estimated growing stock) for Deo/Kail Working Circle P.B.-IV Area= 2517.1253 ha.												
	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Deodar	136960	149920	51898	43492	15439	4660	2348	889	224	15	405845
	Volume in m3	24378.97	72860.94	53921.61	79329.30	44078.86	19228.04	13237.43	6572.32	2098.35	177.13	315882.95
2	Kail	83930	64567	31920	13091	11313	9224	5976	2765	1398	198	224381
	Volume in m3	12757.30	27311.88	30771.05	23237.04	32297.42	38786.37	34806.89	21323.51	13796.67	2438.04	237526.16
3	Spruce	33485	19078	11394	11846	3242	2699	1560	1149	910	0	85363
	Volume in m3	4554.02	8184.42	11849.65	23325.15	10430.57	12909.88	10404.84	10189.82	10364.92	0.00	102213.28
4	Fir	5	10	46	30	51	25	0	5	0	0	173
	Volume in m3	0.69	4.36	47.57	60.04	163.49	121.56	0.00	45.09	0.00	0.00	442.80
5	Chil	0	650	4543	5600	2561	1616	915	269	203	0	16359
	Volume in m3	0.00	213.36	3521.08	8277.37	6326.51	6123.34	5000.10	2028.45	2035.45	0.00	33525.66
6	Ban	1758	2195	6225	1204	1575	1016	767	356	910	915	16923
	Volume in m3	235.62	687.17	4090.14	1446.53	3109.89	3045.15	3288.25	2083.58	7025.47	9050.67	34062.47
7	Birdcherry	0	0	0	5	10	5	0	0	0	0	20
	Volume in m3	0.00	0.00	0.00	7.11	22.36	16.26	0.00	0.00	0.00	0.00	45.74
8	Walnut	5	0	5	0	5	5	0	0	0	0	20
	Volume in m3	0.40	0.00	4.07	0.00	12.71	19.31	0.00	0.00	0.00	0.00	36.48
9	Other B.L. Species	8411	3949	1499	10	0	0	0	0	0	0	13869
	Volume in m3	790.61	1160.93	1061.43	13.58	0.00	0.00	0.00	0.00	0.00	0.00	3026.55
Total Trees =		264555	240369	107530	75280	34197	19251	11567	5433	3644	1128	762954
Total volume =		42717.61	110423.06	105266.59	135696.13	96441.81	80249.91	66737.50	42242.77	35320.86	11665.85	726762.10

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The calculation of yield has based on the total volume of trees in PB-IV. Increment has not been taken into account. All I and II class trees do not warrant their intension in this periodic block and as such can be removed during the plan period. Silviculturally, it is not possible to remove all such trees. Trees standing on precipitous and broken ground have to retain. Besides this some I and II class trees will have to be kept as fire insurance and national emergency reserves. Similarly the II class trees standing amongst the patches of advance growth will not always be available for fellings. This being so, it has been estimated that only 75% of the volume of I and II class trees can be removed during the Working Plan period. In addition to this another 10% volume of trees 20 cms to 40 cms dbh will be available under thinning. The annual yield of different species is accordingly fixed as under:-

$$\text{Annual Yield (AY)} = \frac{V1*75/100 + V2*10/100}{P}$$

Where V1 is volume of I & II class trees.

V2 is volume of II & IV class trees.

P is plan period which is 15 years.

The yield is, therefore, calculated as under:

$$(i) \text{ (Deodar) } AY = \frac{V1*30/100 + V2*10/100}{15}$$

$$V1 = 41313.27 \text{ M}^3$$

$$V2 = 126782.55 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{41313.27 \times 30\% + 126782.55 \times 10\%}{15} = 1671 \text{ M}^3 \text{ or say } 1600 \text{ M}^3$$

$$(ii) \text{ (Kail) } AY = \frac{V1*30/100 + V2*10/100}{15}$$

$$V1 = 111151.49 \text{ M}^3$$

$$V2 = 58082.93 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{111151.49 \times 30\% + 58082.93 \times 10\%}{15} = 2610 \text{ M}^3 \text{ or say } 2600 \text{ M}^3$$

$$(iii) \text{ (Chil) } AY = \frac{V1*30/100 + V2*10/100}{15}$$

$$V1 = 15187.34 \text{ M}^3$$

$$V2 = 3734.44 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{15187.34 \times 30\% + 3734.44 \times 10\%}{15} = 329 \text{ M}^3 \text{ or say } 300 \text{ M}^3$$

$$\text{(iv) (Spruce) AY} = \frac{V1 \times 30/100 + V2 \times 10/100}{15}$$

$$V1 = 43869.46 \text{ M}^3$$

$$V2 = 20034.07 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{43869.46 \times 30\% + 20034.07 \times 10\%}{15} = 1011 \text{ M}^3 \text{ or say } 1000 \text{ M}^3$$

$$\text{(v) (Fir) AY} = \frac{V1 \times 30/100 + V2 \times 10/100}{15}$$

$$V1 = 166.65 \text{ M}^3$$

$$V2 = 51.93 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{166.65 \times 30\% + 51.93 \times 10\%}{15} = 4 \text{ M}^3 \text{ or say } 0 \text{ M}^3$$

Therefore, the annual yield of different species is summarised as under for P.B.IV:

Table – 3.18

Sr. No.	Species	Annual yield
1	Deodar	1600 m ³
2	Kail	2600 m ³
3	Chil	300 m ³
4	Spruce	1000 m ³
5	Fir	0 m ³
Total		5500 m³

3.16 Total prescribed Annual yield: The total Annual prescribed yield from the forests of this Working Circle is prescribed as under. However, the yield from PBIII as mentioned above will not be available for commercial felling.

Table – 3.19

Species	PBI	PBIV	Total
Deodar	1750 m ³	1600 m ³	3350 m ³
Kail	5500 m ³	2600 m ³	8100m ³
Chil	0 m ³	300 m ³	300 m ³
Spruce	4100 m ³	1000 m ³	5100 m ³
Fir	275 m ³	0 m ³	275 m ³
Total	11625 m³	5500 m³	17125 m³

3.17 Control of yield: All the removals of whatever nature down upto V class shall count towards yield of this Working Circle. It is indeed impossible that the removal of various species in a particular year will conform to or equalize the prescribed yield for each species. In actual practice this is ruled out. It is, therefore, imperative that the marking in the forests should be carried out strictly on silvicultural principles. However, yield will be shown by species in the control forms and deviation statement. The deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield. Felling in the PBI areas will depend on the progress of regeneration. It is therefore most essential that critical regeneration survey of felled PBI areas is carried out annually so as to assess the progress of regeneration. It is observed and revealed that regeneration is not keeping pace with the felling. Further fellings should be discontinued or deferred till such time by which regeneration in the felled PBI areas gain momentum. The detailed report should be sent to Pr. CCF HP through CCF Working Plan and CF Working Plan for information, scrutiny and orders. All the removals what so ever, down to 10 cms dbh in all the periodic blocks will count towards the prescribed yield.

3.18 Yield in relation to CAI: The annual increment percentage (CAI) is already given in para 8.3 of Part I. Based on these the yield is compared to the increment and is tabulated in table No. 3.20

Table 3.20

Species	Total Standing Volume (cum)	Increment %age	Annual Increment	Annual Yield	Prescribed Yield %age
Deodar	1143829.2	1.74	19902.63	3350	17
Kail	1873726.3	1.58	29604.88	8100	27
Chil	34326.12	2.16	741.44	300	40
Spruce	620181.51	1.20	7442.18	5100	69
Fir	31329.73	1.06	332.10	275	83
Total	3703392.9		58023.22	17125	30

3.19 Method of executing the felling

3.19.1 In PB-I Areas

The technique of regeneration marking is given in CCFs, Technical Order No. 2 of the Punjab Forest manual Volume III and must be carefully studied by the marking of officer and complied. It must be emphasized that marking must aim at obtaining natural rather than artificial regeneration on suitable ground. The skill of the forester in manipulating the canopy lies in his getting natural regeneration. A little patience will bring in considerable quantities of natural regeneration of Deodar on suitable ground in Deodar and mixed Deodar and Kail forests and subsequent opening of canopy will bring in sufficient Kail. In upper part of the compartment at present being occupied by Spruce and Fir on well drained ground suitable for Deodar, the canopy must be opened out some what heavily and followed by artificial sowing and planting. Elsewhere, i.e. in diameter per parts the aim must be to get Spruce and Fir regeneration and the opening here must conform to the silvicultural requirements of these species. Spruce requires nearly the same amount of opening as Deodar. The detailed treatment map of forest indicating the type of marking carried out shall be prepared and posted in compartment history file.

The following general principles are however laid down for guidance of marking officer:

- (i) In seeding fellings, in case of pure crop of Deodar the number of seed bearers retained will be 35-50 (65 m³) volume per hac. In case of Kail, this number will be 30 to 35 trees (56 to 65 M³ volumes) per hac. In both the cases, these trees will invariably be of 35 to 55 cms diameter classes and uniformly spaced all over the areas. The average distance of seed bearers shall be 16 to 18 mts. in case of Deodar and 18 to 20 mts. in case of Kail. In case of mixture of Deodar and Kail 30 to 45 trees (56.5 to 84.74 M³ volumes) per hac. of both Deodar, Kail of dia 35 to 55 cms per hac. shall be retained uniformly spaced all over the area.
- (ii) Well grown healthy, tall and clean boled trees preferably II to I A class trees should be selected as Seed bearers.
- (iii) In conformity with the distance consideration as far as possible seed bearers shall be left on Spurs and ridges and not in depressions for better seed dispersal.
- (iv) Compact group of healthy poles upto 40cms. dbh and not less than 0.1 hac. in extent will be retained as advance growth/future crop. It must be clearly understood and remembered that the diameter fixed for retention applies to the diameter at the time of first marking i.e. seedling felling. Once a group is retained it shall not be opened up

for regeneration in the subsequent years. Vigour and condition of pole crop must determine its retention rather than its extent.

- (v) On the very steep and broken ground the marking should conform to the selection principle.
- (vi) In mixed crops, Deodar shall be preferred to Kail as seed bearer.
- (vii) Groups of pole crop retained as part of future crop shall be thinned.
- (viii) Valuable broad leaved trees such as Maple, Walnut, Bird cherry and Carpinus etc. will be preferred to other less valuable species. The seed bearer of these species should be spaced about 20 mts. apart.
- (ix) Before undertaking any forest for seeding felling it shall be ensured that the nursery stock is ready to replace the fellings immediately after timber have been extracted from the forest. To achieve this objective the nurseries should be raised 2 to 3 years in advance in the vicinity of the areas to be undertaken for fellings. In case neither nurseries has been raised nor is the stock available for planting. No marking/felling shall be done and the yield for that particular year should be considered as obtained.
- (x) The secondary felling will be carried out keeping in view the progress of regeneration and when the seedlings have retained height of over two meters. The Number of trees retained during the seeding fellings shall reduce to 50% during secondary fellings.
- (xi) The final fellings shall be carried out when average height of new crop exceeds three meters and 4-5 healthy clean bold and vigorously growing trees per hac. shall be retained as mother trees.

3.19.2 In PB-II Areas: This being sacred periodic block, no major felling of any kind and magnitude will be done in PB-II. However, only salvage marking of dead, uprooted trees will be done to clear these forests from fire hazards and improvement of the crop. The yield removed from these PBs shall be counted for yields towards the yield of the Working Circles.

3.19.3 PB-III Areas: To improve the condition of crop, hygienic removals should be done. The following broad guidelines are laid down for the marking officer to carry out the marking in this periodic block:

- (i) All removals shall aim to improving the composition and condition of the crop. Thinnings will be made in favour of vigorously growing trees irrespective of size.
- (ii) No tree shall be marked to induce regeneration.
- (iii) Dead, dying, diseased and wind broken or fallen trees will be marked.
- (iv) Malformed, stunted and unhealthy trees may be marked under improvement felling.
- (v) If the stocking is less than what normally can be expected as per yield table figures, than no removal are to be carried out.

- (vi) Mature trees interfering with or suppressing young crop will be removed.
- (vii) Valuable species are to be preferred to inferior ones.
- (viii) Broad leaved species should not be cut unnecessarily on the pretext of improvement fellings. These may however, be lopped where suppressing of promising young conifer persist.
- (ix) All trees marked for any purpose shall be removed within a year.

3.19.4 Thinning: A thinning consists lessening the crowded condition of the crowns of the best trees in a canopy so as to favour their development. The main aim of thinning will be to assist the elite trees by providing them optimum growing space.

According to the British Commonwealth Forest Terminology Part-I (Empire Forestry Association, London, 1953) thinning means “Thinning is a felling made in an immature stand for the purpose of improving the growth and form of the trees that remain without permanently breaking the canopy.”

Thinning is done to regulate the distribution of growing space for the purpose of improving the growth and form of tree that are left. The object of thinning is to distribute growth potential of site amongst the trees retained, increase the net yield of timber and money from a stand, obtain earlier returns from capital invested in a stand, produce different smaller size of timber which can meet a different object of management, maintain hygienic conditions in the stand, obtain timber of the desired quality and mechanical strength, and to ensure decomposition of raw humus in temperate forests.

Thinnings vary with the nature of the crop and the methods of thinning used in regular crops are different from that used in irregular crops. In present plan thinnings will be carried out in accordance with the principles of thinnings laid down in Punjab Forest Leaflet No. 1, 1A and book Principles and Practices of silviculture by L.S. Khanna. The crops to be thinned fall mainly in the categories discussed in the following paragraphs.

- v) Pure Deodar crops.
- vi) Pure Kail crops.
- vii) Mixed Deodar crops and Kail crops.
- viii) Deodar or Kail mixed with Spruce.

Thinning in pure Deodar crop:- Selective and increment thinnings as discussed above will be carried out in deodar crops. In young crops, spacing equal to four times the girth will be quite suitable. In crops beyond pole stage, C/D grade thinning will be carried out.

Thinning in pure Kail crop:- Kail crop suffers severely from snow damage if not properly thinned in its early stages. The thinning should be light in the early stages, so that

the boles get cleaned. Light and frequent thinnings should, therefore, be the rule in early stages. After the boles have been cleaned of their side branches, the intensity of thinning should be increased and should be heavier than in case of deodar. In young pole crops, the thumb rule will be to have the spacing in feet equal to one and a half times the average diameter in inches. Beyond pole stage, D grade thinning should be carried out.

Thinning in Mixed Crops of *Kail* and *Deodar*:- Thinning in mixed crops require greater skill and will depend upon the type of mixture. Fore carrying out thinnings in usual types of deodar-kail mixtures met with in these forests, the following general principles are laid down:-

- iv) In even-aged stands, where the mixture is by single trees of deodar and kail, the thinning will be carried out as in pure deodar crop favouring deodar over kail.
- v) Where the mixture is by groups, each group will be thinned in the same way as pure stands of that crop. Along the periphery of these groups where kail and deodar grow mixed, thinning will be done as in deodar crop favouring deodar over kail.
- vi) Isolated kail trees, standing over compact groups of promising saplings or poles of deodar, will be removed and deodar will be encouraged to fill up the gaps created by felling of kail. But where deodar poles or saplings are already suppressed and are not likely to respond to the opening, kail trees should not be marked to free such suppressed deodar.

Thinning in Mixed Crops of *Deodar* or *Kail* with *Spruce*: - In deodar-spruce mixed crops, thinning will be carried out to favour deodar and to suit its silvicultural requirements. Spruce will be treated in the same way as kail in deodar-kail mixture. In mixed crop of kail and spruce, thinning will be carried out strictly in accordance with the silvicultural requirement of the crop, treating kail and spruce alike and removing inferior trees of either species for the benefit of better individuals.

Necessity

- v) Thinnings are made not only to increase increment but also as a measure of fire protection; woods which are well thinned at an early date and which are free from an excess of suppressed and inflammable material are much less subject to fire damage than unthinned crops.
- vi) In areas under concentrated regeneration (i.e. PB I and the youngest PB under the shelter wood system) early and repeated thinning are so important for the optimum development of the crop that periodical thinning must be carried out even though the

disposal of the cut material involves expenditure of considerable sums of money. Thinning promote not only diameter but height increment also.

- vii) The frequency of thinning can not be rigidly prescribed as it depends upon the species; kail closes up in shorter time than deodar and thus requires shorter thinning interval. The aim should be to prevent crowding rather than to await it and then thin the crop.
- viii) Crown thinning can be carried out in PB II areas to ensure optimum space for the crowns of elite trees by removing their competitors and also the dominated trees which press the crowns of the elites strongly upwards and rest their growth.

3.19.5 In PB-IV Areas: These markings require the removal of overhead shade wherever standing on established regeneration. These final fellings therefore correspond to more or less to the fellings in PB-I. Besides this, thinning in patches of advance growth is to be done. The following general principles are laid down for the guidance of marking officer:-

- (i) No attempt should be made to obtain or induce regeneration. The marking should aim at freeing the established regeneration by removing the over wood. Thus, first and second class trees standing over the established regeneration will be marked.
- (ii) The object of marking is to free established regeneration by removal of overhead shade. Thus, all class I and II should be removed except those standing on precipitous slopes
- (iii) All isolated Class II and III trees standing amidst young crop should be marked.
- (iv) Saleable and unsalable thinnings must be carried out in congested groups of trees, poles or saplings. These should correspond to “C” Grade thinning.
- (v) All marked trees likely to damage young crop under neath should be lopped before felling.
- (vi) Broad leaved tree should not be marked unnecessarily on the pretext of improvement fellings. These should, however be lopped where found suppressing the young crop.

3.20 Table of felling: The following tabular statement gives the order of fellings in PB-I and PB-IV areas:-

Table 3.21

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	5	6	7
2013-14	-	-	-	-	-	-
2014-15	Nankhari	Maniknun (DPF)	2	66.42	P.B.I	Seedling felling
2015-16	Bahli	Surd North (DPF)	64	45.36	P.B.IV	Final felling

1	2	3	4	5	6	7
2016-17	Rampur	Munish North DPF (part)	94	274.18	P.B.I	Seedling felling
2017-18	Rampur	Munish North DPF (part)	94	274.18	P.B.I	Seedling felling
2018-19	Sarahan	Chaland Pat DPF	125	98.41	P.B.I	Seedling felling
2019-20	Nankhari	Keoligad DPF	7	91.12	P.B.IV	Final felling
2020-21	Bahli	Saran Jarashi DPF	75	34.42	P.B.I	Seedling felling
2021-22	Rampur	Sanathaly DPF	109 b	77.76	P.B.I	Seedling felling
2022-23	Sarahan	Jaghori DPF	128 c	68.85	P.B.I	Seedling felling
2023-24	Sarahan	Khutani DPF	121 g	78.97	P.B.IV	Final felling
2024-25	Nankhari	Bhadral DPF	31	108.94	P.B.I	Seedling felling
2025-26	Bahli	Bahli	83	38.47	P.B.I	Seedling felling
2026-27	Sarahan	Bhujri DPF	140 b	121.09	P.B.I	Seedling felling
2027-28	Sarahan	Saranga N.	136	106.11	P.B.I	Seedling felling

3.21 Subsidiary silvicultural operations, cleaning and thinning:

Following subsidiary silvicultural operations are prescribed:-

(I) Subsidiary silvicultural operations in PB-I

The following subsidiary operations will be carried out soon after the fellings in this Periodic block.

- Disposal of felling refuse in accordance with the instructions lay down in Punjab Forest leaflet No. 6 shall be referred to for details.
- Removal of trees of inferior species interfering with the young regeneration, if any left unfelled.
- Lopping of broad leaved species interfering with the growth of young crop of coniferous.
- Cleaning in the existing regeneration patches and climber cutting should be carried out wherever necessary.
- Shrub cutting shall be done wherever needed for providing clean seed bed.
- The villagers should be encouraged to collect the left out material from the sold lot, so as to reduce the cost.
- Unfit refuse should be burnt under control which will provide a clean bed and also act as stimulant to boost up regeneration.

3.21.2 Artificial regeneration: Although by creating optimum light conditions and effective closure, natural regeneration is expected to come up but still to speed it up, artificial regeneration should be taken up in hand and then immediately without waiting for natural regeneration to come out. The technique of artificial regeneration is described in Punjab Forest Leaflet No. 4 and Himachal Pradesh Forest Manual Volume IV and shall be followed. The natural regeneration, however, depends on good seed year which may not synchronize with the year of fellings. Thus, if only natural regeneration relied upon, there is the danger of the area being invaded by weeds and bushes. In view of these impediments, artificial sowing and planting will be taken up immediately after fellings. This will on one hand reduce the period of closure and on the other restock the area expeditiously.

Temporary nursery of Deodar, Fir, Spruce and broad leaved species like Walnut, Horse chestnut, Poplar etc. should be laid at least in advance in the proximity to the area to be felled. Each of the felled area will be planted up in rainy season following the year of exploitation. Subject to the year of fellings, sowing of this species can be taken up even during the year of fellings. The nursery should be extended to the subsequent years depending upon regeneration. The guidelines issued by PrCCF HP. regarding nursery techniques for raising the good Deodar seedlings should be followed and plants less than 25 cms in height should not be planted at all. The patch/line sowing of Kail will be done on the dry and exposed sites where Deodar is not expected to do well. No attempt should be made to convert Spruce and Silver Fir forest into Deodar except in tension belt below 2400 mts. where site conditions are favourable for Deodar. Similarly, broad leaved species should be planted along nalas and in moist location where these grow naturally as well. The technique of raising Deodar and Kail is well established. However, Punjab Forest Manual technical order No. 3 and 4 along with Himachal Pradesh Forest Manual Volume IV Should also be consulted.

It is also important to note that the locality factors are favourable to natural regeneration in the areas where plants like Sarcococa, Strawberry, Viola, Indigofera and Desmodium etc. predominates in the ground flora but do not form dense cover. In such areas reliance can be placed on natural regeneration also to some extent. On the other hand in the areas where weeds/shrubs like Iris, Berberis, Strobilanthus, Spirea and Placranthus are dominant, the conditions are quite unsuitable. Artificial regeneration shall have to be mainly relied upon in such refractory areas. However, it must always be remembered that the more quickly an area is regenerated after seeding felling, lesser will be the overall expenditure and the area will be ready for being thrown open to grazing earlier.

It is also pointed out that it is futile to attempt to fill Thaches/Pats and shallow rocky southern and south west slopes with deodar where at best an open crop of Kail is all that nature intended. Moreover, these grassy plots in the forest areas is of immense value of grazing ground to the villages and keep them contended whereas their value to the forest department is at best secondary.

3.21.3 Planting Programme: The yield prescribed from the forest area in this Working Circle is directly proportionate to area planted successfully. Any slackness in plantation is going to reduce for the forest area for obtaining the prescribed yield. To achieve this objective detail planting programme has been given in the plantation (overlapping) Working Circle.

3.21.4 Tending operations: Young regeneration has to be nursed and tended so as to produce high quality of timber. The tending is the most essential silvicultural operation in the young plantation area. However, the cost of tending operation is more than repaid by production of high quality stems and stands.

3.21.5 Weeding: All the regeneration areas should be properly weeded out in the infancy. Normally two weedings, one in June-July and another in August-September are considered sufficient for young plantations. Number and frequency of weedings depends upon the incidence of bushes and weeds as also on the condition of regeneration. If more than two weedings are necessitated, these should be carried out without any hesitation for the betterment of the crop. The weeding should be done judiciously and carefully and young plant should be freed of overhead shade.

3.21.6 Cleaning: It should be carried out in the early stages of plantations and should be continued till the area is suitable for thinnings, so as to produce healthy stems and minimize fire hazards. Best and vigorously growing stems should be retained. All forked, crooked, sickly and damaged stems should be removed in cleanings so as to provide growing space to better stems. An important point in cleanings is to never cut more than where it is absolutely necessary. In Deodar plantations, Kail has been found coming up naturally in plenty. Kail is two to three times faster than Deodar. Therefore, all Kail competing with healthy Deodar must be cut when it is young or else it may be too late as Deodar may be too suppressed to respond and reach sufficiently. The intensity of cleaning must aim at fairly repaid increment to make the young crop fire resistant within reasonable time and also not to permit the side branches to persist unnecessarily. The cleaning is prescribed in detail in technical order No. 1 of Punjab Forest Manual Volume III and must be studied thoroughly.

3.22 Other Regulations

3.22.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. Preventive measure should be taken advance. Incendiary forest fires are very common and as such the forests are required to be strictly protected from these. The forests floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds, needles and grass. The fire lines, inspection paths and bridle paths should be kept clean of needles especially during summer season. Fire watcher should be employed during dry month's relations with the local protection of the forest from fire. Besides this maintaining cordial relations with the local people and educating them properly with regard and to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the constitution of India read with Section 79 of the Indian Forest Act, 1927. The detail description is given in Chapter No. IX, the Forest Protection (overlapping) Working Circle.

3.22.2 Grazing and grass cutting: Outside the regeneration areas, there will be no restriction on grass cutting. In all the PB-I areas under regeneration, grass cutting will not be allowed till the plants are at least 1 meter in height. Grass cutting in closed areas shall be allowed under the supervision of forest guard that no young, seedlings/sapling are cut. Grazing shall be strictly prohibited in the regeneration areas during the closure period under Section 30 (b) of Indian Forest Act, 1927.

3.22.3 Right Holder's Demand: Demand of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and by this notification now right holders are not entitled to get T.D for construction/repair of house and cow shed etc. from the forest directly in which such rights has been recorded in Forest Settlement Report. Rest of the demand of rights holders will be met from the forest as per the provision of Forest Settlement Report, 1921 and right and concessions shall be exercised strictly in accordance with the silviculture principles. Thus all rights can be exercised subject to silvicultural availability. No trees should be marked from PB-I area after the marking of seedling fellings have been done till the regeneration is fully established. Trees should be marked strictly in accordance with the silvicultural principles and not necessarily according to the convenience of right holders. No trees should be marked from the PB-I area. From other PBs, the trees to be marked to meet out the demand of right holder should be such as are required to be removed during the course of thinning and improvement fellings and final fellings. The trees can be removed/felled from forest irrespective of the prescribed year of fellings. All the trees marked to meet the demand of right holders shall count towards the prescribed yield. Dry and fallen trees should primarily be utilized to meet the right holders demand etc.

3.22.4 Closures: After the seedling fellings are over, the all PB-I areas should be closed immediately till the regeneration is established. The area will have to be closed for grazing till the regeneration is established. Normally this period is 10-15 years, Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927 well in time after approval of felling programme by the competent authority to avoid any litigation.

3.22.5 Lopping: Lopping generally is hereby near habitation and also in those forests which are on the road side or approach to road side etc. It should be stopped immediately, as it makes trees susceptible to disease and retards growth in future. However, lopping may be allowed to the right holders strictly as per the provision of Forest Settlement Report, 1921 and action as per the provision of Indian Forest Act, 1927 should be taken if any person or authority or agent violated the rules or provision of Forest Settlement Report, 1921. The detail/description is given in Chapter-IX in the Forest Protection (overlapping) Working Circle.

3.22.6 Regeneration Survey: The regeneration survey of felled PB-I areas shall be carried out every year till the stock is established. If regeneration is in adequate further fellings will be curtailed for the next year. The reasons for failure should be detailed and corrective measures taken. The regeneration should be made to keep pace with the fellings and in case there are short falls on this account with reference to the prescription of the Working Plan, the further fellings should not be carried out and deferred till the problem is resolved.

Chapter IV

THE FIR/SPRUCE WORKING CIRCLE

4.1 General Constitution: This Working Circle includes all the demarcated and undemarcated protected forests which predominantly contain the pure silver Fir and Spruce or in a mixture containing Fir and Spruce with 60% or more as component and are fit for working under the system of concentrated regeneration fellings have been allotted to this Working Circle. The basic constitution of this Working Circle remains the same as in the earlier plan.

4.2 General Character of Vegetation: The detailed description of the forests is given in Chapter II of Part I and the forests included in this Working Circle mainly conform the Champion and Seths type 12/c 1 (Himalayan Moist-temperate mixed conifer forests), 12/c west Himalayan upper Oak/Fir forests and 14/C1 West Himalayan sub alpine Birch/Fir forests. The Silver Fir and Spruce are the main species of this Working Circle. The Silver Fir predominates in the upper parts and spruce in lower down. In the cooler localities and depressions, Silver Fir descends up to 2500 meters, whereas Spruce penetrates higher along warmer Spurs. Some Deodar is also found in groups on rocks and precipitous areas and Kail on exposed Spurs ridges. Broad leaved species like Acer, Prunus, Juglans, Aesculus, Corylus, Carpinus, Celtis and Betula etc. occupy the sizeable areas along valleys depressions and moist sites. Kharsu, Oak is found mixed with Fir or pure in top upper belt. Taxus form under storey in some Fir forests. The forests are very much under stocked and there is preponderance of mature to over mature trees. These forests have been exploited in the past for packing cases. Many of the over mature trees are unsound and unhealthy which has been retained while meeting the requirement of local saw millars for manufacturing of packing cases. Natural regeneration in this forest is very poor and artificial regeneration is inadequate. There are no young age classes at all, however, in some areas like 15/20 areas of Sarahan range, the Fir and Spruce trees are in good condition. The forests are covered with snow for several months in winter. The silver fir regenerates itself freely whenever the Oak and other broad leaved trees form a light under storey in the forests. Excellent examples of this may be observed in fir forests along the upper ridges in the Ganwi Suga, Koot and Maglad valley of this Division.

4.3 Special objects of management: Without prejudice to general objects of managements, the special objects of managements of the forest allotted to this Working Circle are:

- (i) To restock the areas deficient in regeneration either naturally or through artificial means.
- (ii) Gradual conversion of irregular stock to normal stock thus to build up growing stock.
- (iii) To improve the existing soil covers for water and soil conservation.
- (iv) To obtain normal forests with normal distribution of age classes as far as possible.
- (v) To restock all the poorly stocked areas and blank patches by natural and artificial means.
- (vi) To improve the biodiversity of the areas.
- (vii) To achieve progressively increasing sustained yield of Fir and Spruce timber consistent with the scientific management.

4.4 Areas statement: The total area of this Working Circle is **13998.4743 hac.** this works out to be 35.51% of the total area of the division. The Range wise distribution of these forests is tabulated in table No. 4.1

Table 4.1

Name of Range	DPF	UPF	Total in hac.
Nankhari	2799.3100	0	2799.3100
Bahli	4796.7102	0	4796.7102
Rampur	219.9496	0	219.9496
Sarahan	6075.9945	106.5100	6182.5045
Total	13891.9643	106.5100	13998.4743

The forest wise detail of specific allotment is given in *Appendix No.-IV*.

4.5 Blocks and compartments: No change in the existing compartments and sub compartments has been made. The compartments and sub compartments have been numbered systematically both for DPFs and UPFs which was necessitated due to creation of new DPFs and preparation of separate new Working Plans for this division and Kotgarh division.

4.6 Felling series: One Felling series has been formed i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Rampur forest Division.

4.7 Analysis and valuation of the crop: Except for the converted crop during the period of previous plans (before the ban on green felling) the crop is irregular having all the age classes in the same areas. The converted crop, however, is generally well stocked having more or less represented almost equally, generally in mixture and some times as pure crop of Fir and Spruce separately. Deodar and Kail trees are also found in groups on rocks and precipitous on exposed spurs respectively. Broad leaved species like Acer, Prunus, Juglans,

Aesculus, Corylus, Carpinus, Celtis and Betula etc. occupy the sizeable areas along nalas depressions, Kharsu Oak is found mixed with Fir or pure in top upper belt. The regeneration of Fir and Spruce is deficient owing to the several inhibiting factors like heavy weed growth, accumulation of heavy felling refuse and biotic interferences of which grazing and fires are the most serious.

4.7.1 Stock Map: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

4.7.2 Density: The crown density of each compartment has been estimated ocularly and has been recorded in respective compartments history files. The average density of the crop varies from 0.3 to 0.5.

4.7.3 Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub-compartment has been indicated in the compartment history files.

4.7.4 Age classes:-The crop is very irregular. There is predominance of mature to over mature classes. The overall age condition is tabulated in table No. 4.2

Table 4.2

	Young, 10-29 cms	Middle aged, 30-59 cms	Mature & over Mature 60 cms & above
Stems	1320827	767538	357611
Volume	328152.88	1367454.37	2480002.23

4.7.5 Enumerations: As given in the Chapter-VIII under paragraph 8.8 complete enumeration of random sampled compartments has been done by sampling 10% of PB-I & PB-IV areas and 5% PB-II & PB-III areas. The results have been analyzed statistically. The results of enumerations are given in *Appendix No-X*. The growing stock has been assessed by random sampling and is also given in *Appendix No-XIV*.

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Table-4.3
Species wise No. and Volume in cubic mts. (Estimated growing stock) for Fir/Spruce Working Circle

P.B.-I Area= 3636.7097 hac.												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	16090	16332	8841	5735	4178	4957	4066	1306	1021	536	63063
	Volume in m3	2864.03	7937.50	9185.69	10461.25	11928.85	20451.69	22922.83	9653.10	9578.89	6231.15	111214.98
2	Kail	17526	8901	4377	2907	2543	2206	1514	856	441	234	41505
	Volume in m3	2663.96	3765.31	4219.62	5159.21	7261.04	9275.80	8816.67	6605.47	4355.33	2873.09	54995.5
3	Fir	53071	23625	14481	10952	11618	5606	4490	4118	2310	320	130589
	Volume in m3	7217.70	10135.01	15060.32	21563.77	37374.24	26817.08	29941.49	36532.03	26316.78	4555.90	215514.32
4	Spruce	94464	60779	38339	28737	23979	18011	17362	12310	10502	1237	305720
	Volume in m3	12847.15	26074.19	39872.95	56583.61	77141.77	86162.28	115785.29	109212.35	119657.58	17607.93	660945.10
5	Ban	441	260	190	285	242	398	199	112	52	251	2431
	Volume in m3	59.12	81.23	125.04	342.85	478.13	1192.19	852.56	658.66	400.85	2482.08	6672.70
6	Kharsu	4135	1419	882	277	69	26	26	9	9	0	6851
	Volume in m3	554.09	425.61	882.36	498.27	207.61	119.38	163.50	69.20	83.05	0.00	3003.07
7	Walnut	1107	969	856	588	320	251	121	61	69	17	4360
	Volume in m3	87.47	193.77	685.13	882.36	800.18	953.29	617.65	435.99	615.92	195.50	5467.27
8	Mohru	4282	3313	2033	1574	727	640	450	311	61	138	13530
	Volume in m3	573.79	993.95	2032.89	2833.93	2179.95	2944.66	2833.93	2491.37	581.32	1688.59	19154.38
9	Mapple	12786	4931	2699	1747	1029	822	389	121	69	35	24628
	Volume in m3	1495.91	986.17	1889.29	2271.64	2161.78	2711.96	1946.38	787.20	588.24	387.55	15993.24719
10	Taxus	1791	934	571	424	234	95	52	9	9	0	4118
	Volume in m3	186.23	218.62	266.63	348.00	305.97	185.08	141.90	31.88	41.55	0.00	1725.86
11	Other B.L. Species	47596	21756	11324	4896	2318	1462	1324	761	545	52	92034
	Volume in m3	4473.98	6396.33	8017.12	6541.36	5047.06	4725.02	5955.93	4553.80	4184.41	497.60	50392.60
Total Trees =		253289	143219	84594	58123	47258	34473	29992	19974	15087	2820	688829
Total volume =		33023.44	57207.68	82237.01	107486.26	144886.58	155538.43	189978.13	171031.06	166403.91	36519.39	1144311.89
P.B.-II Area= 3185.7782 hac.												
1	Deodar	3537	2025	1159	969	1189	602	249	220	29	59	10039
	Volume in m3	629.58	984.31	1204.64	1766.79	3393.96	2482.73	1406.66	1626.86	275.44	682.04	14453.02
2	Kail	15278	9862	14397	14574	13840	5283	3155	2040	205	117	78753
	Volume in m3	2322.26	4171.82	13879.11	25868.03	39512.41	22216.94	18377.04	15734.53	2028.38	1444.26	145555

1	2	3	4	5	6	7	8	9	10	11	12	13
3	Spruce	59776	86106	25008	36192	31539	22352	15131	7397	6149	2803	292454
	Volume in m3	8129.60	36939.34	26008.70	71261.43	101461.95	106931.78	100910.21	65624.77	70065.78	39900.29	627234
4	Fir	79355	58602	17964	43706	24553	10185	7470	4828	4535	1717	252916
	Volume in m3	10792.23	25140.41	18682.31	86056.99	78988.29	48726.63	49818.91	42838.39	51671.42	24441.54	437157
5	Ban	2994	1835	646	440	264	220	161	29	0	59	6648
	Volume in m3	401.19	574.21	424.26	528.79	521.48	659.55	691.77	171.92	0	580.83	4554
6	Kharsu	5283	1761	704	279	29	0	0	0	0	0	8057
	Volume in m3	707.98	528.35	704.46	501.93	88.06	0.00	0.00	0.00	0.00	0.00	2531
7	Mohru	9995	4887	2378	1145	895	528	294	132	44	44	20341
	Volume in m3	1339.27	1466.16	2377.56	2060.55	2685.76	2430.39	1849.21	1056.69	422.68	537.15	16225
8	Taxus	2436	1541	323	132	88	0	0	15	0	0	4535
	Volume in m3	253.37	360.60	150.78	108.44	115.36	0.00	0.00	54.08	0.00	0.00	1043
9	Walnut	660	264	411	161	235	103	0	103	0	0	1937
	Volume in m3	52.17	52.83	328.75	242.16	587.05	390.39	0	739.68	0	0	2393
10	Other B.L. Species	65412	77197	33403	17538	7896	4667	3170	2656	2260	0	214200
	Volume in m3	6148.74	22695.97	23649.46	23430.96	17189.23	15083.92	14265.34	15890.62	17353.4	0	155708
Total trees		244727	244082	96394	115135	80529	43941	29631	17420	13223	4799	889881
Total Volume in m3		30776.39	92913.99	87410.04	211826.06	244543.54	198922.33	187319.14	143737.55	141817.10	67586.11	1406852.26
P.B.-III Area= 4072.2853 hac.												
1	Deodar	17849	14515	4779	2948	5017	5940	6133	2352	625	179	60336
	Volume in m3	3177.15	7054.07	4965.00	5376.37	14323.03	24507.61	34579.69	17382.02	5867.27	2075.45	119307.65
2	Kail	997	2188	3990	5344	5091	4302	1935	953	417	149	25367
	Volume in m3	151.61	925.67	3846.01	9486.18	14535.53	18091.00	11271.03	7348.56	4114.93	1831.21	71601.73
3	Fir	65189	72409	43008	30026	21645	19531	12460	8351	8813	2903	284336
	Volume in m3	8865.69	31063.45	44728.02	59122.17	69632.86	93438.05	83096.93	74094.02	100414.56	41320.00	605775.76
4	Spruce	128413	67958	45017	27466	21720	18802	11909	8054	5434	4496	339268
	Volume in m3	17464.14	29153.91	46818.11	54080.52	69872.31	89948.37	79423.58	71452.52	61911.01	63993.03	584117.52
5	Walnut	60	238	417	581	536	268	104	45	0	30	2278
	Volume in m3	4.70	47.64	333.46	870.87	1339.80	1018.25	531.46	321.55	0.00	336.44	4804.18
6	Mohru	1846	2769	3528	2010	1459	521	670	60	0	45	12907
	Volume in m3	247.36	830.68	3528.15	3617.47	4376.69	2396.76	4220.38	476.37	0.00	544.85	20238.72
7	Taxus	3677	4302	4451	1816	1102	0	15	0	0	0	15363
	Volume in m3	382.41	1006.73	2078.68	1491.08	1443.12	0.00	40.70	0.00	0.00	0.00	6442.72

1	2	3	4	5	6	7	8	9	10	11	12	13
8	Mapple	1295	1891	908	1444	938	253	298	30	0	0	7056
	Volume in m3	151.53	378.12	635.66	1877.21	1969.51	835.14	1488.67	193.53	0.00	0.00	7529.39
9	Other B.L. Species	17700	11716	10763	5091	1474	2784	1340	595	194	179	51836
	Volume in m3	1663.83	3444.46	7620.27	6801.92	3208.43	8997.29	6029.12	3562.09	1485.90	1712.63	44525.93
Total Trees =		237026	177986	116861	76726	58981	52401	34865	20439	15482	7979	798747
Total volume =		32108.42	73904.72	114553.37	142723.80	180701.29	239232.48	220681.55	174830.67	173793.67	111813.62	1464343.59
P.B.-IV Area= 3103.7011 hac.												
1	Deodar	0	7	0	14	14	0	7	0	0	0	43
	Volume in m3	0.00	3.49	0.00	26.23	41.05	0.00	40.54	0.00	0.00	0.00	111.31
2	Kail	338	417	345	324	122	58	58	36	7	7	1711
	Volume in m3	51.36	176.40	332.69	574.29	348.96	241.87	334.99	277.28	70.98	88.44	2497.27
3	Spruce	2322	13697	11957	4925	2883	2919	2840	1690	1352	403	44987
	Volume in m3	315.84	5875.92	12435.10	9697.50	9275.11	13965.00	18940.06	14990.39	15401.31	5731.11	106627.33
4	Fir	137	237	2171	1251	640	1977	1352	338	115	50	8268
	Volume in m3	18.58	101.79	2258.21	2463.31	2058.57	9459.05	9014.51	2998.08	1310.75	716.39	30399.22
5	Taxus	137	259	244	201	79	0	0	0	0	0	920
	Volume in m3	14.21	60.57	114.16	165.28	103.61	0.00	0.00	0.00	0.00	0.00	457.82
5	Mohru	259	690	259	288	108	72	43	50	22	14	1805
	Volume in m3	34.68	207.07	258.84	517.67	323.55	330.74	271.78	402.64	207.07	175.43	2729.46
7	Ban	144	252	309	927	1172	892	43	0	0	0	3739
	Volume in m3	19.27	78.77	203.12	1113.93	2313.44	2671.08	184.85	0.00	0.00	0.00	6584.46
8	Other B.L. Species	280	1323	1754	1424	1524	410	230	93	7	0	7046
	Volume in m3	26.36	388.95	1242.07	1901.93	3318.32	1324.55	1035.35	559.13	55.20	0.00	9851.86
Total Trees =		3617	16882	17040	9354	6543	6327	4573	2207	1503	475	68520
Total volume =		480.30	6892.95	16844.19	16460.15	17782.60	27992.28	29822.08	19227.52	17045.31	6711.37	159258.75

Table- 4.4
Yield Calculation Table Growing Stock in PB-I & PB-IV

Sr. No	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	16090	16339	8841	5750	4193	4957	4073	1306	1021	536	63106
	Volume in m3	2864.03	7940.99	9185.69	10487.48	11969.90	20451.69	22963.37	9653.10	9578.89	6231.15	111326.30
2	Kail	17864	9318	4722	3230	2665	2263	1571	892	448	241	43217
	Volume in m3	2715.33	3941.71	4552.31	5733.50	7610.00	9517.67	9151.67	6882.75	4426.30	2961.53	57492.77
3	Fir	53208	23862	16652	12203	12258	7583	5841	4456	2425	370	138858
	Volume in m3	7236.28	10236.80	17318.52	24027.08	39432.81	36276.13	38956.00	39530.11	27627.53	5272.29	245913.54
4	Spruce	96787	74476	50296	33662	26863	20930	20202	13999	11854	1640	350707
	Volume in m3	13162.99	31950.11	52308.05	66281.11	86416.88	100127.28	134725.36	124202.74	135058.89	23339.04	767572.44
5	Ban	585	511	499	1213	1414	1289	242	112	52	251	6170
	Volume in m3	78.39	159.99	328.16	1456.77	2791.58	3863.27	1037.41	658.66	400.85	2482.08	13257.16
6	Kharsu	4135	1419	882	277	69	26	26	9	9	0	6851
	Volume in m3	554.09	425.61	882.36	498.27	207.61	119.38	163.50	69.20	83.05	0.00	3003.07
7	Walnut	1107	969	856	588	320	251	121	61	69	17	4360
	Volume in m3	87.47	193.77	685.13	882.36	800.18	953.29	617.65	435.99	615.92	195.50	5467.27
8	Mohru	4541	4003	2292	1862	834	712	493	362	82	153	15334
	Volume in m3	608.48	1201.02	2291.72	3351.60	2503.49	3275.39	3105.71	2894.00	788.39	1864.03	21883.84
9	Mapple	12786	4931	2699	1747	1029	822	389	121	69	35	24628
	Volume in m3	1495.91	986.17	1889.29	2271.64	2161.78	2711.96	1946.38	787.20	588.24	387.55	15226.11
10	Taxus	1927	1193	815	625	313	95	52	9	9	0	5038
	Volume in m3	200.44	279.19	380.79	513.29	409.58	185.08	141.90	31.88	41.55	0.00	2183.69
11	Other B.L. Species	47876	23079	13078	6320	3843	1872	1554	855	552	52	99080
	Volume in m3	4500.34	6785.27	9259.19	8443.30	8365.38	6049.57	6991.27	5112.94	4239.61	497.60	60244.46
Total Trees =		256906	160101	101634	67477	53801	40800	34564	22181	16589	3295	757348
Total volume =		33503.74	64100.63	99081.20	123946.41	162669.19	183530.71	219800.21	190258.57	183449.22	43230.76	1303570.65

Table- 4.5
General Abstract Growing Stock in all PBs

Species wise No. and Volume in cubic mts.(Estimated growing stock) for Fir/Spruce WC in all P.B.s												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	37476	32879	14779	9666	10398	11498	10456	3878	1675	774	133480
	Volume in m3	6670.77	15979.37	15355.33	17630.63	29686.89	47442.02	58949.72	28661.98	15721.61	8988.63	245086.96
2	Kail	34139	21369	23109	23148	21596	11849	6662	3885	1071	507	147337
	Volume in m3	5189.19	9039.20	22277.43	41087.71	61657.95	49825.61	38799.73	29965.84	10569.61	6237.01	274649.29
3	Fir	197751	154873	77624	85935	58456	37300	25772	17636	15773	4990	676110
	Volume in m3	26894.20	66440.66	80728.85	169206.24	188053.96	178440.81	171871.84	156462.52	179713.52	71033.83	1288846.42
4	Spruce	284976	228539	120322	97320	80122	62083	47242	29450	23437	8939	982430
	Volume in m3	38756.73	98043.36	125134.86	191623.06	257751.14	297007.43	315059.15	261280.03	267035.68	127232.36	1978923.80
5	Ban	3579	2346	1145	1653	1678	1509	403	141	52	310	12818
	Volume in m3	479.58	734.35	752.58	1985.21	3312.71	4522.39	1727.30	828.52	400.85	3065.82	17809.31
6	Kharsu	9418	3180	1587	556	99	26	26	9	9	0	14909
	Volume in m3	1262.07	953.95	1586.82	1000.20	295.67	119.38	163.50	69.20	83.05	0.00	5533.84
7	Mohru	16381	11660	8197	5016	3189	1761	1456	553	126	241	48582
	Volume in m3	2195.10	3497.86	8197.43	9029.62	9565.94	8102.55	9175.30	4427.07	1211.07	2946.03	58347.97
8	Mapple	14081	6821	3607	3191	1967	1075	687	151	69	35	31685
	Volume in m3	1647.44	1364.29	2524.95	4148.86	4131.29	3547.10	3435.05	980.73	588.24	387.55	22755.50
9	Taxus	8041	7036	5589	2573	1502	95	67	23	9	0	24936
	Volume in m3	836.22	1646.51	2610.25	2112.81	1968.05	185.08	182.60	85.96	41.55	0.00	9669.03
10	Walnut	1827	1471	1684	1330	1091	622	225	208	69	47	8575
	Volume in m3	144.35	294.25	1347.34	1995.39	2727.03	2361.93	1149.11	1497.23	615.92	531.94	12664.49
11	Other B.L. Species	130988	111992	57244	28949	13212	9323	6063	4107	3006	231	365115
	Volume in m3	12312.90	32925.70	40528.92	38676.17	28763.04	30130.78	27285.73	24565.64	23078.91	2210.23	260478.03
Total Trees =		738659	582168	314889	259339	193311	137142	99060	60041	45295	16073	2445976
Total volume =		96388.55	230919.49	301044.77	478495.92	587913.68	621685.09	627799.02	508824.73	499059.99	222633.40	4174764.64

2.7.6 Total growing stock per hac. works out as under:-

Table- 4.6

P.B.	Area in hac.	Vol. of conifers in cums	Vol. of B.L. in cums	Vol./ha of conifers in cum	Vol/ha of B.L. in cum	Total vol/ha in cums
I	3636.7097	1042669.90	101641.99	286.71	27.95	314.66
II	3185.7782	1224398.76	182453.49	384.33	57.27	441.60
III	4072.2853	1380802.65	83540.94	339.07	20.51	359.59
IV	3103.7011	139635.14	19623.61	44.99	6.32	51.31
Total	13998.4743	3787506.47	387260.0276	1055.10	112.06	1167.16

Statistically analysis of enumeration results:

Table- 4.7

Sr. No.	Particulars	PB-I	PB-II	PB-III	PB-IV
1	Total area of the PB (in hac.)	3636.7097	3185.7782	4072.2853	3103.7011
2	Area enumerated (in hac.)	420.4006	217.07	273.5517	431.6744
3	Percentage of area covered	11.56%	6.81%	6.72%	13.91%
4	No. of units measured (in No.s)	4	4	4	2
5	Mean volume per hac. (in M ³)	314.66	441.6	359.59	51.31

Contd. p-221

4.8 Silvicultural System: The forest allotted to this Working Circle shall be managed under the Punjab Shelter Wood System with the provision of retention of compact group of well grown poles as a part of future crop. The system is described in para 30 of the Punjab Forest leaflet No.11. Young crop upto 30 cm diameter and upto 0.1 hac. in extent of area shall be retained as part of future crop. In addition all fir trees 30 cm dbh will also be retained as part of future crop. No felling will be done on steep, precipitous and rocky patches. The intensity of opening of fir is less than in case of Deodar, though it should be remembered that at higher elevation it will require a fair amount of opening to bring in reproduction. The Spruce requires heavier opening than Fir, almost equal to Deodar. Efforts will be made to regenerate the area naturally with effective closure. Artificial planting will only be resorted where natural regeneration fails to come up in a reasonable time.

4.9 Choice of Species: Silver Fir and Spruce shall be given preference and planted on the ground ideally suited to each species. Broad leaved species like Walnut, Maple, Bird Cherry and Popar etc. shall be planted in moist location, depressions and nallas. The proportion of Deodar shall be increased on suitable ground between 2400 meters to 3000 meters on Northern aspects. The grazing frequency is responsible for absence of natural regeneration of Fir and Spruce. In addition heavy weed growth and accumulation of deep humus are known to be the factors inimical to regeneration of Fir and makes the conditions for natural regeneration unfavourable. It is therefore necessary that the steps must be taken to regenerate these forests with existing two species on the ground suited to each other while broad leaved species should be planted in depressions. In the lower parts of some of these forests in tension belt considerable quantities of Kail are some time present and the Kail is not in frequently found invading into the Fir. Here it should be possible to increase the proportion of this more valuable species and on the ridges in the tension belt it is also possible to introduce little Deodar in the mixture. Beyond this it is mistake to try and force Deodar. Kail should not be sacrificed for Fir or Spruce. In short, the species best suited to the locality shall be preferred.

4.10 Regeneration period: The Silver Fir and Spruce are expected to attain a height of 4 to 5 mts. in 30 years when they can be considered as established and beyond the damage by cattle. Therefore, regeneration period is fixed at 30 years.

4.11 Rotation period: As in the Kapoor's plan the rotation is fixed at 120 years in this Working Circle. This period of 120 years is reasonable and economical for production of sizes of timber fit for all market demands. The general quality class of the tract is II/III FRI.

4.12 Exploitable diameter: Exploitable diameter fixed at 40 to 60cm dbh being the most suited to yield better out turn in the form of sleeper size which fetches better price in the market. This is, however, a size to be aimed at, for the converted crop whereas the existing

crop has such a large preponderance over mature stock that the exploitable size is only of academic interest.

4.13 Felling cycle: The felling cycle of 15 years corresponding to the period of plan will be adopted.

4.14 Division into periodic blocks: With the rotation of 120 years and regeneration period of 30 years, the area of the whole Working Circle has been divided into 4 periodic Blocks as P.B.I, P.B.II, P.B.III, PB-IV. The allotment is discussed as under:-

4.14.1 PB-I (3636.7097 hac.): Area allotted to this periodic block contain predominantly middle aged to mature crops, the unfelled areas of expired plan and those areas that remained understock and where regeneration is either still progressing or has not come at all. In addition to this the forests with preponderance of mature age classes is also allotted to PB-I and while all the forests having established pole crop with scattered matured trees has been allotted to PB-IV. The forests with generally blanks are also allotted to PB-I. No fellings were done in the plan under revision in PB-I. Some closures for artificial regeneration were, however done in PB-I areas. All such areas have been put in PB-I. No change is made in PB-I area of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 4.8

Table- 4.8
Species wise distribution of number of trees and volume per hac.

P.B.-I Area= 3636.7097 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Deodar	No. of trees per hac.	4	4	2	2	1	1	1	0	0	0	17
	volume per hac.	0.79	2.18	2.53	2.88	3.28	5.62	6.30	2.65	2.63	1.71	30.58
Kail	No. of trees per hac.	5	2	1	1	1	1	0	0	0	0	11
	volume per hac.	0.73	1.04	1.16	1.42	2.00	2.55	2.42	1.82	1.20	0.79	15.12
Fir	No. of trees per hac.	15	6	4	3	3	2	1	1	1	0	36
	volume per hac.	1.98	2.79	4.14	5.93	10.28	7.37	8.23	10.05	7.24	1.25	59.26
Spruce	No. of trees per hac.	26	17	11	8	7	5	5	3	3	0	84
	volume per hac.	3.53	7.17	10.96	15.56	21.21	23.69	31.84	30.03	32.90	4.84	181.74
Ban	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.02	0.02	0.03	0.09	0.13	0.33	0.23	0.18	0.11	0.68	1.83
Kharsu	No. of trees per hac.	1	0	0	0	0	0	0	0	0	0	2
	volume per hac.	0.15	0.12	0.24	0.14	0.06	0.03	0.04	0.02	0.02	0.00	0.83

1	2	3	4	5	6	7	8	9	10	11	12	13
Walnut	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	No. of volume per hac.	0.02	0.05	0.19	0.24	0.22	0.26	0.17	0.12	0.17	0.05	1.50
Mohru	No. of trees per hac.	1	1	1	0	0	0	0	0	0	0	4
	volume per hac.	0.16	0.27	0.56	0.78	0.60	0.81	0.78	0.69	0.16	0.46	5.27
Mapple	No. of trees per hac.	4	1	1	0	0	0	0	0	0	0	7
	volume per hac.	0.62	0.27	0.52	0.62	0.59	0.75	0.54	0.22	0.16	0.11	4.40
Taxus	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.05	0.06	0.07	0.10	0.08	0.05	0.04	0.01	0.01	0.00	0.47
Other B.L. Species	No. of trees per hac.	13	6	3	1	1	0	0	0	0	0	25
	volume per hac.	1.23	1.76	2.20	1.80	1.39	1.30	1.64	1.25	1.15	0.14	13.86
Total No. of trees per hac.		70	39	23	16	13	9	8	5	4	1	189
Total volume per hac.		9.29	15.73	22.61	29.56	39.84	42.77	52.24	47.03	45.76	10.04	314.87

4.14.2 PB-II (3185.7782 hac.): Forests, in which there is preponderance of maturing trees, have been allotted to this periodic block. No change is made in PB-II areas of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 4.9

Table- 4.9
Species wise distribution of number of trees and volume per hac.

P.B.-II Area= 3185.7782 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Deodar	No. of trees per hac.	1	1	0	0	0	0	0	0	0	0	3
	volume per hac.	0.20	0.31	0.38	0.55	1.07	0.78	0.44	0.51	0.09	0.21	4.54
Kail	No. of trees per hac.	5	3	5	5	4	2	1	1	0	0	25
	volume per hac.	0.73	1.31	4.36	8.12	12.40	6.97	5.77	4.94	0.64	0.45	45.69
Spruce	No. of trees per hac.	19	27	8	11	10	7	5	2	2	1	92
	volume per hac.	2.55	11.60	8.16	22.37	31.85	33.57	31.68	20.60	21.99	12.52	196.89
Fir	No. of trees per hac.	25	18	6	14	8	3	2	2	1	1	79
	volume per hac.	3.39	7.89	5.86	27.01	24.79	15.30	15.64	13.45	16.22	7.67	137.22

1	2	3	4	5	6	7	8	9	10	11	12	13
Ban	No. of trees per hac.	1	1	0	0	0	0	0	0	0	0	2
	volume per hac.	0.13	0.18	0.13	0.17	0.16	0.21	0.22	0.05	0.00	0.18	1.43
Kharsu	No. of trees per hac.	2	1	0	0	0	0	0	0	0	0	3
	volume per hac.	0.22	0.17	0.22	0.16	0.03	0.00	0.00	0.00	0.00	0.00	0.79
Mohru	No. of trees per hac.	3	2	1	0	0	0	0	0	0	0	6
	volume per hac.	0.42	0.46	0.75	0.65	0.84	0.76	0.58	0.33	0.13	0.17	5.09
Taxus	No. of trees per hac.	1	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.08	0.11	0.05	0.03	0.04	0.00	0.00	0.02	0.00	0.00	0.33
Walnut	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.02	0.02	0.10	0.08	0.18	0.12	0.00	0.23	0.00	0.00	0.75
Other B.L. Species	No. of trees per hac.	21	24	10	6	2	1	1	1	1	0	67
	volume per hac.	1.93	7.12	7.42	7.35	5.40	4.73	4.48	4.99	5.45	0.00	48.88
Total No. of trees per hac.		77	77	30	36	25	14	9	5	4	2	279
Total volume per hac.		9.66	29.17	27.44	66.49	76.76	62.44	58.80	45.12	44.52	21.21	441.60

4.14.3 PB-III (4072.2853 ha): The forests carrying pole to middle aged crops with few scattered matured and maturing trees has been allotted to this PB, as in plan under revision. No change has been made therein. The distribution of number of trees and volume per hac. is tabulated in table No. 4.10

Table- 4.10
Species wise distribution of number of trees and volume per hac.

P.B.-III Area= 4072.2853 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Deodar	No. of trees per hac.	4	4	1	1	1	1	2	1	0	0	15
	volume per hac.	0.78	1.73	1.22	1.32	3.52	6.02	8.49	4.27	1.44	0.51	29.30
Kail	No. of trees per hac.	0	1	1	1	1	1	0	0	0	0	6
	volume per hac.	0.04	0.23	0.94	2.33	3.57	4.44	2.77	1.80	1.01	0.45	17.58

1	2	3	4	5	6	7	8	9	10	11	12	13
Spruce	No. of trees per hac.	32	17	11	7	5	5	3	2	1	1	83
	volume per hac.	4.29	7.16	11.50	13.28	17.16	22.09	19.50	17.55	15.20	15.71	143.44
Walnut	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.00	0.01	0.08	0.21	0.33	0.25	0.13	0.08	0.00	0.08	1.18
Mohru	No. of trees per hac.	0	1	1	0	0	0	0	0	0	0	3
	volume per hac.	0.06	0.20	0.87	0.89	1.07	0.59	1.04	0.12	0.00	0.13	4.97
Fir	No. of trees per hac.	16	18	11	7	5	5	3	2	2	1	70
	volume per hac.	2.18	7.63	10.98	14.52	17.10	22.94	20.41	18.19	24.66	10.15	148.76
Taxus	No. of trees per hac.	1	1	1	0	0	0	0	0	0	0	4
	volume per hac.	0.09	0.25	0.51	0.37	0.35	0.00	0.01	0.00	0.00	0.00	1.58
Mapple	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	2
	volume per hac.	0.06	0.09	0.16	0.46	0.48	0.21	0.37	0.05	0.00	0.00	1.87
Other B.L. Species	No. of trees per hac.	4	3	3	1	0	1	0	0	0	0	13
	volume per hac.	0.41	0.85	1.87	1.67	0.79	2.21	1.48	0.87	0.36	0.42	10.93
Total No. of trees per hac.		58	44	29	19	14	13	9	5	4	2	
Total volume per hac.		7.90	18.15	28.13	35.05	44.37	58.75	54.19	42.93	42.68	27.46	

4.14.4 PB-IV (3103.7011 hac.): All the compartments having young poles with scattered mother trees have been allotted to PB-IV as in the plan under revision. No change has been made therein. The species wise distribution in different classes is tabulated in table No.4.11.

Table- 4.11
Species wise distribution of number of trees and volume per hac.

P.B.-IV Area= 3103.7011 hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
Deodar	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.04
Spruce	No. of trees per hac.	1	4	4	2	1	1	1	1	0	0	14
	volume per hac.	0.10	1.89	4.01	3.12	2.99	4.50	6.10	4.83	4.96	1.85	34.35
Kail	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.02	0.06	0.11	0.19	0.11	0.08	0.11	0.09	0.02	0.03	0.80

1	2	3	4	5	6	7	8	9	10	11	12	13
Fir	No. of trees per hac.	0	0	1	0	0	1	0	0	0	0	3
	volume per hac.	0.01	0.03	0.73	0.79	0.66	3.05	2.90	0.97	0.42	0.23	9.79
Taxus	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	volume per hac.	0.00	0.02	0.04	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.15
Mohru	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.01	0.07	0.08	0.17	0.10	0.11	0.09	0.13	0.07	0.06	0.88
Ban	No. of trees per hac.	0	0	0	0	0	0	0	0	0	0	1
	volume per hac.	0.01	0.03	0.07	0.36	0.75	0.86	0.06	0.00	0.00	0.00	2.12
Other B.L. Species	No. of trees per hac.	0	0	1	0	0	0	0	0	0	0	2
	volume per hac.	0.01	0.13	0.40	0.61	1.07	0.43	0.33	0.18	0.02	0.00	3.17
Total No. of trees per hac.		1	5	5	3	2	2	1	1	0	0	22
Total volume per hac.		0.15	2.22	5.43	5.30	5.73	9.02	9.61	6.20	5.49	2.16	51.31

4.14.5 General abstract of areas allotted PB wise: The PB wise allotment of the areas to different Ranges is tabulated in table No.:- 4.12

Table- 4.12

Sr. No.	Name of Range	Forest category	Fir/Spruce WC				
			PBI	PBII	PBIII	PBIV	Total
1	Nankhari	DPF	1597.6900	459.6700	254.7400	487.2100	2799.3100
		Listed UPF	0	0	0	0	0
		Total	1597.6900	459.6700	254.7400	487.2100	2799.3100
2	Bahli	DPF	670.2600	1108.8800	1826.5500	1191.0202	4796.7102
		Listed UPF	0	0	0	0	0
		Total	670.2600	1108.8800	1826.5500	1191.0202	4796.7102
3	Rampur	DPF	0	34.0200	0	185.9296	219.9496
		Listed UPF	0	0	0	0	0
		Total	0	34.0200	0	185.9296	219.9496
4	Sarahan	DPF	1276.4197	1569.0382	1990.9953	1239.5413	1
		Listed UPF	92.3400	14.1700	0	0	1
		Total	1368.7597	1583.2082	1990.9953	1239.5413	6182.5045
Total DPF			3544.3697	3171.6082	4072.2853	3103.7011	13891.9643
Total Listed UPF			92.3400	14.1700	0	0	106.5100
G. Total			3636.7097	3185.7782	4072.2853	3103.7011	13998.4743

4.14.6 General Abstract of areas and Growing Stock P.B. wise

The general abstract of areas and Growing Stock P.B. wise is tabulated in table No.:- 4.13

Table- 4.13

Particulars	P.B.I	P.B.II	P.B.III	P.B.IV	Total
Area allotted (in hac.)	3636.7097	3185.7782	4072.2853	3103.7011	13998.4743
Growing Stock (M ³)	1144311.89	1406852.26	1464343.591	159258.75	4174766.49

4.15 Calculation of yield

The yield has been calculated by volume for PB-I and PB-IV. Increment has been ignored for the reasons safety against fire and natural calamities and to serve as emergency reserve. No yield has been prescribed from PB-II as a safe guard and to build up the growing stock to be treated in next PB-I.

4.15.1 Yield from PB-I areas: The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in four numbers of PB-I areas and the details are given in the *Appendix No.-X*. The abstract showing the growing stock of class wise and species wise PB-I areas is tabulated in table No.:- 4.14

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Table- 4.14

Species wise No. and Volume in cubic mts.(Estimated growing stock) for Fir/Spruce Working Circle

P.B.-I Area= 3636.7097 hac.												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Deodar	16090	16332	8841	5735	4178	4957	4066	1306	1021	536	63063
	Volume in m3	2864.03	7937.50	9185.69	10461.25	11928.85	20451.69	22922.83	9653.10	9578.89	6231.15	111214.98
2	Kail	17526	8901	4377	2907	2543	2206	1514	856	441	234	41505
	Volume in m3	2663.96	3765.31	4219.62	5159.21	7261.04	9275.80	8816.67	6605.47	4355.33	2873.09	54995.5
3	Fir	53071	23625	14481	10952	11618	5606	4490	4118	2310	320	130589
	Volume in m3	7217.70	10135.01	15060.32	21563.77	37374.24	26817.08	29941.49	36532.03	26316.78	4555.90	215514.32
4	Spruce	94464	60779	38339	28737	23979	18011	17362	12310	10502	1237	305720
	Volume in m3	12847.15	26074.19	39872.95	56583.61	77141.77	86162.28	115785.29	109212.35	119657.58	17607.93	660945.10
5	Ban	441	260	190	285	242	398	199	112	52	251	2431
	Volume in m3	59.12	81.23	125.04	342.85	478.13	1192.19	852.56	658.66	400.85	2482.08	6672.70
6	Kharsu	4135	1419	882	277	69	26	26	9	9	0	6851
	Volume in m3	554.09	425.61	882.36	498.27	207.61	119.38	163.50	69.20	83.05	0.00	3003.07
7	Walnut	1107	969	856	588	320	251	121	61	69	17	4360
	Volume in m3	87.47	193.77	685.13	882.36	800.18	953.29	617.65	435.99	615.92	195.50	5467.27
8	Mohru	4282	3313	2033	1574	727	640	450	311	61	138	13530
	Volume in m3	573.79	993.95	2032.89	2833.93	2179.95	2944.66	2833.93	2491.37	581.32	1688.59	19154.38
9	Mapple	12786	4931	2699	1747	1029	822	389	121	69	35	24628
	Volume in m3	1495.91	986.17	1889.29	2271.64	2161.78	2711.96	1946.38	787.20	588.24	387.55	15993.24719
10	Taxus	1791	934	571	424	234	95	52	9	9	0	4118
	Volume in m3	186.23	218.62	266.63	348.00	305.97	185.08	141.90	31.88	41.55	0.00	1725.86
11	Other B.L. Species	47596	21756	11324	4896	2318	1462	1324	761	545	52	92034
	Volume in m3	4473.98	6396.33	8017.12	6541.36	5047.06	4725.02	5955.93	4553.80	4184.41	497.60	50392.60
Total Trees		253289	143219	84594	58123	47258	34473	29992	19974	15087	2820	688829
Total volume		33023.44	57207.68	82237.01	107486.26	144886.58	155538.43	189978.13	171031.06	166403.91	36519.39	1144311.89

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Calculation of the yield has been based on the volume of the trees of 40 cms dbh and over. Increment has been ignored. From the management point of view and theoretically the entire growing stock except the mother trees above 40 cms diameter should be available during the plan period. Since a compact group of poles shall be retained as advance growth and some trees will be left on broken and steep grounds, only a part of II and III/IV class trees will be available. Similarly, the yield from I and II class trees will be further restricted as some trees have to be retained as emergency reserve and fire insurance trees. The trees standing on blanks or over patches where regeneration has not established shall also be not available. Therefore, the yield on the basis of silvicultural availability is calculated as under:-

$$Y = \frac{C1V1 + C2V2 + C3V3}{P}$$

Where V1, V2 and V3 are the volumes of I class, II class trees and III and IV class trees respectively.

P= Plan period i.e. 15 years.

C1, C2, C3 are the constants representing percentage of I class, II class and III class and IV class trees respectively estimated to be available for felling during the regeneration period. The values of constants of C1, C2, and C3 have been fixed as under after detailed examination of forests during field inspections. These figures are arrived at after analysis number of stems per hac. Also and is tabulated in table No. 4.15.

Table – 4.15

Species	No. of trees in PB-I	Proportion of trees	No. of seed bearer to be retained/ ha	No. of seed bearer to be retained/ hac. on proportionate basis	Total Trees to be retained over 3636.7097 ha	Existing No. of trees class I, II & III	No. of trees available for removal I, II & III	Proportionate no. of Class I, II & III class available
Deodar	63063	12	30	4	13092	30640	17548	0.13
Kail	41505	8	25	2	7273	15078	7805	0.06
Chil	0	0	20	0	0	0	0	0.00
Rai	305720	56	25	14	50914	150477	99563	0.74
Fir	130589	24	50	12	43641	53893	10253	0.08

The above proportion is based on purely theoretical consideration. This combined with field observations gives following well suiting proportions.

Deodar = 0.1
Kail = 0.1
Spruce = 0.1

Fir = 0.1

Chil = 0

This was in respect of III and above classes. Field inspections indicate that 40% of V and IV classes trees will also be available for felling.

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1 + C2V2}{P}$$

C1= Constant representing the fraction of volume of V and IV class trees available for felling during the Plan period. C1 has been taken as 0.4 for all species.

C2= Constant representing the fraction of volume of III & above class trees available for felling during the plan period. C2 has been taken as 0.1, for Deodar, 0.1 for Kail, 0 for Chil, 0.1 for Spruce and 0.1 for Fir respectively.

V1= Volume of trees of V, IV & III class trees of conifers

V2= Volume of trees of II class and above trees of conifers

P= Period of the plan is 15 years i.e. Working Plan period.

(Deodar) V1= Volume of trees of V, IV & III class trees of conifers = 19987.22 M³

V2= Volume of trees of II class and above trees of conifers = 91227.76 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1 \times V1 + C2 \times V2}{P}$$

$$Y = \frac{0.4 \times 19987.22 + 0.1 \times 91227.76}{15} = 1141.18 \text{ or say } 1100 \text{ M}^3$$

(KAIL) V1= Volume of trees of V, IV & III class trees of conifers = 10648.89 M³

V2= Volume of trees of II class and above trees of conifers = 44346.61 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1 \times V1 + C2 \times V2}{P}$$

$$Y = \frac{0.4 \times 10648.89 + 0.1 \times 44346.61}{15} = 579.61 \text{ or say } 550 \text{ M}^3$$

(FIR) V1= Volume of trees of V, IV & III class trees of conifers = 32413.03 M³

V2= Volume of trees of II class and above trees of conifers = 183101.29 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1 \times V1 + C2 \times V2}{P}$$

$$Y = \frac{0.4 \times 32413.03 + 0.1 \times 183101.29}{15} = 2085.02 \text{ or say } \mathbf{2100 \text{ M}^3}$$

(SPRUCE) V1= Volume of trees of V, IV & III class trees of conifers = 78794.29 M³

V2= Volume of trees of II class and above trees of conifers = 582150.81 M³

P= Period of the plan is 15 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1 \times V1 + C2 \times V2}{P}$$

$$Y = \frac{0.4 \times 78794.29 + 0.1 \times 582150.81}{15} = 5982.19 \text{ or say } \mathbf{6000 \text{ M}^3}$$

Therefore, the annual yield of different species is summerised as under for P.B.I:

Table- 4.16

Sr. No.	Species	Annual yield
1	Deodar	1100 m ³
2	Kail	550 m ³
3	Chil	0 m ³
4	Rai	6000 m ³
5	Fir	2100 m ³
Total		9750 m³

4.15.2 Yield from PB-II: Strictly speaking, there should be no felling from this PB as this PB constitutes the future PB-I. However, past experience has shown that due to snow damage and wind thrown, salvage removals occur which also have to be accounted for. These removals have to be counted for in order to safe guard the future yield, no major fellings are prescribed and therefore, no yield has been calculated for this periodic block. As given in the Chapter-VIII under paragraph 8.8 complete enumeration of random sampled compartments has been done by sampling 10% of PB-I & PB-IV areas and 5% PB-II & PB-III areas. The results have been analyzed statistically and growing stock has been assessed. All the trees in

such units down to 10 cms dbh were enumerated in four numbers of PB-II areas. The results of enumeration were statistically analyzed and is tabulated in table No.4.17

Table- 4.17

Sr. No.	Items	Particulars
1.	Total area of periodic block	3185.7782 hac.
2.	Area enumerated	217.07 hac
3.	Percentage of area covered	6.81%
4	Number of units measures	4 No.s
5	Mean volume per Hac.	441.6 m ³

The detail of enumeration done in the sample areas are given in *Appendix-X*

4.15.3 Intermediate yield from P.B.III: For conservative reasons, no yield is prescribed from PB-III areas. The demand of right holders used to be invariably met from the forests of this periodic block before imposition of ban on green fellings. Hence no green fellings are prescribed. However, salvage markings of dead and uprooted trees will be done to clear these forests from fire hazards. The removals will, however, count toward the yield of PB-I.

As given in the Chapter-VIII under paragraph 8.8 complete enumeration of random sampled compartments has been done by sampling 10% of PB-I & PB-IV areas and 5% PB-II & PB-III areas. The results have been analyzed statistically and growing stock has been assessed. All the trees in such units down to 10 cms dbh were enumerated in four numbers of PB-II areas. The results of enumeration were statistically analyzed and is tabulated in table No. 4.18

Table- 4.18

Sr. No.	Items	Particulars
1.	Total area of periodic block	4072.2853 hac.
2.	Area enumerated	273.5517 hac.
3.	Percentage of area covered	6.72%
4	Number of units measures	4 No.s
5	Mean volume per Hac.	359.59 m ³

The detail of enumeration done in the sample areas are given in *Appendix No.-X*.

4.15.4 Yield from PB-IV Area: Complete enumeration down to 10 cms dbh has been carried out in two numbers of samples and with an area of 431.6744 hac. All the trees in such units down to 10 cms dbh were enumerated in two numbers of PB-IV areas. The results of enumeration were statistically analyzed and is tabulated in table No. 4.19

Table- 4.19

Sr. No.	Items	Particulars
1.	Total area of periodic block	3103.7011 m ³
2.	Area enumerated	431.6744 hac
3.	Percentage of area covered	13.91%
4	Number of units measures	2 No.s
5	Mean volume per Hac.	51.31 m ³

The abstract of growing stock is tabulated in table No.4.20

Table- 4.20

Species wise No. and Volume in cubic mts. (Estimated growing stock) for Fir/Spruce WC P.B.-IV Area= 3103.7011 hac.												
Sr. No.	Species	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	Deodar	0	7	0	14	14	0	7	0	0	0	43
	Volume in m3	0.00	3.49	0.00	26.23	41.05	0.00	40.54	0.00	0.00	0.00	111.31
2	Kail	338	417	345	324	122	58	58	36	7	7	1711
	Volume in m3	51.36	176.40	332.69	574.29	348.96	241.87	334.99	277.28	70.98	88.44	2497.27
3	Spruce	2322	13697	11957	4925	2883	2919	2840	1690	1352	403	44987
	Volume in m3	315.84	5875.92	12435.10	9697.50	9275.11	13965.00	18940.06	14990.39	15401.31	5731.11	106627.33
4	Fir	137	237	2171	1251	640	1977	1352	338	115	50	8268
	Volume in m3	18.58	101.79	2258.21	2463.31	2058.57	9459.05	9014.51	2998.08	1310.75	716.39	30399.22
5	Taxus	137	259	244	201	79	0	0	0	0	0	920
	Volume in m3	14.21	60.57	114.16	165.28	103.61	0.00	0.00	0.00	0.00	0.00	457.82
6	Mohru	259	690	259	288	108	72	43	50	22	14	1805
	Volume in m3	34.68	207.07	258.84	517.67	323.55	330.74	271.78	402.64	207.07	175.43	2729.46
7	Ban	144	252	309	927	1172	892	43	0	0	0	3739
	Volume in m3	19.27	78.77	203.12	1113.93	2313.44	2671.08	184.85	0.00	0.00	0.00	6584.46
8	Other B.L. Species	280	1323	1754	1424	1524	410	230	93	7	0	7046
	Volume in m3	26.36	388.95	1242.07	1901.93	3318.32	1324.55	1035.35	559.13	55.20	0.00	9851.86
Total Trees		3617	16882	17040	9354	6543	6327	4573	2207	1503	475	68520
Total volume		480.30	6892.95	16844.19	16460.15	17782.60	27992.28	29822.08	19227.52	17045.31	6711.37	159258.75

That all the trees above 40 cms. in diameter are out of place in this PB, if the regeneration has established and can be removed during the period of plan. However, this is not possible due to silvicultural considerations. Trees standing on broken and precipitous ground can not be removed. Similarly the trees standing on periphery of the blanks and along the boundary or in the nallas shall not be available for fellings. Beside this many of the II class trees standing amongst groups of pole retained as part of future crop will not be removed. Therefore, keeping in view the condition of forest and observation made during inspection of forests, it is estimated that not more than 50% of the volume of I and II class trees shall be available for felling during the period of plan. In addition to this another 10% of the volume

of IV and III class trees shall be available under thinning. The annual yield is therefore calculated

$$\text{Annual Yield (AY)} = \frac{V1*50/100 + V2*10/100}{P}$$

Where V1 is volume of I & II class trees.

V2 is volume of III & IV class trees.

P is plan period which is 15 years.

The yield is, therefore, calculated as under:

(i) **(Deodar)** $AY = \frac{V1*50/100 + V2*10/100}{15}$

$$V1 = 107.82 \text{ M}^3$$

$$V2 = 3.49 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{107.82 \times 50\% + 3.49 \times 10\%}{15} \quad 3.62 \text{ M}^3 \text{ or say } 0 \text{ M}^3$$

(ii) **(Kail)** $AY = \frac{V1*50/100 + V2*10/100}{15}$

$$V1 = 1936.82 \text{ M}^3$$

$$V2 = 509.09 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{1936.82 \times 50\% + 509.09 \times 10\%}{15} \quad 67.95 \text{ M}^3 \text{ or say } 68 \text{ M}^3$$

(iv) **(Spruce)** $AY = \frac{V1*50/100 + V2*10/100}{15}$

$$V1 = 88000.48 \text{ M}^3$$

$$V2 = 18311.02 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{88000.48 \times 50\% + 18311.02 \times 10\%}{15} \quad 3055.42 \text{ M}^3 \text{ or say } 3050 \text{ M}^3$$

$$(v) \text{ (Fir) AY} = \frac{V1 \times 50/100 + V2 \times 10/100}{15}$$

15

$$V1 = 25022.57 \text{ M}^3$$

$$V2 = 2360.00 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{25022.57 \times 50\% + 2360.00 \times 10\%}{15} = 849.82 \text{ M}^3 \text{ or say } 850 \text{ M}^3$$

Therefore, the annual yield of different species is summerised as under for P.B.IV

Table- 4.21

Sr. No.	Species	Annual yield
1	Deodar	0 m ³
2	Kail	68 m ³
3	Chil	0 m ³
4	Spruce	3050 m ³
5	Fir	850 m ³
Total		3968 m³

4.16 Total prescribed Annual yield: The total Annual yield from the forests of this Working Circle is prescribed as under. However, the yield from PB-III as mentioned above will not be available for commercial sales and is tabulated in table No. 4.22.

Table- 4.22

Species	PBI	PBIV	Total
Deodar	1100 m ³	0 m ³	1100 m ³
Kail	550 m ³	68 m ³	618 m ³
Chil	0 m ³	0 m ³	0 m ³
Spruce	6000 m ³	3050 m ³	9050 m ³
Fir	2100 m ³	850 m ³	2950 m ³
Total	9750 m³	3968 m³	13718 m³

4.17 Control of yield: All the removals of whatever nature down to 10 cms dbh shall count towards yield of this Working Circle. Deviation for a year, period of five year and plan period shall not exceed 10% of the annual prescribed yield. Removals will depend upon the pace of regeneration. Moreover, no commercial fellings will be undertaken until there is stock of nursery of 3.5 to 4.5 years for Fir, 2.5 to 3.5 years for Spruce and for Deodar 2.5 years. The regeneration survey shall be carried out once in five year and if it indicates that the specification of regeneration has not been achieved, then fellings shall be deferred till such time as desired result of regeneration is achieved.

4.18 Yield in relation to CAI: The current annual increment percentage (CAI) is already given in para 8.3 of Part I. Based on these, the yield is compared to the increment as under:-

Table 4.23

Species	Total Standing Volume (cum)	Increment %age	Annual Increment	Annual Yield	Prescribed Yield %age
Deodar	245086.96	1.74	4264.51	1100	26
Kail	274649.29	1.58	4339.46	618	14
Chil	0	2.16	0.00	0	0
Spruce	1978923.80	1.20	23747.09	9050	38
Fir	1288846.42	1.06	13661.77	2950	22
Total	3787506.47	7.74	46012.83	13718	30

4.19 Method of executing the felling

4.19.1 In PB-I Areas:

The marking shall be carried out by Divisional Forest Officer or his ACF and in variably checked by the Conservator of Forests. The technique of carrying of regeneration marking is described in the Punjab Forest Leaflet No. 2 and must be carefully studied by the marking officer and complied. In addition the following broad guidelines are laid down for the marking Officer.

- (i) The Mother trees should be uniformly distributed all over the area and tall, well grown healthy trees with superior poles and well developed crown should be selected as Mother trees. These should preferably of class II B and II-A.
- (ii) As far as practicable, mother trees selected should be of Fir and Spruce and uniformly spaced. In case of pure Fir crop, 40 to 50 trees per hac. and in case of pure Spruce 30 to 35 trees per hac. shall be retained as seed bearers. In the groups of Deodar and Kail occurring on warmer slopes and in lower belt, opening shall be created to same extent suitable for these species.
- (iii) In case of mixture of Fir and Spruce, 30 to 40 trees of both Fir and Spruce of 40 to 60 cms dia class per hac. shall be retained.
- (iv) As far as possible seed bearers shall be retained on ridges and spurs in order to have better disposal of seed.
- (v) Well grown advance growth upto 30 cm d.b.h. covering an area not less than 0.1 hac. and density exceeding 0.5 shall be retained as part of future crop.
- (vi) Markings on steep and precipitous slopes shall conform to selection principles.

- (vii) Broad leaved trees found in mixture with Fir and spruce shall ordinarily be retained but where too dense, they shall be marked or lopped as warranted by the situation in order to remove the over head shade and to create a proper seed bed.
- (viii) Before undertaking any forest for seeding fellings it shall be ensured that nursery stock is ready to replace the felled trees immediately after the timber has been extracted from the forest. To achieve this objective, nurseries should be raised 2 to 3 years in advance in the vicinity of the area to be undertaken for felling. In case neither the nurseries have been raised nor the stock is available, no markings/fellings shall be done and the yield for that particular year should be considered as obtained.
- (ix) Regeneration survey shall be carried out in the felled areas and the success of regeneration will be reviewed every fifth year. In case the regeneration is not keeping pace with the fellings further fellings shall be stopped/deferred.
- (x) Final felling shall be carried out keeping in view the progress of regeneration.

4.19.2 In PB-II Areas: This being sacred PB, no major felling of any kind and magnitude will be done in PB-II. However, only salvage marking of dead, uprooted trees will be done to clear these forests from fire hazards and improvement of the crop. The yield removed from these PBs shall be counted for yields towards the yield of the Working Circles.

4.19.3 In PB-III Areas: No fellings will be carried out in this PB. However, salvage marking of dead and uprooted trees will be done to clear the forest from fire hazards. All removals shall count towards total yield of Working Circle.

4.19.4 Thinning: Thinning will be carried out in accordance with the principles of thinning laid down in Punjab Forest Leaflets No. I and IA, with the additional numerical check of yield table figures.

4.19.5 In PB-IV Areas: All over wood shall be removed in the areas where regeneration has been fully established. Besides this, thinnings in patches of advance growth are to be done. The following general principles are laid down for the guidance of marking officer:-

- (i) No attempt should be made to obtain or induce regeneration. The marking should aim at freeing the established regeneration by removing the over wood. Thus, first and second class trees standing over the established regeneration will be marked.
- (ii) All solitary trees standing amongst young crop which are likely to develop into wolf tree shall be marked.
- (iii) Thinnings in groups of poles and patches of advance growth shall be carried out wherever necessary.

- (iv) All marked trees likely to damage young crop underneath should be lopped before felling.
- (v) Broad leaved tree should not be marked unnecessarily on the pretext of improvement fellings. These should, however be lopped where found suppressing the young crop.

4.20 Table of felling: The following tabular statement gives the order of fellings in PB-I and PB-IV areas:-

Table 2.24

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	5	6	7
2013-14	-	-	-	-	-	-
2014-15	Nankhari	Peojna DPF	14	119.07	P.B.I	Seedling felling
2015-16	Bahli	Saran Jarasi DPF (Part)	72	507.06	P.B.IV	Final felling
2016-17	Bahli	Saran Jarasi DPF (Part)	72	507.06	P.B.IV	Final felling
2017-18	Bahli	Saran Jarasi DPF (Part)	72	507.06	P.B.IV	Final felling
1	2	3	4	5	6	7
2018-19	Nankhari	Baghat DPF	20	133.24	P.B.I	Seedling felling
2019-20	Sarahan	Jumkurai DPF	113	153.49	P.B.IV	Final felling
2020-21	Bahli	Saran jarashi DPF (Part)	78	324	P.B.I	Seedling felling
2021-22	Bahli	Saran jarashi DPF	78	324	P.B.I	Seedling felling
2022-23	Bahli	Saran jarashi DPF	78	324	P.B.I	Seedling felling
2023-24	Rampur	Thala (NDPF)	48	36.3214	P.B.IV	Final felling
2024-25	Nankhari	Baghat DPF (Part)	21	184.27	P.B.I	Seedling felling
2025-26	Nankhari	Baghat DPF	21	184.27	P.B.I	Seedling felling
2026-27	Sarahan	Phancha II 19 (NDPF)	78	46.5906	P.B.I	Seedling felling
2027-28	Nankhari	Punan C.114	46	189.13	P.B.I	Seedling felling

4.21 Subsidiary silvicultural operations, cleaning and thinning

Following subsidiary silvicultural operations are prescribed:-

(I) Subsidiary silvicultural operations in PB-I: The techniques of slash disposal are laid down in the technical order No.6 of Punjab Forest Manual Volume III. In addition to this the following principles must be born in mind while carrying out the slash disposal.

- (a) Once the seeding fellings are completed, collection and disposal of felling refuse, cutting of bushes and racking of humus etc. are the most essential operations to be carried out in order to obtain the clean seed bed.
- (b) As the felling refuse is salable as fuel wood or as pulp wood and the obsolete method of burning the same should be avoided. Very rarely and in exceptional circumstances, the felling refuse should be disposed by burning in small heaps in depressions and

nalas. Every care should be taken while disposing the debris by burning, as Spruce and Fir trees are extremely susceptible to fire and die with excessive drought. Therefore, these heaps should be small and away from trees. As the heaps burn away, additional chips, twigs and billets can be added gradually keeping thereby intensity of fire low.

- (c) The humus around the burning heaps must be completely removed to ensure that the fire does not become under ground. The humus in these patches will automatically get burnt and elsewhere it can be removed by scraping either in strips or patches to keep down the expenditure.
- (d) These operations shall be carried out in winter only and in the presence of Range Officer to avoid accidental fires.

4.21.1 Artificial regeneration: The natural regeneration in the Fir Spruce area has unfortunately been failed to fill the areas for many reasons and the reliance has to be placed on artificial regeneration. The technique of raising nurseries and artificial reproduction has been given in detail in the Chief Conservator of Forests Technical Order No. 3 &4 of Punjab Forest Manual Volume III and also Himachal Pradesh Forest Manual Volume IV.

Although both Silver Fir and Spruce constitute the forest but both these species are silviculturally different. Silver Fir is a very slow growing species and natural distribution of Spruce and Fir clearly indicates that Spruce grows in lower parts and silver Fir occupies upper belt. Silver Fir prefers the cooler, moist and shady locations whereas Spruce occupies the raised ground and exposed spur. The depressions are filled up by broad leaved species. Therefore, only such locations should be chosen for planting of Silver Fir as are suitable for the species. Some retrogression does take place as consequence of operation proceeding artificially and often it will be possible to introduce the faster grown and higher crowned Spruce in preference to Silver Fir. The Fir and Spruce seeds ripen in September, October and the seed should be collected from the middle aged healthy trees with well developed crown and clear bole. The Fir nursery should be raised in the natural zone of its distribution. The healthy plants not less than 25 to 30 cms. (Silver Fir 3.5 to 4.5 years old and Spruce 2.5 to 3.5 years old) in height should be planted in the field. The planting should be carried out in July after 2 to 3 good showers and must be planned in such a manner so as to complete by the end of first week of August. In moist location, Broad leaved species like Ash, Walnut, Birdcherry and Maple shall be planted in winter (December) when the plants are dormant.

4.21.2 Planting programme: The yield prescribed from the forest area in this Working Circle is directly proportionate to area planted successfully. Any slackness in plantation is

going to reduce the forest area for obtaining the prescribed yield. To achieve this objective detail planting programme has been given in the plantation (overlapping) Working Circle.

4.21.3 Closure and fencing: All the regeneration areas shall be fenced and closed for grazing. Action to notify these closures shall be taken immediately to avoid legal complications. Regeneration/successful planting depend upon the effective closure and good will of the local people and their cooperation in this regard.

4.21.4 Weeding: For the healthy growth of the plants timely weeding are of immense importance. The growing season of Fir is limited to the months of April, May and June and the plants must be kept free of weeds during this period. The growth starts with the on set of rain as the temperature falls down but still another weeding during July/August to keep the plant free of weed is essential and also beneficial. In a nut shell, the plants must always be kept free from weeds during the growing season. The weeding shall be continuing till the plants are free from the damage of the weeds.

4.22 Other Regulations

4.22.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. Preventive measure should be taken in advance. Incendiary forest fires are very common and as such the forests are required to be strictly protected from these. The forests floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds, needles and grass. The fire lines, inspection paths and bridle paths should be kept clean of needles especially during summer season. Fire watcher should be employed during dry months. Besides developing cordial relations with local people to protect the forests, they should be educated with regard to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the constitution of India read with Section 79 of the Indian Forest Act, 1927. The detail description is given in Chapter No. IX of the Forest Protection (overlapping) Working Circle.

4.22.2 Grazing and grass cutting: Outside the regeneration areas, there will be no restriction on grass cutting. In all the PB-I areas under regeneration, grass cutting will not be allowed till the plants are at least 1 meter in height. Grass cutting in closed areas shall be allowed under the supervision of forest guard that no young, seedlings/sapling are cut. Grazing shall be strictly prohibited in the regeneration areas during the closure period under Section 30 (b) of Indian Forest Act, 1927.

4.22.3 Right Holder's Demand: Demand of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and by this notification now right holders are not entitled to get T.D for construction/repair of house and cow shed etc. from the forest directly in which such rights has been recorded in Forest Settlement Report.

Rest of the demand of rights holders will be met from the forest as per the provision of Forest Settlement Report, 1921 and right and concessions shall be exercised strictly in accordance with the silviculture principles. Thus all rights can be exercised subject to silvicultural availability. No trees should be marked from PB-I area after the marking of seedling felling have been done till the regeneration is fully established. Trees should be marked strictly in accordance with the silvicultural principles and not necessarily according to the convenience of right holders. No trees should be marked from the PB-I area. From other PBs, the trees to be marked to meet out the demand of right holder should be such as are required to be removed during the course of thinning and improvement felling and final felling. The trees can be removed/felled from forest irrespective of the prescribed year of felling. All the trees marked to meet the demand of right holders shall count towards the prescribed yield. Dry and fallen trees should primarily be utilized to meet the right holders demand etc.

4.22.4 Closures: After the seedling felling are over, the all PB-I areas should be closed immediately till the regeneration is established. The area will have to be closed for grazing till the regeneration is established. Normally this period is 30 years, Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927 well in time after approval of felling programme by the competent authority to avoid any litigation.

4.22.5 Regeneration Survey: The regeneration survey of the felled areas shall be carried out every year as per standing instructions and corrective measures taken if the regeneration is not progressing satisfactorily. The regeneration survey of the felled PB-I areas shall be carried out to assess the progress of regeneration, and to plan operations for the next year. The reasons for failure should be detailed and corrective measures taken. The regeneration should be made to keep pace with the felling and in case there are short falls on this account with reference to the prescription of the Working Plan, the further felling should not be carried out and deferred till the problem is resolved.

CHAPTER V

THE PROTECTION WORKING CIRCLE

5.1 General Constitution

This working circle comprises of all the conifers and Broad leaved forests which are inaccessible and are situated on the steep and precipitous grounds where commercial working is not possible and the removal of which will create soil erosion problems and will encourage land slides. In short, this circle contains all the demarcated/undemarcated protected forests which has not been included in any of the working circle, being either inaccessible due to steep and difficult precipitous terrain and poor stocking. Their chief value has been in being most important from the point of view of the protection in preventing denudation and maintaining an equitable flow of water in the streams and rivers which have their sources in the hills. The forest allotted to this working circle render intangible benefits than the tangible ones. It includes all the areas allotted to protection working circle in the previous plan and also newly created DPFs. The total area of this Working Circle is **9442.48** hac.

5.2 General Character of Vegetation

Because of the varied types of areas included in this working circle and their scattered distribution throughout the tract, almost every type of vegetation typical to this area is encountered in the forests allotted to this working circle and has been described in detail in Chapter II of this working plan. However, principle forest types are found in this working circle are as under:

- (i) Group 9 Sub-tropical pine forests
- (ii) Group 12/C 1 Lower West Himalayan temperate forests.
- (iii) 12/C 1c Moist Deodar Forests.
- (iv) 12/C 1d Western mixed coniferous forests.
- (v) 12/C 1f Low level blue pine forests.
- (vi) 12/C 1 /DS 1 Oak scrub.
- (vii) 12/C 2 Upper Broad leaved and coniferous forests.
- (viii) 12/C 2 a Kharsu Oak forests.
- (ix) 12/C b West Himalayan Upper Oak/fir forests.
- (x) 14/C 1 West Himalayan sub alpine birch/fir forests.
- (xi) 14/C 1b Birch/fir forests.

(xii) 15/C Birch/Rhododendron scrub forests.

5.3 Special objects of Management

Without prejudice to general objects of managements, the special objects of managements of the forest allotted to this Working Circle are:

- (i) To protect the hill sides from further denudation and erosion by preserving and enhancing the forest cover and by undertaking the effective soil conservation works in a planned manner, where ever necessary.
- (ii) To conserve moisture and streamline the flow of water in streams and nallas by protecting and enhancing vegetation cover in the watershed.
- (iii) Consistent with above, to provide for grazing requirements of local people of sheep goats and buffaloes and migratory graziers who come to these areas with their flocks for summer grazings.
- (iv) To protect and preserve the valuable forest wealth from the indiscriminate fellings and lopping of trees.
- (v) To protect the forest, no felling of trees will be allowed from precipitous slopes, nallas and banks of rivers to ensure ecological security of the tract.

5.4 Area Statement

The total area of this working circle **9442.48 hac.** which works out to be **23.95%** of the total area of the division. The distribution of these forests range wise and by legal status is tabulated in table No. 5.1

Table 5.1

Name of Range	DPF		Total in hac.
	Old	New	
Nankhari	0	0	0
Bahli	702.67	1739.3667	2442.0367
Rampur	149.85	6086.0741	6235.9241
Sarahan	502.60	261.9214	764.5214
Total	1355.12	8087.3622	9442.4822

The forest wise detail of specific allotment is given in *Appendix No.-IV*.

5.5 Blocks and Compartment: No change has been made in the existing compartments and sub compartments. New compartments have been formed in case of newly created DPFs. Compartments and sub compartments have been numbered systematically both for DPFs and UPFs which was necessitated due to creation of new DPFs and preparation of separate new Working Plans for this division and Kotgarh division.

5.6 Analysis and Valuation of the Crop: Most of the demarcated and undemarcated protected forests are rocky, steep, precipitous, inaccessible and unworkable or high lying alpine pastures. Their main value lies in being most important from the point of view of protection in preventing erosion and denudation of the hill slopes and in maintaining and equitable flow of water in the river and streams. Unless these hills are protected, mountain falls shall start eroding and flood will play the havoc. They will silt up the reservoirs, break and dams and embankments ruin the roads, bridges and over run the field, villages and town in the foot hill and plains bringing misery to the thousand of people. In view of the objects of management of forest allotted to this Working Circle, no detailed analysis and valuation of the crop is considered necessary.

5.6.1 Stock Map: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

5.6.2 Density: The crown density of each compartment has been estimated ocularly at the time of field inspection of the forests and has been recorded in respective compartments history files. The average density of the crop varies from 0.3 to 0.7

5.6.3 Site Quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub compartment has been indicated in the compartment history files.

5.6.4 Enumerations: No enumerations have been carried out in these areas.

5.7 Silvicultural System: Since the object of management is to conserve the existing forests and no commercial fellings are envisaged. Therefore, no silvicultural system is prescribed only the demand of local right holders will met with that too, from the dead and dying trees. Under no circumstances the commercial fellings will be carried out for any purpose. Only salvage marking will be carried out as and when required.

5.8 Choice of Species: Species best suited to the area will be preferred.

5.9 Rotation Period

The forest allotted to this Working Circle will have physical rotation only.

5.10 Calculation of Yield

As no commercial fellings are proposed, therefore, no yield is prescribed. Only salvage marking will be carried out to extract the dead and uprooted trees. All these fellings will be recorded in the CH Files.

5.11 Sequence of Fellings

No sequence of fellings is prescribed as the area is to be given rest and protection.

5.12 Methods of Treatment

The chief value to these forests is in protection of hill sides against the denudation and soil erosion and hence these forests will be strictly protected and preserved. The demand of right holders, where there is no other forests in the vicinity will be met with strictly in accordance with the selection principles and as per recorded settlement rights.

5.13 Plantation Programme

The chief value to these forests lies in their protective cover against the denudation and soil erosion of hills. Demands of the right holders will be met only on silvicultural consideration and should conform to selection marking. All the sizable cultural blanks will be planted with suitable species. The areas which requires closure, soil conservation work and afforestation etc. the detail is been given in the plantation (overlapping) working circle. The plantation areas will remain closed for minimum period of 10 years or more and the area so closed shall be got notified well in time. The inspection path in the plantation area which is normally constructed 60 cms wide should be constructed at least one meter wide which will act as fire line and also to protect the plantation. The path should be constructed in such a way that it divides the whole plantation in four or five equal parts.

5.14 Watershed Management

5.14.1 Introduction: The fragile Himalayan ecosystem is rich repository of bio diversity and also forms the catchments of the major North Indian Rivers like Ravi, Chenab, Beas, Satluj and Yamuna. It is, therefore, an important source of water supply to its neighboring states. Several important hydroelectric projects have been constructed on these rivers. Many medicinal herbs are also found in abundance in these areas that provide livelihood to various forest dwelling communities. Rural population is heavily dependent upon forests for meeting out the day to day requirements of fuel wood, fodders, small timber and non-timber forest produce. Per capita forest availability is about 0.22 hac. as compare to the world average of 0.75 hac. The state has about 25% of total Hydro electric potential of the entire country. Tourism is an important service centre generating large employment, in the region.

The majority of the areas including mid Himalayas have mainly an agrarian economy based upon rain fed agriculture and horticulture. The average cultivated land is about 6.2 lac hac. in the state, out of which 80% is rain fed and the farmers have to depend upon the behavior of the monsoon. Land holdings are not only small but fragmented and 85% farmers fall in the category of marginal and small farmers. Their survival depends upon subsistence

farming and minor forest produce. The minor forest produce collected from the forest is exported in raw form to the neighboring states, which fetches very low prices. The livestock population in the state is about 5.3 million. These are mostly low productive cattle contributing to degradation of grass land and forests. With the increase in cropping area under vegetable production (300% increases) alternative source of fodder are shrinking and thus pressure on natural pastures/ghasnis is increases. Natural grass land and pastures are the major source of fodder for wild animals and cattle etc.

To meet the challenges of conservation of natural resources and rural development, the Government of H.P. has committed to preservation of natural resources and also to increasing the productivity of rural areas. Integrated water shed management is viewed as a priority approach to ensure that land and water resources are sustainably managed and the livelihood of the rural inhabitants are enhanced.

The area from which river or stream or nalla collect its water is called water shed or catchment area. The essence of water shed development program is proper use of land and water from ridge to valley. The aim of the water shed development program is to conserve and manage the area, land and water so that the basic need of local people like food, fodder and water are met in sustainable and socially just manner.

5.14.2 General Objectives of Watershed Management

- i) Reduce the damaging impacts of soil erosion.
- ii) Harvest rain water for the purpose of irrigation, plantations, including horticulture and floriculture, pasture development, fisheries etc. to create sustainable sources of income for the village communities as well as for drinking water supplies.
- iii) Improve capacity of natural source of water.
- iv) Ensuring overall development of rural areas through the Gram Panchayats and creating the regular sources of income for the Panchayat from rain water harvesting and management.
- v) Mitigating the adverse effects of extreme climatic condition such as drought and diversification on crops, human and livestock population for the overall improvement of Catchment areas.
- vi) Restoring the ecological balance by harnessing, conserving and developing natural resources i.e. land, water, vegetative cover especially through plantation.

- vii) Encouraging village communities toward sustained community action for operation and maintenance of assets created and for development of potential of natural resources in the water shed.
- viii) Promotion and propagation of non-conventional energy saving devices, energy conservation measures, bio-fuel plantation etc.

5.14.3 Water shed management programme in Rampur Forest Division

Most of the area in Rampur Forest Division is having precipitous slopes and rugged terrain, which are vulnerable to soil erosion and run-off. Besides, many developmental activities like road construction and other infrastructure development have resulted into increased runoff and soil erosion. In this Division there are two ongoing major CAT Plans of NJHEP and Rampur HEP and six numbers of other approved CAT Plans for Samej HEP, Kut HEP, Kurmi HEP, Upper Nanti, Lower Nanti HEP and Jogni HEP. Most of the erosion prone areas are being treated under these ongoing CAT Plans. Beside this the Luhri HEP CAT Plan and comprehensive CAT Plan of Satluj river basin (under approval of the competent authority) are yet to be implemented. Various components have been prescribed in these CAT Plans to check the soil erosion and will be implemented in this division as per detail of works prescribed in these CAT Plans. More thrust will be laid on bio engineering works along with the civil engineering works. The erosion prone areas have been identified and year wise programme for tackling these areas has also been given in the on going CAT Plans as well as the CAT Plans which are in the pipeline. The detailed technical inputs to mitigate the soil erosion in the forest areas covered by this plan are also given in the on going and approved CAT Plan of the Hydro Electric Projects. Therefore a year-wise programme for tackling the erosion prone areas is mere repetition and is not given here.

5.14.4 Areas identified for treatment

In Rampur Forest Division there are **42** numbers of micro water sheds with an area of **81808 Hac**. The range wise detail is tabulated in Table No. 5.2 and micro watershed wise list of areas identified for treatment is tabulated in Table No. 5.3

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Table No.:-5.2

Name of Range								
Sr. No.	Nankhari		Bahli		Rampur		Sarahan	
	Micro water shed numbers	Area in Ha	Micro water shed numbers	Area in Ha	Micro water shed numbers	Area in Ha	Micro water shed numbers	Area in Ha
1	2	3	4	5	6	7	8	9
1	Sn2a	also falls in Kotgarh range of Kotgarh division)			Sq1a	1508	Sp2b	3452
2	Sn2b	1976	Sq1b	also falls in Rampur range)	Sq1b	2124	Sp2c	832
3	Sn2c	1452			Sq1c	2168	Sp2d	1680
4	Sn2d	1880			Sq1d	2300	Sp3a	1376
5	Sn2e	1260	Sq1f	1780	Sq1f	(also falls in Bahli range)	Sp3b	1980
6	Sn2f	1000			Sq1g	1696	Sp3c	1584
7	Sn2k	(also falls in Bahli range)	Sq1h	3836	Sq1h	(also falls in Bahli range)	Sp3d	2628
8	Sn2m	1432	Sn2g	1120	Sq1j	2272 (also falls in wildlife range Sarahan)	Sp3f	1388
9	Sn2n	3660	Sn2h	1576	Sq1k	2328 (also falls in wildlife range Sarahan)	Sp3g	2624
10			Sn2i	1720	Sq2a	2032	Sp4a	972
11			Sn2j	2680	Sq2b	1608	Sp4b	2612
12							Sp4c	1672
13							Sp4d	2624
14			Sn2k	2008	Sq2c	(also falls in Sarahan range)	Sq2c	2156
15					Sq3a	(also falls in Sarahan range)	Sq3a	1976
16					Sq3b	(also falls in Sarahan range)	Sq3b	2192

1	2	3	4	5	6	7	8	9
17					Sq3c	(also falls in Sarahan range)	Sq3c	1480
18					Sn2g	(also falls in Bahli range)	Sq4a	1476
19					Sn2h	(also falls in Bahli range)	Sq4b	1688
20					Sn2i	(also falls in Bahli range)		
21					Sn2j	(also falls in Bahli range)		
Total No. of MWS	7	12660	7	14720	9	18036	19	36392

ABSTRACT

Sr. No.	Name of Range	No. of Micro water shed	Area in hac.
1.	Nankahri	7	12660
2.	Bahli	7	14720
3.	Rampur	9	18036
4.	Sarahan	19	36392
Total		42	81808

Table No. 5.3

Micro watershed wise list of areas identified for treatment

Name of Range								
Sr. No.	Nankhari		Bahli		Rampur		Sarahan	
	Micro water shed numbers	Name of areas identified for treatment	Micro water shed numbers	Name of areas identified for treatment	Micro water shed numbers	Name of areas identified for treatment	Micro water shed numbers	Name of areas identified for treatment
1	2	3	4	5	6	7	8	9
1	Sn2a	Dhana pani, Lambi dhar, Tamber dhar, Kathi gad			Sq1a	Badrash-I, Badrash-II, Duttnagar, Naya Nirsu, Nirsu, Talai, Bara nala, Childi nala, Naubai nala, Shiv nala, Talai nala	Sp2b	Barguri dhar, Zia, New Kundar, Sargha, Sargha nala, Sumej khad, Mohali suga
2	Sn2b	Badrari, Bagalti, chori dhar, chebri, Bhadroli nala, Thanfi nala, Nani nala	Sq1b	Bander pani, Dalot, Kapri dhar, Masheli, Rajpura, Chauka nala, Chauka nala-I, Kamlahu nala, Nalti nala, Thanol nala	Sq1b	Bandal pani, Dalot, Kapri dhar, Masheli, Rajpura, Chauka nala, Chauka nala-I, Kamlahu nala, Nalti nala, Thanol nala	Sp2c	Sarpara-I, Sarpara(Margot), Gaon pani nala, Kundar nala, Nala below Sumej, Nala below Kushwa village
3	Sn2c	Kuabag, Maniknun, Taprog, Noon nala			Sq1c	Bithli, Chadaini, Dansa, Darshal, Lalsa, Nogli, Batuna nala, Grage nala, Kutu nala, Nogli nala, Power house nala, Shog nala, Sukhi gad, Tanseri nala	Sp2d	Nil

1	2	3	4	5	6	7	8	9
4	Sn2d	Addu, Barkha, Bhagri nala, Gahan nala, Nera nala, Peojna nala, Shilla nala			Sq1d	Barkal, Bhani dhar, Deothi, Majhali, Seri, Sheel, Barkal nala, Barkal-I, Chakli nala, Debla nala, Deothi nala, Juan nala, Kamseri nala, Somnala, Urman nala,	Sp3a	Kuki dhar, Molgi, Navel, Sadana, Koti labana, Kurku khad, Molgi nala, Peri, Ganvi to Labana sadana road
5	Sn2e	Brach-I, Brach-II, Kerra, Kaira nala	Sq1f	Agadhar, Kuban, Dermi, keltu, Kuban	Sq1f	Agadhar, Kuban, Dermi, Ketu, Kuban, Barshol-I, Barshol-II, Seri majhali	Sp3b	Baja dhar, Branda, Chandi, Patpuja, Bhah khad, Deora khad, Durga nala, Gharal nala, Khoru nala, Meetha pani
6	Sn2f	Lelan koti, Panda dhar, Soyan, Panda dhar nala, Sonya nala			Sq1g	Lower jogni, Munish, Ollipad, Dandol nala, Munish nala, Jogni-I, Jogni-II	Sp3c	Kandri, Paji dhar, Pashgaon, Phancha, Tharti dhar, Ahara pani, Chakroi, Dharla kapni, Dibri gad, Pancha, Phancha-II, Gahar, Kandil gad, Kandri gad, Khatrina, Khudi nala, Kui nala, Nori gad
7	Sn2k	Dhansha, Faula, Kandreri, Surad, Gharedi nala, Ghat nala, Kaleda nala, Madholi nala	Sq1h	Kuki-I, Kuki-II, Kuki-III, Sharnal -I, Sharnal-II, Kuki nala, Radoli nala,	Sq1h	Kuki-I, Kuki-II, Kuki-III, Sharnal-I, Sharnal-II, Kuki nala, Radoli nala	Sp3d	Shakari nala, Sharan gad, Kapri dhar, Kurmi

1	2	3	4	5	6	7	8	9
8	Sn2m	Bagiri, Bina dhar, Khameri dhar, Shalar, Chakti nala-I, Chakti nala-II, Sholi nala	Sn2g	Khanewli-I, Khanewli-II, Khanewli-III, Khanewli-IV, Bunju nala, Shalooni nala	Sq1j	No worse required	Sp3f	Kurmi dhar, Tikkar, Bha, Shadoli gad, Nanti slip
9	Sn2n	Kungal, Punan-I, Punan-II, Shelti dhar, Bai Bahli nala, Banala nala, Kholtu nala, Koptu nala, Kungal nala	Sn2h	Dalog, Kurnu, Sobli-I, Sobli-II, Chilya nala, Dalog nala, Pulzara nala-I, Pulzara nala-II, Sobli nala, Sobli nala-I, Sobli nala-II	Sq1k	Birni dhar, Dhantu nala, Jagothi dhar, Punar, Rangeha nala, Bai nala, Chhulta nala, Jakhoti nala	Sp3g	Nil
10			Sn2i	Jaloshi-I, Jaloshi-II, Jaloshi nala, Sharan nala.	Sq2a	Khuna, Pagu, Racholi, Sunda-I, Sunda-II, Sunda-III, UF Shingla, UF Shingla helipad, Kalna-I, Kalna-II, Lahsa nala, Racholi nala	Sp4a	Beu nala, Kiao-Dhartu, Bada bon, Ratu khad
11			Sn2j	Brandli nala,	Sq2b	Jhakri, Pashada, Pashada nala, Darshai nala, Jabha nala, Pashada khad, Racholi odda	Sp4b	Suru-I, Suru-II, Kut, Ropri, Thikwa, Kurtu slip
12							Sp4c	Kheuncha nala, Kot gad
13							Sp4d	Nil

1	2	3	4	5	6	7	8	9
14			Sn2k	Dhansha, Faula, Kandreri, Surad, Gharadi nala, Ghat nala, Kaleda nal, Madholi nala	Sq2c	C181 b, Goi dharti, Jhakri, Jhalawat, Koshgar, Sanarsa, Brauni khad near Jhakri, Brauni khad top, Gaura nala, Koti nala, Gaura- Kapti road (1 Km), Shana dhar-Sharai koti road(1.5 Km)	Sq2c	Nil
15					Sq3a	Funja, Kosker, Maghara, Majhewali, Shana dhar, Maghara, Uchi, Damri, Dofda, Kuni, Maghara	Sq3a	Nil
16					Sq3b	Barnai, Dharan, Rama, Sajwa, Daran nala (100 mts), Daran nala(1 Km), Dofda (4 Km), Mashnoo (3Km), Rama (1 Km) , Bajwa village, Daran	Sq3b	Nil
17					Sq3c	Kharaya, Kinu, Kuni, Phivi, Ghartheda, Kharaya, Lothoa, Theda, Bhagawat, Garteda, Kinu, Theda	Sq3c	Nil
18					Sn2g	Khanewli-I,Khanewli-II,Khanewli-III,Khanewli-IV, Bunju nala, Shalooni nala, Neri, Neri-II, Shaloon	Sq4a	Nil

1	2	3	4	5	6	7	8	9
19					Sn2h	Dalog, Kurnu, Sobli-I, Sobli-II, Chilya nala, Dalog nala, Puljora nala-I, Puljora nala-II, Sobli nala, Sobli-I, Sobli-II	Sq4b	Nil
20					Sn2i	Jalashi-I, Jalashi-II, Jalashi nala, Sharan nala, Beunthal, Jalashi-II		
21					Sn2j	Brandli nala(2.5 Km)		
Total No. of MWS	7		7		9		19	

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5.14.5 Causes of Watershed Degradation

The main cause of watershed degradation is soil erosion. Soil erosion can broadly be classified into two groups i.e. geological erosion and accelerated erosion.

a) Geological Erosion

Geological soil erosion represents the erosion of soil in its natural state. Semi-arid and arid soil, which lack protective plant cover, may erode naturally. This erosion takes place at such a slow pace that a balance is always maintained between soil lost by erosion and soil formed from parent material. As far as effect on agricultural lands is concerned geological erosion is not of much consequence. It is responsible for wearing of hills and mountains and is the cause of various land features such as existing canyons, stream channel and valleys etc. Geological erosion is caused mainly by the action of water, wind, temperature and is responsible for soil formations and their distribution on the earth's surface.

b) Accelerated Erosion

When the natural balance is disturbed by human activities, large scale deforestation or leveling of field for cultivation, the process of erosion is increased manifold. This rapid erosion as a result of human interference is referred to as accelerated erosion or abnormal erosion. This depletes the soil fertility in agricultural lands. The various forces involved in accelerated erosion are i) attacking forces – Which detach and transport the soil particles and ii) resisting forces- Which resist erosion.

c) Forms of Erosion

The tract dealt with suffers from different forms of soil erosion caused due to water and these are as under:-

i) Rain drop erosion. ii) Sheet erosion iii) Rill erosion iv) Gully erosion v) Stream erosion vi) Land slide/land slip erosion.

5.14.6 Criteria for treatment

- (i) All the micro water shed in Rampur Forest Division has been categorized into very high, high and medium on the basis of magnitude of degradation.
- (ii) First priority of the management will be for that micro water shed which falls under the category of very high on the basis of magnitude of denudation and others will be managed/treated subsequently.
- (iii) Plantations and afforestation activities on waste land/ forest land in micro water shed will be carried out as per the technique mentioned at para- 7.17.1 Chapter No. VII.

- (iv) The CAT Plan works in different water shed will be carried out as per CAT Plan approved by the competent authority.
- (v) Water shed management works on routine basis will be carried out by adopting multidisciplinary approach.
- (vi) Reduced incidence of land slips/land slide, stabilization of reduction in runoff rate and water. For soil and moisture conservation the approach will be as under:-
 - (a) Bio engineering measures
 - (b) Vegetative measures
- (vii) For Water shed management approach, the rain water harvesting structures will be carried out by :
 - a) Construction of low cost farm ponds, check dams and percolation tanks
 - b) Construction of drainage line treatment with vegetative measures.
 - c) Renovation and augmentation of irrigation and drinking water tanks.
 - d) Construction of Van Sarovar in forests.
 - e) Water harvesting structure (WHS)
 - f) Springs & other natural sources will be cleaned and maintained.

5.15 Bio engineering measures

Bio engineering is the use of vegetation, either alone or in conjunction with civil engineering structures, with a view to reduce instability and erosion on slopes, arrest run off, enhance percolation and help in moisture conservation.

5.15.1 Bio Engineering Techniques

(i) Palisades

Palisades are used for protection of small but deeper, narrow gullies and shallow V-shaped rails. Immediately after construction they provide mechanical protection by catching debris, armoring and reinforcing gully floors. These effects are increasing after shoot and root development of cuttings.

(ii) Brush Layer/Hedge Brush layer

This is a more effective method for earth reinforcement and mass stability of slope. The construction breaks up the slope length into series of shorter slopes separated by rows of brush layer. It also reinforces the soil with un-rooted branch stems and reinforces the soil as root- develops, adding significant resistance to sliding or shear resistance.

(iii) Fascines

Fascines mean “a bundle of sticks”. Fascines are used for a variety of slope stabilization purposes. Fascines slow run off, catch debris and reinforce the slope due to rooting. Fascines in particular stabilize and drain slopes, and are built into rills or small gullies.

5.15.2 Vegetative Measures

A vigorous plant cover is the best protection against erosion. Mechanical measures are extremely valuable but they should not be regarded as a substitute for adequate vegetation. The most effective plant cover is provided by tree growth and naturally growing herbs and shrubs. The trees best adopted for planting on eroded sites usually are native which are intolerant of shade and have low moisture and nutrients requirements of fuel and fodder should be fully borne in mind.

In the pasture lands, over grazing must be avoided. Additional restorative measures are only possible on critical areas where community demands immediate control of erosion and run off and soil conditions are favorable for forage plant growth. In such areas sowing and planting of selected tree species and even engineering works such as contour furrows, absorption terraces and check damming of gullies are justified along with biological interventions.

Gullies require the use of vegetation for their control. More commonly however, mechanical measures are necessary to facilitate revegetation. ***Native species especially those characteristic of pioneer communities***, such as *Alnus*, *Ailanthus*, *Aesculus*, *Acacias*, *Ficus* species, *Mulberry*, *Pines*, *Poplars* and *Robinia* etc. are usually better adapted for severe condition on gullied land. The shrubs most useful are *Berberis*, *Desmodium*, *Adathoda*, *Indigofera*, *prinsepia*, *Vitex*, *Zanthoxylum* etc.

Before planting is attempted, diversion of run off water before it enters in the gullies is generally necessary. Feasible dams of various types have to be constructed so as to check further cutting and area must be closed to all grazing to avoid the damage to the developing vegetation. In drier localities rooted stems give better results.

An effective method to break the velocity of run off on steep slopes where contour trenching is out of place is to create vegetal breaks. Some of the most common plants, met with as wildings are *Adhatoda*, *Agave*, *Euphorbia*, *Indigofera*, *Punica* and *Prinsepia* species etc.

5.16 Farm Ponds: These are constructed by excavating earth and forming embankments with stone lining to harvest rain water. An approach path with some pitching is provided in these

ponds. Size of these ponds depends upon catchments areas and space available but generally the proposed size is 18.00 x 10.00 x 10.50 mts.

5.17 Dams

a) RCC check Dam: These dams are constructed of mass concrete where foundation is rocky and cross section of nalla is small and aggregate is cheaply available. In these dams spill way is provided within the dam body. These dams should be constructed near motorable roads and should be avoided in the forested areas.

b) Masonry Dams: These dams are constructed of stone masonry at places where stones are cheaply available as compared to stone aggregate. The purpose and size of the masonry dam are same as that of RCC dam.

c) Gabion Check Dams

Gabion structures are made with stones/ boulders packed closely in wire mesh cages made with G.I. wire of 10 gauge thickness. Gabion structures are preferred in soil conservation works as they are: (a) Flexible (bend without breaking), (b) Porous (Water can seep through them), (c) Stable, and (d) Economical as compared to cement concrete structures.

Galvanized iron (GI) wire of 8-10 gauge thickness is used in the fabrication of wire nets and the mesh size is generally kept 10-15 cms. Gabion structures have a long life (20-25 years) almost similar to cement masonry permanent structures.

5.17.1 Construction of drainage line treatment with vegetative measures

a) Live Check dams: Barriers are created with native species to check erodibility of fine soil and moisture. On the down side of grass rows two rows of shrubs are planted at close spacing of 30 cm from plant to plant and 50 cm from row to row across the nalla bed. This arrangement comes in handy along drainage lines to prolong the life of water harvesting structures.

b) Brushwood check dams: These are made of wooden stakes to which long branches of trees and shrubs are tied in a zigzag manner across the small gully. The site is first eased to slope of 1:1 and bottom of the gully is excavated by about 25 cm. Then the wooden stakes of about 10 cm in diameter is driven about 75-90 cm deep and 0.60-0.90 cm apart along the dam axis. The height of such dams may vary from 30 to 60 cm. On the lower side the brush wood is placed in such a way that cut end side half is placed inside the structure and remaining half extended downward as a mat to act as apron which may protect the base against erosion.

5.18 Construction of Van Sarovar in Forests

The Scheme envisages creating composite units in the forests, with each such unit comprising of a series of trenches to trap surface run off and one/two water harvesting structures to store water. The components and design of the scheme is as follows:

i) Staggered Contour Trenches

- i) A series of shallow trenches will be dug up along the contours in a staggered fashion to trap as much surface run off as possible.
- ii) As far as possible, the spread of trenches along the contour shall be between two adjacent streams.
- iii) Digging of trenches will start from near the ridge/top of the area under treatment with the subsequent rows dug up below the 1st row in staggered manner at contour intervals of an average of 20 meters. For slopes above 30 degrees the interval between trench rows may be reduced to 15 meters.
- iv) Size of each trench will be 0.5 meter wide x 0.3 meter deep x 10 meters long (actual length of trenches will depend upon the site conditions), with length of trenches per hectare being 200 meters.
- v) Dug up soil will be stacked along the down hill side of the trench, making a beam.
- vi) Seeds of grass, herbs and perennial shrubs will be sown/seedlings planted on the dug up soil stacked along the beam.

ii) Water Harvesting Structure (WHS)

- i) A maximum of two WHS will be put up per composite unit.
- ii) The maximum dimensions of these structures will be 7 meters length x 2 meters height (excluding foundation).
- iii) Design of the WHS will be as per the standard departmental design for such structures and estimates prepared accordingly.
- iv) Site for WHS would be so selected as to create an average water holding capacity of each WHS of 1.5 to 2.0 lac liters.

5.19 Other Regulations

5.19.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. All the old and new plantations area will be strictly fire protected from fire. All the fire lines should be cleared and fire watcher should be engaged in the fire prone areas. Young Chil plantation should receive special attention in this behalf. The methods of fire protection

and control burning suggested in Chil Working Circle shall be followed. Besides this maintaining cordial relations with the local people and educating them properly with regard to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the constitution of India read with Section 79 of the Indian Forest Act, 1927.

5.19.2 Closures: All areas taken up for planting should be closed to grazing, lopping, grass cutting etc. and shall duly notified for closure under Section 30 (b) of IFA, 1927, for a period of 10-15 years.

5.19.3 Grazing: All plantations areas shall remain closed for grazing for 10 to 15 years period depending upon the progress or success of plantation. The closure should be effective and for the minimum possible time, so that least hardships is experienced by right holders. However, depending upon the progress of the young crop, particular area may be thrown open to grazing even before the period of closure notification is expired. This will be so, especially in the case of Chil plantations when after 8-10 years of effective closure, the young crop will be nearly 2m in height and cattle grazing will also minimize damage by browsing etc..

5.19.4 Grass cutting: No grass cutting shall be allowed except under strict supervision of the forest guard under MGNREGA Scheme etc. It will also better if Panchayats are associated for the purpose. Removal of grass reduces competition and also mortality due to overhead shade.

5.19.5 Lopping: Trees standing in the plantation areas shall remain prohibited for lopping during the closure period and necessary notification shall be got issued under Section 30 (b) of the Indian Forest Act, 1927 to avoid any litigation.

5.19.6 Right Holder's Demand: The requirements of right holders will be met from the forests in which such right has been recorded in settlement. But it should be bare minimum so that the forest crop is not damaged and soil conservation problem is not created. The marking of trees to the right holders should be in accordance with the silvicultural principle and all the trees marked to the right holders shall count towards the prescribed yield.

CHAPTER VI

THE OAK WORKING CIRCLE

6.1 General Constitution

This Working Circle has been constituted to meet the increasing demand of fire wood and charcoal and includes predominantly Ban Oak forests mostly in pure patches. The total area of this Working Circle is **911.3073 hac.**

6.2 General Character of Vegetation: The Ban oak is the common low level oak of the moist zone and is the major species over considerable area which varies from 1300 to 2100 m. It thus, overlaps the altitudinal zones of the entire lower conifer and is common companion of the blue pine, deodar, and spruce. Pure Ban Oak forests occur in sheltered belts in Nogli valley and Machhada valley in Rampur/Bahli and Nankhari ranges respectively.

The forests are of selection type and irregular in age. Its chief associates are *Rhododendron arboreum*, *Pieris ovalifolia*, *Pyrus pashia* with some *Machilus odoratissima*, *Litsaea umbrosa*, *Cedrela serreta*, *Carpinus viminea* etc. in damp ravines. Slight mixture of Kail also occurs along ridges and Spurs in the upper portion and few scattered Chil in the lower portion. Some Spruce trees are also met within the forest like in Theda forest of Bahli range. The oak forests are typically of selection type with almost all age classes well represented. In the forests away from the habitations, the regeneration is adequate but is scattered and scanty near habitations and along lower boundary due to year round heavy grazing. There is generally good deal of shurby undergrowth chiefly of *berberis*, *Lycium*, *Indigofera*, *Gerardiana*, *Sarcococca saliana*, *Daphne pepyracea*, *Desmodium tiliaefolium*, *Myrsine africana*, *Prinsepia utilis*, *Spiraea canescens*, *Lonicera quinquelocularis*, *Viburnum* species, *Rubus* species etc.

6.3 Special Objects of Management

Apart from meeting the fuel and fodder requirement of the local inhabitants, the special objects of managements of the forest allotted to this Working Circle are:

- (i) To protect and preserve the hill sides.
- (ii) To meet the local demand of people for fodder and fuel.
- (iii) To maintain and improve the stocking of these forests by effective closure carrying out artificial sowing and planting.
- (iv) To improve the biological diversity of the area.
- (v) To obtain the maximum progressive sustained yield.

6.4 Area Statement

The total area of this Working Circle is **911.3073 hac.** this works out to be 2.31% of the total area of the division. The distribution of these forests range wise is tabulated in table No. 6.1

Table 6.1

Name of Range	DPF	UPF	Total in hac.
Nankhari	0	16.2000	16.2000
Bahli	94.1617	159.1600	253.3217
Rampur	179.6856	462.1000	641.7856
Sarahan	0	0	0
Total	273.8473	637.4600	911.3073

The detail of specific allotment is given in *Appendix No.-IV*.

6.5 Blocks and Compartment: No change in the existing compartments and sub compartments has been made. The compartments and sub compartments have been numbered systematically both for DPFs and UPFs which was necessitated due to creation of new DPFs and preparation of separate new Working Plans for this division and Kotgarh division.

6.6 Felling series: There will be only One Felling series has been formed i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Rampur forest Division.

6.7 Analysis and valuation of the crop: The crop is generally uneven aged. Admixture of other species also occurs. The common associates are, Rhododendron, Pieris ovalifolia, Pyrus pashia, Bauhinia, Albizzia species etc. The associates occurs either in light admixture or occasionally may form the under storey. The sprinkled Kail along ridges and Spurs occurs in the upper reaches and few scattered Chil trees are also found in the lower portions.

6.7.1 Stock map: - The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

6.7.2 Density: The crown density of each compartment has been estimated ocularly and has been recorded in respective compartments history files. The average density of the crop varies from 0.4 to 0.6

6.7.3 Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub-compartment has been indicated in the compartment history files.

6.7.4 Age classes: Since the forests are of typically of selection type, all age class are well represented.

6.7.5 Enumerations: The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in two numbers of forests of Oak Working Circle and the details are given in the *Appendix No-XI* along with the estimated growing stock is given in *Appendix No-XV*. **6%** Sampling has been done and the general abstract of enumeration results along with the abstract showing the estimated growing stock of class wise and species wise are tabulated in table No 6.2

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Table-6.2

General Abstract

General Abstract of Oak WC Species wise No. & volume of Oak WC Area														
Sr. No.	Total Area enumerated in Hac.	Species	Class											
			10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total	
			V	IV	III	IIA	IIB	IA	IB	IC	ID	IE		
1	53.86	Deodar	0	1	0	0	0	0	0	0	0	0	1	
		Volume in m3	0	0.49	0	0	0	0	0	0	0	0	0.49	
2		Kail	159	57	55	22	21	23	21	1	1	0	360	
		Volume in m3	24.17	24.11	53.02	39.05	59.96	96.72	122.30	7.71	9.87	0.00	436.91	
3		Spruce	12	4	3	2	2	1	2	8	1	0	35	
		Volume in m3	1.63	1.72	3.12	3.94	6.43	4.78	13.34	70.98	11.39	0.00	117.33	
4		Chil	135	126	375	98	79	75	33	1	0	0	922	
		Volume in m3	12.02	41.33	290.63	144.84	195.13	284.18	180.38	7.53	0.00	0.00	1156.03	
5		Ban	837	323	403	401	343	261	152	130	80	50	2980	
		Volume in m3	112.16	101.10	264.77	481.60	677.08	781.96	651.32	761.41	617.84	494.70	4943.94	
6		Mapple	19	5	4	2	1	0	0	0	0	0	31	
		Volume in m3	2.22	1.00	2.80	2.60	2.10	0.00	0.00	0.00	0.00	0.00	10.72	
7		Other B.L. Species	2984	443	205	145	68	44	29	9	5	12	3944	
		Volume in m3	280.50	130.24	145.14	193.72	148.04	142.21	130.50	53.84	38.39	115.04	1377.61	
Total Trees =			4146	959	1045	670	514	404	237	149	87	62	8273	
Total volume =			432.69	299.98	759.48	865.75	1088.74	1309.84	1097.84	901.47	677.50	609.74	8043.03	

Table 6.3

Estimated Growing stock of Oak WC

Area= 911.3073 hac.												
Sr. No	Species											Total
		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Deodar	0	17	0	0	0	0	0	0	0	0	17
	Volume in m3	0	8	0	0	0	0	0	0	0	0	8.22
1	2	3	4	5	6	7	8	9	10	11	12	13
2	Kail	2690	964	931	372	355	389	355	17	17	0	6091
	Volume in m3	408.92	407.96	897.09	660.72	1014.43	1636.41	2069.37	130.50	167.03	0.00	7392.45
3	Spruce	203	68	51	34	34	17	34	135	17	0	592
	Volume in m3	27.61	29.03	52.79	66.63	108.86	80.94	225.68	1200.91	192.79	0.00	1985.25
4	Chil	2284	2132	6345	1658	1337	1269	558	17	0	0	15600
	Volume in m3	203.29	699.27	4917.35	2450.75	3301.59	4808.22	3051.98	127.42	0.00	0.00	19559.88
5	Ban	14162	5465	6819	6785	5804	4416	2572	2200	1354	846	50421
	Volume in m3	1897.71	1710.59	4479.91	8148.65	11456.18	13230.64	11020.29	12883.00	10453.81	8370.29	83651
6	Mapple	321	85	68	34	17	0	0	0	0	0	525
	Volume in m3	37.61	16.92	47.38	43.99	35.53	0.00	0.00	0.00	0.00	0.00	181.43
7	Other B.L. Species	50489	7496	3469	2453	1151	744	491	152	85	203	66732
	Volume in m3	4745.97	2203.69	2455.76	3277.73	2504.76	2406.15	2208.05	910.94	649.56	1946.54	23309.13
Total Trees =		70150	16226	17681	11336	8697	6836	4010	2521	1472	1049	139979
Total volume =		7321.12	5075.67	12850.28	14648.48	18421.35	22162.36	18575.37	15252.77	11463.18	10316.82	136087.42

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6.8 Silvicultural System

The areas being steep to precipitous and liable to erosion, the adoption of coppice with standards system will not be applied. The system of selection cum improvement fellings combined with thinning will be applied for the forests of this Working Circle. However, felling will be done only after approval of the competent authority as the government has imposed restrictions on felling of oak forests as per *Appendix No.-XL*.

6.9 Choice of Species: Ban oak is most predominant species and will naturally be favoured in the matter of regeneration and tending operations. However, the species best suited to the area will be preferred.

6.10 Rotation Period: There is no necessity to fix any rotation and as such no rotation is prescribed.

6.11 Exploitable Diameter

The Ban Oak is a slow growing species and repeated lopping and fire wood hacking are also known to retard the growth still further. However, the exploitable diameter for Ban-Oak is 20 cm to 35 cm. No exploitable diameter is, however, fixed for the inferior Broad leaved species like Rhododendron etc. which will be removed in improvement felling and thinning.

6.12 Felling cycle: The felling cycle of 15 years corresponding to the period of plan will be adopted.

6.13 Calculation of Yield

The yield is regulated by area. Since there is a ban on green felling, no yield has been prescribed. However the trees removed during the course of the plan shall be recorded in the control forms for the purpose of record. Salvage removal of 55 cum of Oak will be taken as equivalent to one hac. of yield.

6.14 Method of executing the Felling

The following general principles are however laid down for guidance of marking officer:

- (i) Dead, diseased and definitely dying trees will be marked.
- (ii) Except for the removal of dead and definitely dying trees, in all the markings, silvicultural availability will have an over riding priority. A tree will be considered silviculturally available when
 - (a) Its removal does not create a permanent gap in the canopy.
 - (b) There is group of well established saplings or a pole crop of the same or an equally valuable species near or arounded.

- (c) There is a good seed bearer of the same and equally valuable species near to it and provided that the canopy is not opened up more than one crown space of half chain square. Mature and over mature trees will be marked in preference to smaller one even of the exploitable size.
- (iv) While marking, slow growing trees will be preferred to vigorous ones and badly shaped trees to well shaped ones.
- (v) Selection trees standing over and interfering with the growth of younger trees or regeneration will be removed.
- (vi) In even aged groups of Oaks below the approached class, C Grade thinnings may be done by removing dead, dying moribund, suppressed and dominated stems.
- (vii) Ban Oak trees of 40 cm to 50 cm diameter will not ordinarily be marked in order to safe guards the future yield.
- (viii) Valuable Broad leaved species will be encouraged by the removal of inferior and less valuable species.
- (ix) On steep ground, on the banks of nalla and in the open area, fellings should invariably be lighter than in better places.

6.15 Table of Felling: The order of fellings are tabulated in table No. 6.4

Table 6.4

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Nature of felling
2013-14	-	-	-	-	-
2014-15	-	-	-	-	-
2015-16	Bahli	Theda (NDPF)	18	44.4147	Selection felling/ Salvage
2016-17	Nankhari	Chitralli UPF	31	16.2	Selection felling/ Salvage
2017-18	Bahli	Majholi UPF	52	121.5	Selection felling/ Salvage
2018-19	Rampur	Nogli (NDPF)	60	49.4191	Selection felling/ Salvage
2019-20					
2020-21	Bahli	Damrali (NDPF)	20	37.2604	Selection felling/ Salvage
2021-22					
2022-23	Rampur	Nogli (NDPF)	60	49.4191	Selection felling/ Salvage
2023-24	Rampur	Kamlahu DPF	56	225.18	Selection felling/ Salvage
2024-25					
2025-26	Bahli	Barshol (NDPF)	21	12.4866	Selection felling/ Salvage
2026-27					
2027-28	Rampur	Sangri Kap UPF	55	236.92	Selection felling/ Salvage

6.16 Subsidiary Silvicultural Operations, Cleaning and Thinning

Following subsidiary silvicultural operations are prescribed:-

(I) Subsidiary Silvicultural Operations

These will be carried out in the year following the main fellings and will consist of:-

- (i) Coppicing of all damaged poles and saplings flush with the ground, for getting better coppice shoots.
- (ii) Tending of young regeneration of Oak and other valuable Broad leaved species by freeing these from bushes and other inferior species.
- (iii) Cleaning and unsolvable thinning in thickets of Oak saplings.
- (iv) Cutting of climbers wherever necessary.
- (v) Felling and conversion refuse shall be collected and dumped in nallas and depressions unsuitable for planting.
- (vi) Lopping of inferior B/L species interfering with the young saplings poles of valuable species will be done.
- (vii) Weeding and cleaning should be carried out to help regeneration of valuable species to come up and grow.

6.17 Artificial Regeneration

The felled and blank areas, in the compartments allotted to this Working Circle will be artificially regenerated during the period of the plan. To achieve this objective the detail planting programme has been given in Plantation (overlapping) Working Circle, Chapter-VII, Part-II.

6.18 Planting Programme: The planting program has been given in the plantation (overlapping) Working Circle.

6.19 Bush Cutting/Weeding: Bush cutting is carried out lightly so as to afford seed bed as well as protection against drought to the young seedlings. Weeding is an essential and most important activity that young regeneration should be properly weeded by freeing it from thick grasses and over head shade of bushes. The cut material should be disposed off by using it in interlacing of barbed wire fencing or by burring it safely outside the plantation area to reduce fire hazards.

6.20 Cleaning: It should be carried out in the early stages of plantations and should be continued till the area is suitable for thinning, so as to produce healthy stems and minimize fire hazards. The cut material should be collected in open place or nalla and burnt unless required by the right holders.

6.21 Other Regulations

6.21.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. The floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds and grass etc and adequate fire watcher should be employed.

6.21.2 Closures: The areas taken up for protective and improvement works shall be closed for a period of 15 years or more depending upon the status of regeneration. Normally this period is 30 years, Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927.

6.21.3 Grazing: The area closed for planting will be strictly protected from grazing. However, the grazing rights of the right holders as admitted in the settlement report will be allowed strictly for rotational grazing only. The other area to be taken up for reclamation, soil conservation purposes shall also be closed to grazing till artificial regeneration is fully established.

6.21.4 Lopping: The lopping of Ban Oak for fodder will be regulated as under:-

- (i) The trees below 60 cm in girth will not be lopped.
- (ii) Branches more than 2.5 cm diameter thick will not be cut.
- (iii) The upper 1/3rd portion of the crown will not be lopped.
- (iv) Trees along paths and water springs/streams etc. will not be lopped.
- (v) The trees marked for fellings will, however, be allowed to be lopped freely by the right holders without any restrictions, so that the pressure of lopping on other trees is reduced.
- (vi) Conifers and other valuable Broad leaved species will not however, be lopped.

6.21.5 Right Holder's Demand: Demand of right holders for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 subject to silviculture availability. The marking of trees to the right holders should be in accordance with the silvicultural principle and all the trees marked to the right holders shall count towards the prescribed yield. Dry and fallen trees should primarily be utilized to meet the right holders demand etc.

CHAPTER VII

THE PLANTATION (OVERLAPPING) WORKING CIRCLE

7.1 General Constitution

This Working Circle comprises of such demarcated and undemarcated protected forests including Culturable Govt. waste land which are understock or devoid of tree growth or blank areas or have young plantation or crop which still need protection and are suitable for planting of ecologically and economically important species. This Working Circle partially overlaps all the Working Circles. Only such areas will be taken which have site factor favourable for raising plantations, closure is possible, in view of the fact that not more than one third area of a forest can be closed at a time under the permission of settlement of rights and **section 29 (b) of Indian Forest Act, 1927**. Human population has increased manifold and is further increasing day by day. Their requirements for fuel-wood, fodder, timber, NTFP and water has also increased manifold thereby putting pressure on natural forest resources. Therefore, the areas adjacent to village habitations where the species of local requirement of fodder and fuel can be raised insustainable manner through JFM (participatory practices). The depleted scrub forests and the plantations raised in the plan period but not fully established are also included in this Working Circle. Focus will be on restoring the species composition from timber centric to other useful species for fuel, fodder and NTFP etc.

7.2 General Character of Vegetation: This Working Circle extends over several types of forests starting from low level Khair-Sissu seral type of dry tropical forest along river banks to upper Oak coniferous forests along Daran Ghati and 15/20 ridges of this division. The general description of the crop has been described in Chapter II of Part I of the Working Plan under revision. The detail descriptions are also given in the respective compartment history files also. The forests of this Working Circle are located in different altitudinal zones and therefore, there is marked variation in the vegetation. Unrestricted grazing, browsing, lopping and repeated fires have reduced these areas to the present deplorable state.

7.3 Special Objects of Management

The special objects of managements of the forest allotted to this Working Circle are:

- (i) To rehabilitate the degraded treeless area and poorly stocked areas, with economic and ecological tree species to meet the demand of the local people for fodder, fuel and timber etc. in the vicinity of these forests.

- (ii) To manage the degraded, sparsely stocked and blank forests on scientific basis to increase the area under forest cover, thereby, reducing the pressure on natural forests.
- (iii) To relocate the barren areas to preserve the soil in situ and conserve the soil moisture in the watershed/catchment areas.
- (iv) To rehabilitate degraded areas by planting fodder trees and high yielding varieties of grasses through participatory management practices.
- (v) To protect and nurse the existing plantations and natural young growth under a systematic regime of cleaning and thinning etc.

7.4 Area Statement

The Range wise distribution of areas is tabulated in table No. 7.1

Table 7.1

Name of Range	Protected Forests			
	Old	New	Listed UPF's	Total
Nankhari	0	0	157.95	157.95
Bahl	0	0	0	0
Rampur	0	0	387.99	387.99
Sarahan	9.72	0	0	9.72
Total	9.72	0	545.94	555.66

The forest wise detail of specific allotment is given in *Appendix No.-IV*.

7.5 Blocks and Compartment: No change in the existing compartments and sub compartments has been made. The compartments and sub compartments have been numbered systematically both for DPFs and UPFs which was necessitated due to creation of new DPFs and revision of the present plan.

7.6 Plantation series: There will be only one plantation series, conforming to the territorial jurisdiction of Rampur forest Division.

7.7 Analysis and valuation of the crop

In order to cover the entire plantable area of this division during the plan period, annual plantation program has been laid down in this Working Circle. Emphasis, however, should be on proper selection of suitable species of the area, combination of species, reduction of mortality etc.

7.7.1 Stock map: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately and placed in the respective compartment history files.

7.7.2 Density: The area being bare grassy land or with scattered and stunted tree growth, working out of density is not feasible. However, the crown density of each compartment

wherever necessary, has been estimated ocularly and has been recorded in respective compartment history files.

7.7.3 Site quality: Working out of the site quality is not feasible since the area being bare grassy land or with scattered and stunted tree growth. However, the site quality of the crop varies from place to place but overall quality conforms to II/III of the FRI quality classes. The site quality of individual compartment/ sub compartment has been indicated in the compartment history files.

7.7.4 Enumerations: No enumerations have been carried out as it was not required in these areas. However, the description has been written up for each area showing the present state of the areas.

7.8 Silvicultural System

The new plantations will be raised artificially. The choice of silvicultural system, therefore, at the stage does not arise. As the main object is to raise plantations of suitable species, therefore, no silvicultural system is prescribed. The plantation will be raised by artificial planting or sowing. However, as and when plantations are established, areas as per crop composition will be allotted to respective Working Circles in next Working Plans.

7.9 Choice of Species

The choice of species for raising plantation will mostly be governed by the site factors. The choice of species depends on various factors such as climatic, edaphic, topographic and biotic but surviving indigenous species give a clear indication of most suitable species. The correct choice of species would give productive and praise worthy results where as wrong choice of species always brings adverse publicity for the forester. In short, adequate care must be taken while selecting the species to be planted keeping in view the ecological land capability, terrain and the demands of the local people. The species to be planted altitude-wise are suggested as under. However, Divisional Forest Officer is at liberty to change or new species suitable to a particular site.

Table-7.2

Suggested list of species to be planted

Altitude	Species suggested for plantation
1	2
Up to 1000 metres	Shisham, Khair, Ritha, Toon, Bihul, siris, Khirk, Kachnar, Daru, Harar, Bahera, Amla
1000 to 1500 meters	Robinia, Chulli, Chil, Ailanthus, Bihul, Toon, Ritha, Kachnar, Willow, Leucaenia, Bamboo, Khair, Khirk, Kikker, Daru, Poplar, Mulberry
1	2
1500 to 2500 metres	Deodar, kail, Walnut, Poplar, Willow, Robinia, Ban Oak, Horse Chestnut
2500 to 3000 metres	Silver Fir, Spruce, Maple, Walnut, Moru/Kharsu Oak, Bird Cherry, Ash, Poplar

7.10 Rotation Period

There is no need for prescribing rotation at this stage. However, the different species will naturally be worked out under different rotations.

7.11 Exploitable Diameter

No exploitable diameter is fixed at this stage.

7.12 Calculation of Yield

Since blank grassy land, degraded forest and under stock areas have been prescribed for afforestation, and therefore, no felling has been prescribed in this Working Circle at this stage. Therefore, no yield has been prescribed.

7.13 Table of Planting

The table below gives the plantation programme in these areas and is tabulated in table No. 7.3

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Table No. 7.3											
Year	Name of Range	Name of Forest	Comptt No.	Area of Comptt. (ha)	Working Circle wise area to be planted (in hac.)						Total
					CWC	D/ KWC	F/ SWC	PWC	OWC	PL. WC	
1	2	3	4	5	6	7	8	9	10	11	12
2013-14	Nankhari	Trena	UF-14	52.65	10	0	0	0	0	0	10
	Nankhari	Kandal	UF-13	48.60	10	0	0	0	0	0	10
	Nankhari	Bhadral	C-29 b	49.81	0	10	0	0	0	0	10
	Nankhari	Maniknun	C-2	66.42	0	10	0	0	0	0	10
	Nankhari	Bhadral	C-31	108.94	0	10	0	0	0	0	10
	Nankhari	Nankhari	C-35	156.33	0	10	0	0	0	0	10
	Nankhari	Sidhpura	C-1	131.22	0	0	10	0	0	0	10
	Nankhari	Bagat	C-20	133.24	0	0	10	0	0	0	10
	Nankhari	Bhadral	C-30	104.08	0	0	5	0	0	0	5
	Nankhari	Gahan	C-9	123.12	0	0	10	0	0	0	10
	Nankhari	Kungal-mundar	C-51	150.66	0	0	10	0	0	0	10
	Total Nankhari Range			1125.07	20	40	45	0	0	0	105
	Bahali	Aagadhar	C-97	157.14	15	0	0	0	0	0	15
	Bahali	Chalari	C-103	102.06	20	0	0	0	0	0	20
	Bahali	Kandreri	C-60	185.08	0	10	0	0	0	0	10
	Bahali	Beunthal	C-70	98.01	0	10	0	0	0	0	10
	Bahali	Surd N	C-65	71.28	0	5	0	0	0	0	5
	Bahali	Bahli	NDPF C-13	49.55	0	5	0	0	0	0	5
	Total Bahli Range			663.12	35	30	0	0	0	0	65
	Rampur	Browni	NDPF-30	59.71	20	0	0	0	0	0	20
	Rampur	Darshal	NDPF C-56	217.35	20	0	0	0	0	0	20
	Rampur	Kasha	NDPF C-41	422.63	0	0	0	20	0	0	20
	Rampur	Punar	C-90	125.14	0	10	0	0	0	0	10
	Rampur	Munish (E)	C-91	110.56	0	10	0	0	0	0	10
	Rampur	Sanathaly	C-109 a	114.21	0	10	0	0	0	0	10
	Rampur	Talaidthar	NDPF C-32	121.28	0	10	0	0	0	0	10
	Total Rampur Range			1170.89	40	40	0	20	0	0	100
	Sarahan	Phoneoti	C-112 c	170.10	0	20	0	0	0	0	20
	Sarahan	Kalindi Dhar	UF C-57 a	72.90	0	20	0	0	0	0	20
	Sarahan	Kandri	UF C-58	98.01	0	20	0	0	0	0	20
	Sarahan	Magara	C-114	126.76	0	20	0	0	0	0	20
	Sarahan	Saraikot	C-112 a	70.47	0	0	20	0	0	0	20

1	2	3	4	5	6	7	8	9	10	11	12
	Sarahan	Gaura	C-112 b	113.80	0	0	20	0	0	0	20
	Sarahan	Kundluchonda	C-119	319.14	0	0	20	0	0	0	20
	Sarahan	Kundluchonda-I	NDPF C-65	154.11	15	0	0	0	0	0	15
	Total Sarahan Range			1125.29	15	80	60	0	0	0	155
	G. Total			4084.36	110	190	105	20	0	0	425
2014-15	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Trena	UF-14	52.65	10	0	0	0	0	0	10
	Nankhari	kandal	UF-13	48.60	10	0	0	0	0	0	10
	Nankhari	Baghat	C-20	133.24	0	0	15	0	0	0	15
	Nankhari	Bhadral	C-29 a	40.50	5	0	0	0	0	0	5
	Nankhari	Banauli	UF C-9	24.30	5	0	0	0	0	0	5
	Nankhari	Kandal	UF C-13	48.60	5	0	0	0	0	0	5
	Nankhari	Maniknun	C-2	66.42	0	5	0	0	0	0	5
	Nankhari	Maniknun	C-3	78.16	0	10	0	0	0	0	10
	Nankhari	Gahan	C-10	24.70	0	5	0	0	0	0	5
	Nankhari	Gahan	C-11	87.48	0	5	0	0	0	0	5
	Nankhari	Shilla	C-18	104.49	0	10	0	0	0	0	10
	Nankhari	Bahli	C-54	151.06	0	0	10	0	0	0	10
	Nankhari	Kungalmundar	C-52	141.75	0	0	10	0	0	0	10
	Nankhari	Punan	C-46	189.13	0	0	10	0	0	0	10
	Nankhari	Dabridhar	C-25	169.29	0	0	10	0	0	0	10
	Nankhari	Peojna	C-14	119.07	0	0	5	0	0	0	5
	Total Nankhari Range			1787.24	35	35	70	0	0	0	140
	Bahali	Sharan Jarashi	C-79	702.67	0	0	0	20	0	0	20
	Bahali	Rajpura	C-104	143.37	5	0	0	0	0	0	5
	Bahli	Palasi Jal	NDPF-28	1181.87	0	0	0	0	10	0	10
	Bahali	Agadhar	C-97	457.14	10	0	0	0	0	0	10
	Bahali	Chalali	C-103	102.06	10	0	0	0	0	0	10
	Bahali	Sharan Jarashi	C-78	324.00	0	0	20	0	0	0	20
	Bahali	Surad N	C-65	71.28	0	10	0	0	0	0	10
	Bahali	Beunthal	C-70	98.01	0	5	0	0	0	0	5
	Bahali	Kandreri	C-60	185.08	0	10	0	0	0	0	10
	Bahali	Bahli	NDPF C-13	49.55	0	5	0	0	0	0	5
	Total Bahli Range			3315.02	25	30	20	20	10	0	105
	Rampur	Khanewali	C-31 NDPF	139.91	30	0	0	0	0	0	30
	Rampur	Kasha	C-41 NDPF	422.63	0	0	0	20	0	0	20

1	2	3	4	5	6	7	8	9	10	11	12
	Rampur	Punar	C-90	125.14	0	10	0	0	0	0	10
	Rampur	Munish (N)	C-94	274.18	0	10	0	0	0	0	10
	Rampur	Tauni	C-110 b	121.50	0	10	0	0	0	0	10
	Rampur	Brawni upper	C-111 a	84.64	15	0	0	0	0	0	15
	Total Rampur Range			1168.00	45	30	0	20	0	0	95
	Sarahan	Sodorigad	C-132	93.55	0	20	0	0	0	0	20
	Sarahan	Ruwancha E	C-123 a	42.93	0	20	0	0	0	0	20
		Ruwancha W	C-123 b	86.67	0	20	0	0	0	0	20
	Sarahan	Chalandipat	C-125	98.41	0	20	0	0	0	0	20
	Sarahan	Kuimori gad	C-126	49.41	0	20	0	0	0	0	20
	Sarahan	Kuimori gad	C-127	53.46	0	20	0	0	0	0	20
	Sarahan	Koot	C-121 b	42.52	0	0	20	0	0	0	20
	Total Sarahan Range			466.95	0	120	20	0	0	0	140
G. Total				6737.22	105	215	110	40	10	0	480
2015-16	Nankhari	Peojna	C-14	119.07	0	0	25	0	0	0	25
	Nankhari	Bhagat	C-20	133.24	0	0	15	0	0	0	15
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Sidhpura	C-1	131.22	0	0	20	0	0	0	20
	Nankhari	Santhal	UF C-16	115.83	10	0	0	0	0	0	10
	Nankhari	Balani	UF C-10	40.50	5	0	0	0	0	0	5
	Nankhari	Maniknun	C-4	132.84	0	5	0	0	0	0	5
	Nankhari	Taprog	C-6	28.75	0	10	0	0	0	0	10
	Nankhari	Gahan	C-11	87.48	0	5	0	0	0	0	5
	Nankhari	Gahan	C-12	21.06	0	5	0	0	0	0	5
	Nankhari	Shilla	C-19	42.93	0	10	0	0	0	0	10
	Nankhari	Peojna	C-13	58.32	0	0	10	0	0	0	10
	Nankhari	Peojna	C-14	119.07	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-20	133.24	0	0	10	0	0	0	10
	Nankhari	Bhadral	C-30	104.08	0	0	10	0	0	0	10
	Nankhari	Punan	C-46	189.13	0	0	10	0	0	0	10
	Total Nankhari Range			1764.56	15	35	120	0	0	0	170
	Bahli	Gandlaseri	C-96	132.84	20	0	0	0	0	0	20
	Bahli	Marara	NDPF 25	145.26	0	0	0	0	10		10
	Bahli	Sharan Jarashi	C-72	507.06	0	0	20	0	0	0	20
	Bahli	Kandreri	C-60	185.08	0	5	0	0	0	0	5
	Bahli	Theda	C-84	127.57	0	0	10	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Bahli	Majholi	C-52	121.50	0	0	0	0	10	0	10
	Bahli	Taklech	C-87	814.86	0	0	20	0	0	0	20
	Bahli	Kukidhar	C-89	1756.08	0	0	20	0	0	0	20
	Bahli	Surd N	C-65	71.28	0	5	0	0	0	0	5
	Total Bahli Range			3861.53	20	10	70	0	20	0	120
	Rampur	Talaidhar	32 NDPF	121.28	0	15	0	0	0	0	15
	Rampur	Tauni	C-110 a	68.44	15	0	0				15
	Rampur	Sanathaly	NDPF C-29	160.54	0	15	0	0	0	0	15
	Rampur	Hansbishan	NDPF C-39	4689.22	0	0	0	25	0	0	25
	Rampur	Tauni	NDPF C-62	227.29	0	0	0	10	0	0	10
	Rampur	Sangri kofta	UF C-55	236.92	0	0	0	0	10	0	10
	Total Rampur Range			5503.69	15	30	0	35	10	0	90
	Sarahan	Bajadhar	C-128(b)	88.29	0	20	0	0	0	0	20
		Patni punj	C-128 a	56.61	0	20	0	0	0	0	20
		Jaghori	C-128 c	68.85	0	20	0	0	0	0	20
	Sarahan	Kundluchaunda	C-119	319.14	0	0	20	0	0	0	20
	Sarahan	Jamukurai	C-113	153.49	0	0	20	0	0	0	20
	Sarahan	Deora	C-121 c	187.51	0	0	20	0	0	0	20
	Total Sarahan Range			873.89	0	60	60	0	0	0	120
G.Total				12003.67	50	135	250	35	30	0	500
2016-17	Nankhari	Peojna	C-16	102.46	0	0	10	0	0	0	10
	Nankhari	Baghat	C-20	133.24	0	0	15	0	0	0	15
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Santhal	UF-16	115.83	10	0	0	0	0	0	10
	Nankhari	Nankhari	C-36	57.91	0	5	0	0	0	0	5
	Nankhari	Sholi	C-38	85.86	0	10	0	0	0	0	10
	Nankhari	Punan	C-44	49.81	0	10	0	0	0	0	10
	Nankhari	Andela	C-56 a	121.50	0	10	0	0	0	0	10
	Nankhari	Sidhpura	C-1	131.22	0	0	10	0	0	0	10
	Nankhari	Andela	C-56 b	174.55	0	0	10	0	0	0	10
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-22	141.34	0	0	10	0	0	0	10
	Total Nankhari Range			1729.32	10	35	75	0	0	0	120
	Bahli	Kukidhar	C-89	1756.08	0	0	20	0	0	0	20
	Bahli	Sarnal	NDPF 27	146.12	0	0	0	0	10	0	10
	Bahli	Sobli	NDPF C-14	46.81	5	0	0	0	0	0	5

1	2	3	4	5	6	7	8	9	10	11	12
	Bahli	Majoli	NDPF C-1	122.62	10	0	0	0	0	0	10
	Bahli	Theda	C-84	127.57	0	0	15	0	0	0	15
	Bahli	Saran Jarashi	C-78	324.00	0	0	40	0	0	0	40
	Total Bahli Range			2523.20	15	0	75	0	10	0	100
	Rampur	Munish Bahali	C-47 NDPF	117.74	0	20	0	0	0	0	20
	Rampur	Shareri	NDPF C-49	149.61	0	0	15	0	0	0	15
	Rampur	Brawni	NDPF C-30	59.71	10	0	0	0	0	0	10
	Rampur	Sangri kofta	UF C-55	236.92	0	0	0	0	10	0	10
	Rampur	Sanathaly	UF C-53	157.95	0	0	0	0	0	10	10
	Rampur	Thala	NDPF C-48	36.32	0	0	5	0	0	0	5
	Rampur	Nirsu	NDPF C-33	20.71	10	0	0	0	0	0	10
	Rampur	Darshal	NDPF C-56	217.35	15	0	0	0	0	0	15
	Total Rampur Range			996.31	35	20	20	0	10	10	95
	Sarahan	Bujri	C-140(b)	121.09	0	30	0	0	0	0	30
	Sarahan	Kundluchonda-III	NDPF C-67	191.71	0	0	20	0	0	0	20
	Sarahan	Margot	C-142 b	81.00	0	0	20	0	0	0	20
	Sarahan	Kalindi Dhar	UF 57 a	72.90	0	5	0	0	0	0	5
	Sarahan	Kandri	UF 58	98.01	0	20	0	0	0	0	20
	Sarahan	Karai	C-129	68.66	0	20	0	0	0	0	20
	Sarahan	Tikkar	C-130	96.79	0	20	0	0	0	0	20
	Sarahan	Kundken	C-131	30.78	0	10	0	0	0	0	10
	Total Sarahan Range			760.94	0	105	40	0	0	0	145
G. Total				6009.78	60	160	210	0	20	10	460
2017-18	Nankhari	Peojna	C-16	102.46	0	0	10	0	0	0	10
	Nankhari	Sidhpura	C-1	131.22	0	0	20	0	0	0	20
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Bhadral	C-29 a	40.50	10	0	0	0	0	0	10
	Nankhari	Paradhar	UF C-18	51.84	5	0	0	0	0	0	5
	Nankhari	Nagadhar	UF C-6	129.60	0	10	0	0	0	0	10
	Nankhari	Banala	C-57	161.59	0	10	0	0	0	0	10
	Nankhari	Garasu	C-49	92.74	0	5	0	0	0	0	5
	Nankhari	Nankhari	C-36	57.91	0	5	0	0	0	0	5
	Nankhari	Maniknun	C-5	52.65	0	5	0	0	0	0	5
	Nankhari	Gahan	C-9	123.12	0	0	10	0	0	0	10
	Nankhari	Andela	C-56 b	174.55	0	0	5	0	0	0	5
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Nankhari	Bhagat	C-90	141.34	0	0	10	0	0	0	10
	Nankhari	Gahan	C-11	87.48	0	10	0	0	0	0	10
	Total Nankhari Range			1962.60	15	45	75	0	0	0	135
	Bahli	Kukidhar	C-89	1756.08	0	0	25	0	0	0	25
	Bahli	Theda	C-18 NDPF	44.41	0	0	0	0	5	0	5
	Bahli	Saran Jarashi	C-76	162.81	0	0	15	0	0	0	15
	Bahli	Saran Jarashi	C-72	507.06	0	0	20	0	0	0	20
	Bahli	Kandreri	C-60	185.08	0	10	0	0	0	0	10
	Bahli	Saran Jarashi	C-78	324.00	0	0	20	0	0	0	20
	Bahli	Theda	C-86	280.66	0	0	10	0	0	0	10
	Total Bahli Range			3260.10	0	10	90	0	5	0	105
	Rampur	Chiksa	C-52 NDPF	249.48	0	30	0	0	0	0	30
	Rampur	Thala	NDPF C-48	36.32	0	0	5	0	0	0	5
	Rampur	Khanewali	NDPF C-31	139.91	20	0	0	0	0	0	20
	Rampur	Kareri	C-100	128.79	15	0	0	0	0	0	15
	Rampur	Sanathaly	UF C-53	157.95	0	0	0	0	0	10	10
	Total Rampur Range			712.45	35	30	5	0	0	10	80
	Sarahan	Bujri	C-140(b)	121.09	0	20	0	0	0	0	20
	Sarahan	Boihaoi dhar	C-139 b	78.16	0	20	0	0	0	0	20
	Sarahan	Dharapori	C-139a	49.21	0	15	0	0	0	0	15
	Sarahan	Karai	NDPF C-74	162.44	0	20	0	0	0	0	20
	Sarahan	Gamoghati	NDPF C-75	24.82	0	5	0	0	0	0	5
	Sarahan	Kandri	UF 58	98.01	0	10	0	0	0	0	10
	Sarahan	Tikkar	C-130	96.79	0	20	0	0	0	0	20
	Total Sarahan Range			630.52	0	110	0	0	0	0	110
	G. Total			6565.68	50	195	170	0	5	10	430
2018-19	Nankhari	Peojna	C-16	102.46	0	0	10	0	0	0	10
	Nankhari	Santhal	C-16	115.83	10	0	0	0	0	0	10
	Nankhari	Banola	UF C-9	24.30	5	0	0	0	0	0	5
	Nankhari	Balani	UF C-10	40.50	5	0	0	0	0	0	5
	Nankhari	Maniknun	C-4	132.84	0	10	0	0	0	0	10
	Nankhari	Maniknun	C-5	52.65	0	5	0	0	0	0	5
	Nankhari	Bagalti	C-26	130.00	0	10	0	0	0	0	10
	Nankhari	Bagalti	C-27	45.36	0	5	0	0	0	0	5
	Nankhari	Sidhpura	C-1	131.22	0	10	0	0	0	0	10
	Nankhari	Peojna	C-13	58.32	0	10	0	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Nankhari	Punan	C-46	189.13	0	10	0	0	0	0	10
	Nankhari	Kungal	C-52	141.75	0	10	0	0	0	0	10
	Total Nankhari Range			1164.36	20	70	10	0	0	0	100
	Bahli	Biunthal	C-70	98.01	0	10	0	0	0	0	10
	Bahli	Sharan Jarashi	C-79	702.67	0	0	0	30	0	0	30
	Bahli	Theda	C-86	280.66	0	0	20	0	0	0	20
	Bahli	Taklech	C-87	814.86	0	0	20	0	0	0	20
	Bahli	Kukidhar	C-89	1756.08	0	0	10	0	0	0	10
	Bahli	Kandreri	C-60	185.08	0	15	0	0	0	0	15
	Bahli	Brandli	NDPF C-7	118.19	0	0	0	10	0	0	10
	Bahli	Palasi Jal	NDPF C-28	1181.87	0	0	0	20	0	0	20
	Total Bahli Range			5137.41	0	25	50	60	0	0	135
	Rampur	Munish (E)	C-92	200.47	0	10	0	0	0	0	10
	Rampur	Shikaridhar	NDPF C-58	179.47	0	20	0	0	0	0	20
	Rampur	Munish (N)	C-94	274.18	0	10	0	0	0	0	10
	Rampur	Keem	NDPF C-54	61.36	0	10	0	0	0	0	10
	Rampur	Tauni	C-110 a	68.44	10	0	0	0	0	0	10
	Rampur	Suki gad	NDPF C-57	317.11	15	0	0	0	0	0	15
	Rampur	Pat	NDPF C-42	289.25	0	0	0	20	0	0	20
	Total Rampur Range			1390.28	25	50	0	20	0	0	95
	Sarahan	Gauni	C-64 NDPF	301.51	0	10	0	0	0	0	10
	Sarahan	Khirwa	C-120(d)	122.31	0	10	0	0	0	0	10
	Sarahan	Sarpara	C-142(a)	122.71	0	30	0	0	0	0	30
	Sarahan	Chechi	C-144	147.01	0	20	0	0	0	0	20
	Sarahan	Sugacho	C-145	123.52	0	20	0	0	0	0	20
	Sarahan	Hularuding II	NDPF 72	39.13	0	10	0	0	0	0	10
	Sarahan	Sechigad	C-142 c	129.19	0	20	0	0	0	0	20
	Sarahan	Kheucha	NDPF 68	495.61	0	0	20	0	0	0	20
	Sarahan	Bhujri	NDPF 80	87.17	0	0	20	0	0	0	20
	Total Sarahan Range			1568.16	0	120	40	0	0	0	160
G. Total				9260.21	45	265	100	80	0	0	490
2019-20	Nankhari	Peojna	C-14	119.07	0	0	25	0	0	0	25
	Nankhari	Kandal	UF C-13	48.60	5	0	0	0	0	0	5
	Nankhari	Santhal	UF C-16	115.83	5	0	0	0	0	0	5
	Nankhari	Nagadhar	UF C-6	129.60	0	10	0	0	0	0	10
	Nankhari	Banala	C-57	161.59	0	10	0	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Nankhari	Garasu	C-49	92.74	0	10	0	0	0	0	10
	Nankhari	Shila	C-17	52.65	0	0	15	0	0	0	15
	Nankhari	Bhagat	C-20	133.24	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-21	184.27	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-22	141.34	0	0	10	0	0	0	10
	Total Nankhari Range			1178.93	10	30	70	0	0	0	110
	Bahali	Sharan Jarashi	C-76	162.81	0	0	20	0	0	0	20
	Bahli	Marara	C-25 NDPF	145.26	0	0	0	10	0	0	10
	Bahli	Sharan Jarashi	C-79	702.67	0	0	0	50	0	0	50
	Bahli	Kandreri	C-60	185.08	0	10	0	0	0	0	10
	Bahli	Beunthal	C-70	98.01	0	5	0	0	0	0	5
	Bahli	Kandreri	C-61	69.66	10	0	0	0	0	0	10
	Bahli	Kukidhar	C-89	1756.08	0	0	30	0	0	0	30
	Bahli	Taklech	C-87	814.86	0	0	20	0	0	0	20
	Bahli	Saran Jarashi	C-78	324.00	0	0	20	0	0	0	20
	Total Bahli Range			4258.43	10	15	90	60	0	0	175
	Rampur	Munish (E)	C-92	200.47	0	10	0	0	0	0	10
	Rampur	Hansbishan	NDPF C-39	4689.22	0	0	0	20	0	0	20
	Rampur	Tauni	NDPF C-62	227.29	0	0	0	10	0	0	10
	Rampur	Tauni	C-110 b	121.50	0	10	0	0	0	0	10
	Rampur	Munish Bahali	NDPF C-47	117.74	0	10	0	0	0	0	10
	Rampur	Munish (E)	C-91	110.56	0	10	0	0	0	0	10
	Rampur	Brawni upper	C-111 a	84.64	10	0	0	0	0	0	10
	Rampur	Darshal	C-101	77.76	10	0	0	0	0	0	10
	Total Rampur Range			5629.18	20	40	0	30	0	0	90
	Sarahan	Gauni	C-64 NDPF	301.51	0	10	0	0	0	0	10
	Sarahan	Sarpara	C-142(a)	122.71	0	10	0	0	0	0	10
	Sarahan	Khirwa	C-120(d)	122.31	0	10	0	0	0	0	10
	Sarahan	Tikkar	C-130	96.79	0	10	0	0	0	0	10
	Sarahan	Kundken	C-131	30.78	0	5	0	0	0	0	5
	Sarahan	Sadholi gad	C-132	93.55	0	20	0	0	0	0	20
	Sarahan	Sarangan	C-136	106.11	0	20	0	0	0	0	20
	Sarahan	Sarangan S	C-137	65.20	0	20	0	0	0	0	20
	Sarahan	Kalindi Dhar	UF C-57 b	92.34	0	0	20	0	0	0	20
	Sarahan	Gamoghati	UF 59	14.17	0	0	5	0	0	0	5
Total Sarahan Range				1045.47	0	105	25	0	0	0	130

1	2	3	4	5	6	7	8	9	10	11	12
G. Total				12112.01	40	190	185	90	0	0	505
2020-21	Nankhari	Peojna	C-16	102.46	0	0	10	0	0	0	10
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Jalthani	UF C-34	41.31	10	0	0	0	0	0	10
	Nankhari	Sholi	C-38	85.86	0	10	0	0	0	0	10
	Nankhari	Nankhari	C-35	156.33	0	10	0	0	0	0	10
	Nankhari	Bhadral	C-31	108.94	0	10	0	0	0	0	10
	Nankhari	Bhorja	C-33	85.05	0	10	0	0	0	0	10
	Nankhari	Bhagat	C-21	133.24	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-22	184.27	0	0	10	0	0	0	10
	Nankhari	Tangridhar	C-25	169.29	0	0	10	0	0	0	10
	Nankhari	Bhadral	C-30	104.08	0	0	10	0	0	0	10
	Total Nankhari Range			1478.63	10	40	60	0	0	0	110
	Bahali	Sharan Jarasi	C-78	324.00	0	0	30	0	0	0	30
	Bahali	Theda	C-84	127.57	0	0	10	0	0	0	10
	Bahali	Saran Jarashi	C-72	507.06	0	0	30	0	0	0	30
	Bahali	Rajpura	C-104	143.37	10	0	0	0	0	0	10
	Bahali	Sobli	NDPF C-14	46.81	10	0	0	0	0	0	10
	Total Bahli Range			1148.81	20	0	70	0	0	0	90
	Rampur	Munish (E)	C-92	200.47	0	10	0	0	0	0	10
	Rampur	Rajpura	NDPF C-36	24.10	10	0	0	0	0	0	10
	Rampur	Darshal	NDPF C-56	217.35	15	0	0	0	0	0	15
	Rampur	Shingla	NDPF C-61	13.03	5	0	0	0	0	0	5
	Rampur	Banauli	C-110 d	34.02	0	0	10	0	0	0	10
	Rampur	Tauni	C-110 b	121.50	0	10	0	0	0	0	10
	Rampur	Kareri	NDPF C-34	130.27	0	0	0	0	10	0	10
	Rampur	Kasha	NDPF C-41	422.63	0	0	0	10	0	0	10
	Total Rampur Range			1163.37	30	20	10	10	10	0	80
	Sarahan	Kundlu chanda I	NDPF C-65	154.11	20	0	0	0	0	0	20
	Sarahan	Kuimori dhar	NDPF C-82	188.99	0	0	0	30	0	0	30
	Sarahan	Jamu thach	NDPF C-83	72.93	0	0	0	20	0	0	20
	Sarahan	Imarifall	143 a	110.97	0	0	0	20	0	0	20
	Sarahan	Darapori	C-139	49.41	0	10	0	0	0	0	10
	Sarahan	Phancha	C-138	71.68	0	20	0	0	0	0	20
	Sarahan	Nantigad	C-133	57.51	0	20	0	0	0	0	20
	Sarahan	Dewra	C-121(c)	187.51	0	0	10	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Total Sarahan Range			893.11	20	50	10	70	0	0	150
G. Total				4683.91	80	110	150	80	10	0	430
2021-22	Nankhari	Peojna	C-16	102.46	0	0	20	0	0	0	20
	Nankhari	Punan	C-46	189.13	0	0	20	0	0	0	20
	Nankhari	Dewra	C-121(c)	187.51	0	0	20	0	0	0	20
	Nankhari	Balni	C-10	40.50	10	0	0	0	0	0	10
	Nankhari	Maniknun	C-3	78.16	0	10	0	0	0	0	10
	Nankhari	Maniknun	C-4	132.84	0	10	0	0	0	0	10
	Nankhari	Gahan	C-10	24.70	0	5	0	0	0	0	5
	Nankhari	Gahan	C-12	20.06	0	5	0	0	0	0	5
	Nankhari	Punan	C-46	189.13	0	0	5	0	0	0	5
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Kungal	C-51	150.66	0	0	5	0	0	0	5
	Nankhari	Bahli	C-54	151.06	0	0	10	0	0	0	10
	Nankhari	Bai	C-55	63.58	0	0	5	0	0	0	5
	Total Nankhari Range			1637.59	10	30	95	0	0	0	135
	Bahali	Sharan Jarashi	C-79	702.67	0	0	0	50	0	0	50
	Bahali	Saran Jarashi	C-72	507.06	0	0	30	0	0	0	30
	Bahali	Saran Jarashi	C-78	324.00	0	0	10	0	0	0	10
	Bahali	Theda	C-84	127.57	0	0	10	0	0	0	10
	Bahali	Taklech	C-87	814.86	0	0	30	0	0	0	30
	Bahali	Agadhar	C-97	157.14	10	0	0	0	0	0	10
	Bahali	Rajpura	C-104	143.37	10	0	0	0	0	0	10
	Bahali	Gandlaseri	C-96	132.84	10	0	0	0	0	0	10
	Total Bahli Range			2909.51	30	0	80	50	0	0	160
	Rampur	Munish(W)	C-94	274.18	0	20	0	0	0	0	20
	Rampur	Munish (E)	C-92	200.47	0	10	0	0	0	0	10
	Rampur	Sanathaly	C-109 b	77.76	0	15	0	0	0	0	15
	Rampur	Chiksa	NDPF C-52	249.48	0	15	0	0	0	0	15
	Rampur	Brauni lower	C-111b	132.84	10	0	0	0	0	0	10
	Rampur	Kareri	C-100	128.79	10	0	0	0	0	0	10
	Rampur	Gatghor	NDPF C-40	289.93	0	0	0	20	0	0	20
	Rampur	Nogli	NDPF C-60	49.42	0	0	0	0	5	0	5
	Total Rampur Range			1402.87	20	60	0	20	5	0	105
	Sarahan	Ramagad NDPF	C-63	395.74	0	0	20	0	0	0	20
	Sarahan	Sharan gad S	C-76	112.00	0	0	10	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Sarahan	Phoneoti	C-112 c	170.10	0	20	0	0	0	0	20
	Sarahan	Magara	C-114	126.76	0	20	0	0	0	0	20
	Sarahan	Mule dhar	C-120 a	38.88	0	15	0	0	0	0	15
	Sarahan	Kinpheui	C-120 b	135.27	0	20	0	0	0	0	20
	Sarahan	Saraikot	C-112 a	70.47	0	0	15	0	0	0	15
	Sarahan	Gaura	C-112 b	113.80	0	0	20	0	0	0	20
	Sarahan	Jamukurai	C-113	153.49	0	0	20	0	0	0	20
	Total Sarahan Range			1316.51	0	75	85	0	0	0	160
G. Total				7266.48	60	165	260	70	5	0	560
2022-23	Nankhari	Peojna	C-14	119.07	0	0	20	0	0	0	20
	Nankhari	Maniknun	C-4	132.84	0	5	0	0	0	0	5
	Nankhari	Maniknun	C-5	52.65	0	5	0	0	0	0	5
	Nankhari	Shilla	C-18	104.49	0	10	0	0	0	0	10
	Nankhari	Bagalti	C-26	130.00	0	15	0	0	0	0	15
	Nankhari	Sidhpura	C-1	131.22	0	0	10	0	0	0	10
	Nankhari	Gahan	C-9	123.12	0	0	10	0	0	0	10
	Nankhari	Peojna	C-14	119.07	0	0	5	0	0	0	5
	Nankhari	Peojna	C-16	102.46	0	0	10	0	0	0	10
	Nankhari	Baghat	C-21	184.27	0	0	10	0	0	0	10
	Nankhari	Baghat	C-22	141.34	0	0	10	0	0	0	10
	Nankhari	Dalahu	UF C-11	28.35	10	0	0	0	0	0	10
	Total Nankhari Range			1368.88	10	35	75	0	0	0	120
	Bahali	Theda	C-86	280.66	0	0	20	0	0	0	20
	Bahali	Taklech	C-87	814.86	0	0	30	0	0	0	30
	Bahali	Agadhar	C-97	157.14	15	0	0	0	0	0	15
	Bahali	Rajpura	C-104	143.37	10	0	0	0	0	0	10
	Bahali	Saran Jarashi	C-79	702.67	0	0	0	30	0	0	30
	Bahali	Palasi Jal	NDPF C-28	1181.866	0	0	0	30	0	0	30
	Bahali	Kukidhar	C-89	1756.08	0	0	30	0	0	0	30
	Total Bahli Range			5036.646	25	0	80	60	0	0	165
	Rampur	Munish(W)	C-94	274.18	0	10	0	0	0	0	10
	Rampur	Kamlahu	UF C-56	225.18	0	0	0	0	15	0	15
	Rampur	Kareri	NDPF C-34	130.27	0	0	0	0	10	0	10
	Rampur	Sharaikoti	NDPF C-51	110.43	0	0	0	20	0	0	20
	Rampur	Pat	NDPF C-42	289.25	0	0	0	10	0	0	10
	Rampur	Talaidhar	NDPF C-32	121.28	0	10	0	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Rampur	Baltidhar	C-110 h	53.46	0	10	0	0	0	0	10
	Rampur	Shareri	NDPF C-49	149.61	0	0	10	0	0	0	10
	Total Rampur Range			1353.66	0	30	10	30	25	0	95
	Sarahan	Ramagad	C-63	395.74	0	0	10	0	0	0	10
	Sarahan	Dewra	C-121(c)	187.51	0	0	10	0	0	0	10
	Sarahan	Sharangad(s)	NDPF C-76	112.00	0	0	10	0	0	0	10
	Sarahan	Kundlu chanda I	NDPF C-65	154.11	15	0	0	0	0	0	15
	Sarahan	Manjkalan	C-143 b	90.72	0	0	0	20	0	0	20
	Sarahan	Selti	C-145 d	95.17	0	0	0	20	0	0	20
	Sarahan	Koot	C-120 c	69.66	0	20	0	0	0	0	20
	Sarahan	Khirwa	C-120 d	122.30	0	20	0	0	0	0	20
	Sarahan	Thikwa	C-120 e	81.40	0	20	0	0	0	0	20
	Sarahan	Punan	C-46	189.13	0	0	20	0	0	0	20
	Sarahan	Sidhpura	C-1	131.22	0	0	20	0	0	0	20
	Sarahan	Narola	C-25	52.65	0	0	0	0	0	20	20
	Total Sarahan Range			1681.61	15	60	70	40	0	20	205
G. Total				9440.79	50	125	235	130	25	20	585
2023-24	Nankhari	Punan	C-46	189.13	0	0	10	0	0	0	10
	Nankhari	Trena	UF C-14	52.65	5	0	0	0	0	0	5
	Nankhari	Bhadral	C-29 a	40.50	5	0	0	0	0	0	5
	Nankhari	Maniknun	C-4	132.84	0	10	0	0	0	0	10
	Nankhari	Maniknun	C-5	52.65	0	5	0	0	0	0	5
	Nankhari	Shilla	C-18	104.49	0	10	0	0	0	0	10
	Nankhari	Bagalti	C-26	130.00	0	10	0	0	0	0	10
	Nankhari	Thaily	C-34	115.02	0	10	0	0	0	0	10
	Nankhari	Andela	C-56 b	174.55	0	0	10	0	0	0	10
	Nankhari	Bahli	C-54	151.06	0	0	10	0	0	0	10
	Nankhari	Chabair	UF C-1	52.65	0	0	0	0	0	5	5
	Nankhari	Ropri	UF C-2	52.65	0	0	0	0	0	5	5
	Nankhari	Narola	UF C-3	52.65	0	0	0	0	0	5	5
	Total Nankhari Range			1300.84	10	45	30	0	0	15	100
	Bahali	Kandreri	C-59	166.45	0	0	20	0	0	0	20
	Bahali	Taklech	C-87	814.86	0	0	20	0	0	0	20
	Bahali	Saran Jarashi	C-78	324.00	0	0	30	0	0	0	30
	Bahali	Saran Jarashi	C-72	507.06	0	0	30	0	0	0	30
	Bahali	Saran Jarashi	C-79	702.67	0	0	0	50	0	0	50

1	2	3	4	5	6	7	8	9	10	11	12
	Bahali	Kukidhar	C-89	1756.08	0	0	20	0	0	0	20
	Bahali	Gandlaseri	C-96	132.84	10	0	0	0	0	0	10
	Bahali	Majholi	NDPF C-1	122.62	10	0	0	0	0	0	10
	Total Bahli Range			4526.58	20	0	120	50	0	0	190
	Rampur	Santhali	C-109(a)	114.21	0	20	0	0	0	0	20
	Rampur	Pashada	C-110 (e)	54.67	10	0	0	0	0	0	10
	Rampur	Ruwan	NDPF C-59	28.20	10	0	0	0	0	0	10
	Rampur	Thala	NDPF C-48	36.32	0	0	10	0	0	0	10
	Rampur	Punar	C-90	125.14	0	10	0	0	0	0	10
	Rampur	Munish N	C-94	274.18	0	10	0	0	0	0	10
	Rampur	Kasha	NDPF C-61	422.63	0	0	0	20	0	0	20
	Rampur	Tauni	NDPF C-62	227.29	0	0	0	10	0	0	10
	Total Rampur Range			1282.65	20	40	10	30	0	0	100
	Saharan	Dilpa	C-122	83.83	0	20	0	0	0	0	20
	Sarahan	Ramagad	NDPF C-63	395.74	0	0	10	0	0	0	10
	Sarahan	Sharaikoti	C-112(a)	70.47	0	0	10	0	0	0	10
	Sarahan	Kheuncha	C-121 a	60.34	0	20	0	0	0	0	20
	Sarahan	Hularuding	C-121 d	203.31	0	25	0	0	0	0	25
	Sarahan	Rupinsungling	C-121 e	44.55	0	20	0	0	0	0	20
	Sarahan	Koot	C-121 b	42.52	0	0	5	0	0	0	5
	Sarahan	Deora	C-121 c	187.51	0	0	25		0	0	25
	Sarahan	Rupinsungling	C-121 f	127.57	0	0	20	0	0	0	20
	Total Sarahan Range			1215.84	0	85	70	0	0	0	155
G. Total				8325.90	50	170	230	80	0	15	545
2024-25	Nankhari	Punnan	C-46	189.13	0	0	10	0	0	0	10
	Nankhari	Ropri	C-24	52.65	0	0	0	0	0	20	20
	Nankhari	Bagalti	C-27	45.36	0	5	0	0	0	0	5
	Nankhari	Thaily	C-34	115.02	0	5	0	0	0	0	5
	Nankhari	Nankhari	C-35	156.33	0	10	0	0	0	0	10
	Nankhari	Nankhari	C-36	57.91	0	5	0	0	0	0	5
	Nankhari	Punnan	C-45	103.27	0	10	0	0	0	0	10
	Nankhari	Bahli	C-54	151.06	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-22	141.34	0	0	5	0	0	0	5
	Nankhari	Tangridhar	C-25	169.29	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-21	184.27	0	0	10	0	0	0	10
	Nankhari	Andela	C-56 b	174.55	0	0	10	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Nankhari	Ropri	UF C-2	52.65	0	0	0	0	0	5	5
	Nankhari	Narola	UF C-3	52.65	0	0	0	0	0	5	5
	Total Nankhari Range			1645.48	0	35	55	0	0	30	120
	Bahali	Kandreri	C-60	185.08	0	15	0	0	0	0	15
	Bahali	Saran Jarashi	C-79	702.67	0	0	0	50	0	0	50
	Bahali	Saran Jarashi	C-76	162.81	0	0	15	0	0	0	15
	Bahali	Theda	C-86	280.66	0	0	20	0	0	0	20
	Bahali	Theda	C-84	127.57	0	0	15	0	0	0	15
	Bahali	Majholi	NDPF C-1	122.6197	20	0	0	0	0	0	20
	Total Bahli Range			1581.4097	20	15	50	50	0	0	135
	Rampur	Toni	C-110(b)	121.50	0	20	0	0	0	0	20
	Rampur	Toni	C-54	230.04	0	0	0	0	0	30	30
	Rampur	Langrika	C-95	149.85	0	0	0	10	0	0	10
	Rampur	Pat	NDPF C-42	289.25	0	0	0	10	0	0	10
	Rampur	Daran ghati	NDPF C-50	57.32	0	0	0	10	0	0	10
	Rampur	Shikari dhar	NDPF C-58	179.47	0	10	0	0	0	0	10
	Rampur	Chiksa	NDPF C-52	249.48	0	10	0	0	0	0	10
	Rampur	Sanathaly	C-109 a	114.21	0	10	0	0	0	0	10
	Rampur	Suki gad	NDPF C-57	317.11	10	0	0	0	0	0	10
	Rampur	Jogni upper	NDPF C-44	45.58	10	0	0	0	0	0	10
	Total Rampur Range			1753.80	20	50	0	30	0	30	130
	Sarahan	Chalandipat	C-125	98.41	0	20	0	0	0	0	20
	Sarahan	Bari	C-117	78.97	0	0	20	0	0	0	20
	Sarahan	Khutani	C-121 g	78.97	0	20	0	0	0	0	20
	Sarahan	Dilpa	C-122	83.83	0	20	0	0	0	0	20
	Sarahan	Ruwancha E	C-123 a	42.93	0	10	0	0	0	0	10
	Sarahan	Ruwancha W	C-123 b	86.67	0	20	0	0	0	0	20
	Sarahan	Ramagad NDPF	C-63	395.74	0	0	20	0	0	0	20
	Sarahan	Kundluchanda III	NDPF 67	191.71	0	0	20	0	0	0	20
	Sarahan	Kheuncha	NDPF 68	495.61	0	0	25	0	0	0	25
	Total Sarahan Range			1552.84	0	90	85	0	0	0	175
G. Total				6533.53	40	190	190	80	0	60	560
2025-26	Nankhari	Punan	C-46	189.13	0	0	10	0	0	0	10
	Nankhari	Balani	UF C_10	40.50	5	0	0	0	0	0	5
	Nankhari	Dalahu	UF C-11	28.35	5	0	0	0	0	0	5
	Nankhari	Punan	C-45	103.27	0	10	0	0	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Nankhari	Garasu	C-49	92.74	0	5	0	0	0	0	5
	Nankhari	Andela	56 a	121.50	0	10	0	0	0	0	10
	Nankhari	Tangridhar	C-23	144.58	0	0	10	0	0	0	10
	Nankhari	Tangridhar	C-25	169.29	0	0	10	0	0	0	10
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-21	184.27	0	0	10	0	0	0	10
	Nankhari	Sidhpura	C-1	131.22	0	0	10	0	0	0	10
	Total Nankhari Range			1512.65	10	25	60	0	0	0	95
	Bahali	Sharan Jarashi	C-77	439.83	0	0	30	0	0	0	30
	Bahali	Brandali	NDPF-7	118.19	0	0	0	20	0	0	20
	Bahali	Saran Jarashi	C-79	702.67	0	0	0	30	0	0	30
	Bahali	Saran Jarashi	C-72	507.06	0	0	20	0	0	0	20
	Bahali	Theda	C-86	280.66	0	0	10	0	0	0	10
	Bahali	Taklech	C-87	814.86	0	0	20	0	0	0	20
	Bahali	Kukidhar	C-89	1756.08	0	0	20	0	0	0	20
	Bahali	Majholi	UF C-52	121.50	0	0	0	0	10	0	10
	Bahali	Sharnal	NDPF C-27	146.12	0	0	0	15	0	0	15
	Total Bahli Range			4886.97	0	0	100	65	10	0	175
	Rampur	Sanathali	C-29 NDPF	160.54	0	20	0	0	0	0	20
	Rampur	Jogni upper	NDPF C-44	45.58	10	0	0	0	0	0	10
	Rampur	Khanewali	NDPF C-31	139.91	10	0	0	0	0	0	10
	Rampur	Darshal	C-102	58.72	10	0	0	0	0	0	10
	Rampur	Shareri	NDPF C-49	149.61	0	0	10	0	0	0	10
	Rampur	Pashada	C-110 f	77.76	0	10	0	0	0	0	10
	Rampur	Munish Bahli	NDPF C-47	117.74	0	10	0	0	0	0	10
	Rampur	Sanathaly	UF C-53	157.95	0	0	0	0	0	10	10
	Rampur	Kamlahu	UF C-56	225.18	0	0	0	0	10	0	10
	Total Rampur Range			1132.99	30	40	10	0	10	10	100
	Sarahan	Kundluchonda	C-119	319.14	0	0	20	0	0	0	20
	Sarahan	Chalandipat	C-125	98.41	0	10	0	0	0	0	10
	Sarahan	Ramagad NDPF	C-63	395.74	0	0	35	0	0	0	35
	Sarahan	Kheuncha	C-68	495.61	0	0	35	0	0	0	35
	Sarahan	Koot	C-69	763.84	0	0	45	0	0	0	45
	Sarahan	Karai	C-74	162.44	0	20	0	0	0	0	20
	Sarahan	Sarang N	C-136	106.11	0	20	0	0	0	0	20
	Sarahan	Sarpara	C-142 a	122.71	0	20	0	0	0	0	20

1	2	3	4	5	6	7	8	9	10	11	12
	Total Sarahan Range			2464.00	0	70	135	0	0	0	205
G .Total				9996.60	40	135	305	65	20	10	575
2026-27	Nankhari	Bhagat	C-20	133.24	0	0	15	0	0	0	15
	Nankhari	Punnan	C-46	189.13	0	0	20	0	0	0	20
	Nankhari	Ropri	UF-24	52.65	0	0	0	0	0	10	10
	Nankhari	Batanal	UF C-12	24.30	5	0	0	0	0	0	5
	Nankhari	Nagadhar	UF C-6	129.60	0	10	0	0	0	0	10
	Nankhari	Banala	C-57	161.59	0	10	0	0	0	0	10
	Nankhari	Andela	56 a	121.50	0	10	0	0	0	0	10
	Nankhari	Tangridhar	C-23	144.58	0	0	10	0	0	0	10
	Nankhari	Tangridhar	C-25	168.29	0	0	10	0	0	0	10
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Gahan	C-95	123.12	0	0	10	0	0	0	10
	Total Nankhari Range			1555.80	5	30	75	0	0	10	120
	Bahali	Saran Jarashi	C-72	507.06	0	0	30	0	0	0	30
	Bahali	Taklech	C-87	814.86	0	0	30	0	0	0	30
	Bahali	Kukidhar	C-89	1756.08	0	0	30	0	0	0	30
	Bahali	Theda	C-86	280.66	0	0	15	0	0	0	15
	Bahali	Kandreri	C-61	69.66	10	0	0	0	0	0	10
	Bahali	Majholi	NDPF C-1	122.62	20	0	0	0	0	0	20
	Bahali	Gandlaseri	C-96	132.84	15	0	0	0	0	0	15
	Bahali	Marara	NDPF C-25	145.26	0	0	0	10	0	0	10
	Bahali	Brandali	NDPF C-7	118.19	0	0	0	15	0	0	15
	Total Bahli Range			3947.22	45	0	105	25	0	0	175
	Rampur	Talaidhar	C-32 NDPF	121.28	0	10	0	0	0	0	10
	Rampur	Shangri kofta	UF C-55	236.92	0	0	0	0	10		10
	Rampur	Hansbishan	NDPF C-39	4689.22	0	0	0	20	0	0	20
	Rampur	Sharaikoti	NDPF C-51	110.43	0	0	0	10	0	0	10
	Rampur	Brauni lower	C-111 b	132.84	10	0	0	0	0	0	10
	Rampur	Kareri	C-100	128.79	10	0	0	0	0	0	10
	Rampur	Munish E	C-92	200.47	0	10	0	0	0	0	10
	Rampur	Shikari dhar	NDPF C-58	179.47	0	10	0	0	0	0	10
	Total Rampur Range			5799.42	20	30	0	30	10	0	90
	Sarahan	Katbari	C-135	117.04	0	0	20	0	0	0	20
	Sarahan	Kundluchonda	C-119	319.14	0	0	10	0	0	0	10
	Sarahan	Bajadhar	C-128(b)	88.29	0	20	0	0	0	0	20

1	2	3	4	5	6	7	8	9	10	11	12
	Sarahan	Chalandipat	C- 125	98.41	0	20	0				20
	Sarahan	Patnipunj	C-128 a	65.61	0	20	0	0	0	0	20
	Sarahan	Tikkar	C-130	96.79	0	25	0	0	0	0	25
	Sarahan	Sadholi gad	C-132	93.55	0	20	0	0	0	0	20
	Sarahan	Bohiya dhar	NDPF 79	235.16	0	0	20	0	0	0	20
	Sarahan	Sarpara	NDPF 81	89.68	0	0	20	0	0	0	20
	Total Sarahan Range			1203.68	0	105	70	0	0	0	175
G. Total				12506.12	70	165	250	55	10	10	560
2027-28	Nankhari	Baghat	C-20	133.24	0	0	20	0	0	0	20
	Nankhari	Kandal	UF C-13	48.60	10	0	0	0	0	0	10
	Nankhari	Santhal	UF16	115.83	10	0	0	0	0	0	10
	Nankhari	Banala	C_57	161.59	0	10	0	0	0	0	10
	Nankhari	Andela	C-56 a	121.50	0	10	0	0	0	0	10
	Nankhari	Sidhpura	C-1	131.22	0	0	10	0	0	0	10
	Nankhari	Gahan	C-9	123.12	0	0	10	0	0	0	10
	Nankhari	Peojna	C-14	119.07	0	0	10	0	0	0	10
	Nankhari	Peojna	C-16	102.46	0	0	10	0	0	0	10
	Nankhari	Bhagat	C-21	184.27	0	0	15	0	0	0	15
	Nankhari	Tangridhar	C-23	144.58	0	0	10	0	0	0	10
	Nankhari	Tangridhar	C-25	169.29	0	0	10	0	0	0	10
	Nankhari	Punan	C-47	307.80	0	0	10	0	0	0	10
	Nankhari	Chabair	UF C-1	52.65	0	0	0	0	0	5	5
	Nankhari	Ropri	UF C-2	52.65	0	0	0	0	0	5	5
	Nankhari	Narola	UF C-3	52.65	0	0	0	0	0	5	5
	Total Nankhari Range			2020.52	20	20	105	0	0	15	160
	Bahali	Sharan Jarashi	C-72	507.06	0	0	20	0	0	0	20
	Bahali	Kandreri	C-60	185.08	0	10	0	0	0	0	10
	Bahali	Taklech	C-87	814.86	0	0	30	0	0	0	30
	Bahali	Kukidhar	C-89	1756.08	0	0	30	0	0	0	30
	Bahali	Saran Jarashi	C-78	324.00	0	0	20	0	0	0	20
	Bahali	Palasi Jal	NDPF C-28	1181.87	0	0	0	20	0	0	20
	Bahali	Sharnal	NDPF C-27	146.12	0	0	0	20	0	0	20
	Bahali	Saran Jarashi	C-77	439.83	0	0	20	0	0	0	20
	Total Bahli Range			5354.90	0	10	120	40	0	0	170
	Rampur	Kareri	C-34 NDPF	130.27	0	0	0	0	10	0	10
	Rampur	Ghatghor	NDPF C-40	289.93	0	0	0	10	0	0	10

1	2	3	4	5	6	7	8	9	10	11	12
	Rampur	Kasha	NDPF C-41	422.63	0	0	0	10	0	0	10
	Rampur	Hansbishan	NDPF C-39	4689.22	0	0	0	10	0	0	10
	Rampur	Punar	C-90	125.14	0	10	0	0	0	0	10
	Rampur	Sanathaly	NDPF C-29	160.54	0	10	0	0	0	0	10
	Rampur	Talaidthar	NDPF C-32	121.28	0	10	0	0	0	0	10
	Rampur	Darshal	NDPF C-56	217.35	10	0	0	0	0	0	10
	Rampur	Brauni lower	C-111 b	132.84	10	0	0	0	0	0	10
	Total Rampur Range			6289.21	20	30	0	30	10	0	90
	Sarahan	Katbari	C-135	117.04	0	0	10	0	0	0	10
	Sarahan	Kundluchonda	C-119	319.14	0	0	10	0	0	0	10
	Sarahan	Deora	NDPF 70	599.60	0	0	25	0	0	0	25
	Sarahan	Sharan gad N	NDPF 77	766.95	0	0	25	0	0	0	25
	Sarahan	Bohiya dhar	NDPDF 79	235.16	0	0	20	0	0	0	20
	Sarahan	Kuimoridhar	NDPF 82	188.99	0	0	0	20	0	0	20
	Sarahan	Kundla chunda I	NDPF 65	154.11	20	0	0	0	0	0	20
	Sarahan	Phancha	C-138	71.68	0	20	0	0	0	0	20
	Sarahan	Bhujri	C-140 b	121.09	0	20	0	0	0	0	20
	Sarahan	Suga cho	C-145 c	123.52	0	20	0	0	0	0	20
	Total Sarahan Range			2697.27	20	60	90	20	0	0	190
	G. Total			16361.90	60	120	315	90	10	15	610
	Grand Total			131888.17	910	2530	3065	915	145	150	7715

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Abstract

Name of Range	Category of Forest	Name of Working Circle							Total
		CWC	D/KWC	F/SWC	PWC	OWC	PL.WC		
							Protected forest	Other forest land	
Nankhari	Old	40	520	1020	0	0	20		1600
	New	0	0	0	0	0	0		0
	Listed UPF	160	30	0	0	0	50		240
	Other Forest Land							470	470
	Total	200	550	1020	0	0	70	470	2310
Bahli	Old	190	135	1120	310	10	0		1765
	New	75	10	0	170	35	0		290
	Listed UPF	0	0	0	0	10	0		10
	Other Forest Land							550	550
	Total	265	145	1120	480	55	0	550	2615
Rampur	Old	145	295	10	20	10	30		510
	New	230	245	55	285	25	30		870
	Listed UPF	0	0	0		55			55
	Other Forest Land							1700	1700
	Total	375	540	65	305	90	60	1700	3135
Sarahan	Old	0	1145	425	60	0	20		1650
	New	70	75	410	70	0	0		625
	Listed UPF	0	75	25	0	0	0		100
	Other Forest Land							4380	4380
	Total	70	1295	860	130	0	20	4380	6755
	G.Total	910	2530	3065	915	145	150	7100	14815

The plantation shall be carried out only after issuance of closure notification under 30(b) of IFA, 1927. It has been observed that large chunk of forest land consisting of listed UPFs, other forest land i.e. Charagah Darktan, Bila Darktan were covered in the working plan for raising plantation over these land but these areas does not come under the preview of IFA, 1927 in absence of notification under Section 29 to 32 of the Act. Thus in the event of grazing, fire, felling/removal, lopping of young plants/pole crops and breaking of land through encroachment by local people, the offender cannot be prosecuted under Section 33 of IFA, 1927 in absence of notification under section 29 to 32 of the Act. Therefore it is needs to be done prior to plantation over these lands.

7.14 Control and Deviation: The areas prescribed annually for planting will be shown in the control forms and any excess or deficit carried forward in the control form and deviation statement. The successful planted areas only are to be counted against the prescribed planting programme. Any excess planting will not constitute a deviation. However, the short fall of any one year must be made good in the subsequent years.

7.15 Subsidiary Silvicultural Operations

7.15.1 Treatment/bringing up of failure of existing Plantation

With proper care, precautions and devotion, it should be possible to fill up the whole area successfully within the prescribed period. In case of the any failure, the same must be replaced in the years immediately following sowing and planting.

All existing young plantations should be strictly protected and tended properly. Maintenance operations such as fence repair, weeding, bush cutting, bringing up of failures etc. should be carried out for a period of at least 5 years after the planting.

7.15.2 Weeding: Bush cutting and weeding of plants shall be done in accordance with the practice for each species, preferable in the rainy season. For chil and deodar two weeding in the month of July and August will be done.

7.15.3 Seed collection: “As you sow so shall you reap” goes the saying the seed should, therefore, be of good quality. It should be collected from healthy, well grown, vigorous and genetically superior trees. It may be noted that most of the morphological and physiological characters are inherited. The seed trees should preferably be middle aged as the seed collected from too young or too old trees is not good. The seed trees of each species should be selected by the Divisional Forest Officer or Range Officer and should be marked with a distinctive band. Instead of dispersing the seed collection work in the entire area, it will be better to select good forests of each species from where the seed is to be collected. This will concentrate the work and will facilitate supervision. Such seed stand stands should be properly thinned to weed out inferior trees and to allow sufficient light for each tree to induce more cone formation. It will be desirable to depute some special staff for seed collection at the time when the seed of different species ripens because the experience has been that the beat guards are not able to give due attention to seed collection work. Mechanical appliances such as light aluminum ladders, tree climbing aides, sickles, secateurs etc. should also be provided. The seed should be collected at the right time. The cones should be spread in sun to open and the seed should be separated and cleaned of cone scales, wings, unsound seeds and foreign matter. The seed should be availed of to collect some

extra seed to be used in the following year if it is expected to be a very lean seed year. This extra seed should be stored in cool places in suitable containers. The practice of purchasing the seed from the villagers should be discontinued because in that case the quality of the seed is not guaranteed. To ensure collection of good quality seed, it is prescribed that the seed will be collected departmentally from the seed trees selected for the purpose and no seed will be purchases from the villagers.

7.16 Nurseries

It is axiomatic that the degree of survival of plantations is directly linked to the quality of nursery stock raised in nurseries. More so, when we are faced with increasing swings in seasonal fluctuations, both in terms of erratic rainfall and rising temperatures. These recent changes in weather patterns exacerbate our historical woes of compacted soil, damage by fire and cattle and general lack of interest (and therefore concern) of local communities in our plantations. Vastly improved nursery stock can in a major way address most of these impediments coming in the way of establishing successful plantations in and outside forests.

Few important qualities of any good nurseries would include:

- (a) It should be large in size (at least 0.5 to 1 hac.) so that it is cost effective and also proper infrastructure including water supply, germination chamber (poly-house), Mali-hut, soil mixing yard, vermin-compost etc can be developed.
- (b) Adequately trained, dedicated staff should be available in each nursery. Mali and laboureres should be trained and guided from time to time about raising of quality stock.
- (c) Each nursery should specialize in 5-6 species suited to the area and have large stock of each species, which is graded from time to time so that only quality stock goes for planting.
- (d) Soil mixture is most vital component for raising quality stock. Thus care must be taken not to compromise with quality of soil mixture (ideally 1:1:1 of soil: sand: vermin-compost) There are 27 nurseries in Rampur (as on 31st May, 2012) having a stock of 13,94,477 plants. Thus average number of plants per nursery is 51647 which can further be increased (and the average plant cost reduced) with development of infrastructure in more nurseries.

7.17 New Plantations

7.17.1 Plantation Technique: The technique of raising each species should be as per standard techniques, instructions and guidelines issued from time to time and in conformity with the experience. The technique of “Forest Nursery work” and “Artificial Reproduction” in hills has been dealt with in the Technical Orders No. 3 & 4 contained in the Punjab Forest Manual, Vol-III. and the techniques for plantations on type of land including choice of species for different localities have been given in the book titled as plantation Forestry in India by Sh. R.K. Luna. However, the following points deserve the special consideration:

- (i) **Selection of Plantation Site/Area:** The area selected should be personally inspected by the Range Officers concerned keeping in view the suitability of the area, ease of closure and type of fencing etc. These should also be approved by the DFO/Conservator of forests. The requirement of grazing and grass-cutting of the right holders should also be given due consideration. The following points may be kept in view while selecting the site for plantation.
 - (a) **Migratory Grazier:** No plantation above and below the road should be carried out and the corridor should be maintained to avoid conflict between the department and migratory graziers. However, in suitable sites the tall planting may be carried out in the areas.
 - (b) **Rotational Grazing:** In the halting places of the grazier, no plantation should be carried out. Beside this emphasis on rotational grazing should be laid.
 - (c) **Refractory Areas:** No sites should be taken up for afforestation which is refractory in nature and only well soil deposited sites should be taken.
 - (d) **Community Wood Lot:** The community wood lot should be established in between DPFs and adjoining habitation in order to reduce the pressure and avoid encroachments. Only fuel and fodder species should be planted out side the regular forests i.e. DPFs and listed UPFs.
 - (e) **Grazing land:** No attempt should be made for re-afforestation of grazing land.
 - (f) **Water Harvesting Structures:** Emphasis should be made to established water harvesting structures near the plantation areas to increase the water regime.
 - (g) **Fire line:** A wide strips of preferably 5-7 mtrs. should be kept which will act as fire lines in the plantation areas and reduce the fire hazards.
- (ii) **Fencing:** The plantation area should be efficiently/effectively closed by barbed wire fencing or social fencing. Fencing needs to be done around plantation sites only where it is necessary. Fencing along their steep slopes cliffs, should be avoided where it serves no purpose.

However, it is advisable to plant bio-engineering species suitable for the area along three strand barbed wire fencing especially in areas where grazing incidence is high. Fencing work should be taken up during the rainy season along with live fence support even for area which is to be planted in the ensuing winter. Where economical, and especially along roads, treated bamboo posts should be used for fencing. Tall plants of broad leaved species (6-8 ft high) wherever available can also be planted along the fence provided the area is adjacent to motorable road.

(iii) Site Preparation: Proper preparation of planting site requires special attention. Sites of pits should be marked in the field and on plantation map. The pits should be prepared/dug at least 2-3 months ahead of plantation work so as to allow proper weathering of soil and to enable maximum possible work done within the prime time of planting season. Proper inspection path should also be prepared to facilitate inspection and planting work. Pits of the standard size (30 cm x 30 cm x 30 cm for Chil and 15cm x45cm x 45cm for broad leaves) should be dug about 3-4 months in advance and the soil be heaped on the lower side of the pit. This helps in weathering and improvement of the soil.

In the past it has been a practice to cut and remove all bushes & shrubs from the plantation area. This practice is to be discontinued as shrubs and bushes help/prevent soil erosion and add in moisture retention. However, if the area has exotic weeds/aliens' species like lantana, Parthenium etc. then these are to be removed when the area is fenced.

(iv) Sowing and planting: The indigenous, well grown sturdy nursery plants of fast growing hardy species should be preferred and planted which can survive under the adverse conditions. The nursery should be preferably raised near to the plantation area or on road side, from where the plants could be transported with ease and facility to planting sites in minimum possible time.

(v) Pure or Mixed Species: As far as possible, pure crops should be raised over large blocks to avoid management difficulties.

(vi) Plantation Practices: Under the current departmental policy a mixture of species in departmental plantations is required in the following proportion:-

30% medicinal trees suitable for the area, 20% wild fruit trees suitable for the area and the remainder to be the main species of the forest type either conifers or broad leaved. It has, therefore, to be ensured that for plantation programmes sufficient diversity of tree species is grown and available in the nurseries. It is also prescribed that wherever deodar is being planted, the plants should be at least 2 and half years old. Similarly broad leaved species should be at

least 1 year old. Deciduous broad leaved species are to be planted during winter while conifers are to be planted during the rainy season.

7.18 Tall Planting: As per latest instructions by PCCF HP, tall plants should be planted in the field and technique for raising the same in the nurseries is also given and must be followed because one of the main reasons for failure of plantations is grazing or trampling by cattle. Also drought, fire hazards contribute to failure. Thus, to overcome pressure of grazing and drought, planting of tall plants (above grazing height) with well developed root system and good collar girth is desirable. Such plants will be able to cope with droughts owing to their well developed spread out root system, will be above grazing height and thus will survive grazing pressure and their good collar girth will help them withstand trampling. Such plants can be raised in nurseries for which month-wise operation activity is tabulated in table No. 7.5 & 7.6.

Table 7.5
Raising of Deodar in Nurseries

Month	Activities for Raising Deodar
Nov-Dec	1. Sow Seeds in trays filled with only Vermi compost. Keep the trays in poly house. (1 kg deodar seed contains 8000-10000 seeds approximately)
March (1 st Year)	1. Prick in 6"x4" bags or in root trainers with potting mixture of 1:1:1 of sand, soil, vermin-compost
July (1 st Year)	1. Transfer to 9"x5" bag along with ball of earth, add some more soil at bottom and sides.
July (2 nd Year)	Transfer to 15"x7"bag along with ball of earth, add some more soil at bottom and sides
July (3 rd Year)	1. Plant 90% of the good quality plants 2. Retain 10% best plants from among the quality plants for production of 'Tall Plants' and shift them in bags of size 20" x 12"
July (4 th Year)	Shift these plants to cement bags or such other alternatives
July (5 th Year)	Plant out these plants in pits of size 60x60x60cm

Similarly month wise activity chart for raising Ban Oak is given here:

Table 7.6
Raising of Oaks in Nurseries

Month	Activities for Raising Deodar
1	2
Nov	1. Sow Seeds in fresh cow dung immediately after collection as oak seeds are viable only for 7-14 days
Jan (1 st Year)	1. Prick the germinated seedlings in 9"x5" bags with potting mixture of 1:1:1 of sand, soil, vermin compost
July (1 st Year)	1. Transfer to 15"x7" bag along with ball of earth, add some more soil at bottom and sides.
July (2 nd Year)	Transfer to 20"x12"bag along with ball of earth, add some more soil at bottom and sides

1	2
July (3 rd Year)	1. Plant 90% of the good quality plants 2. Retain 10% best plants from among the quality plants for production of ‘ Tall Plants ’ and shift them in cement bags
July (4 th Year)	Plant out these plants in pits of size 60x60x60cm

Tall plants of other deciduous species will also be raised in a similar way as that of Oak. But sowing time and technique will be as per species requirement. For deciduous tall plants, root-shoot cuttings will be raised in production nurseries while sowing will be done in mother nurseries. Nurseries larger than 0.25 hac. but smaller than 0.5 hac. that have been closed can be used as **Mother Nursery** for production of root-shoot cuttings of deciduous broadleaved species. Thus, all deciduous broad leaved species like Robinia, Chulli, Walnut, Horse Chest Nut, Daru, Drek, Ritha etc will not be grown from seed in production nurseries but their root-shoot cutting will be made in Mother Nurseries. Month wise activity chart for such nurseries is tabulated in table No.7.7.

Table 7.7

Month	Activities for Raising Deodar
Nov-Dec	1. Plough the field, add compost and broadcast seeds, level to cover the seeds 2. Flood irrigation to the field
March to June (Next Year)	1. Flood irrigation 2-3 times depending on rainfall and temperature. 2. Weeding twice-once before and once during monsoon (these plants will not be shown in nursery return)
Nov (Next Year)	1. Uproot plants that are >2', transport to production nurseries 2. Make root-shoot cutting retaining 4" of root and 4" of shoot 3. Plant in poly bags of size 15"x7" (Now they will be shown in the Nursery Return of May'31 under age group 1.5 years)
Nov-Dec (2 nd Year)	1. Plant 90% of the good quality plants 2. Retain 10% best plants from among the quality plants for production of ‘ Tall Plants ’ 3. Make root shoot cutting of these 10% retained plants by cutting the shoot at 2' height (retaining only one shoot) and shift along with the soil to bags of size 20"x12"
Dec' (3 rd Year)	Plant out these plants in pits of size 45x45x45cm

7.18.1 Notification of Closures: Every area to be taken up for plantation should be notified for closure one year in advance. The period of closure may be 15-30 years.

7.18.2 Plantation Journals: It is essential that whenever a site is selected for plantation a proper hard bound plantation journal is prepared for that site. The plantation journal must have a large sketch of the area showing boundaries and other details like nallas, rocks, existing patches of trees etc. It is important that GPS coordinates of at least 6 to 8 points around plantations are

also recorded and entered in the plantation journal along with the altitude of the area. Details of all works carried out must be entered in the plantation journals and signed by the concerned officials showing date of signature. All inspecting officers are to record their visits and comments/observations in the plantation journals. Once a plantation journal is complete i.e. in the fourth and fifth year of the plantation, it should be transferred to the division office and kept properly in record there.

7.19 Land Bank

The Compensatory Afforestation is one of the most important conditions stipulated by the Central Government while approving proposals for diversion of forest land for non-forestry purpose under Section 2 of the Forest (Conservation) Act, 1980. Para 3-4 of the Govt. of India's guidelines under which creation of a Land Bank for carrying out Compensatory Afforestation (CA) against different proposals in a compact area has been mandated and stipulates that the non-forest land identified for the purpose of CA is to be transferred to the ownership of the State Forest Department and declared as Protected Forest or Reserved Forest under the provision of Indian Forest Act, 1927. This transfer is required to take place prior to the commencement of the proposal.

In pursuance to the GOI guidelines it has been decided that each forest Division in the State shall earmark 10 to 15 hac. area as a Land Bank for carrying CA of all the projects approved in the Division. The land so identified shall be surveyed, demarcated and declared as Protected Forest under the provision of Chapter-IV of the Indian Forest Act, 1927. For declaration of areas as Protected Forest (PF), such procedure/methodology defined in the Indian Forest Act, 1927 shall be followed and necessary revenue entries made in the Revenue record under the provision of H.P Land Revenue Act, 1954.

In case of non-availability of degraded forest land or other Govt. land in a compact patch of 10-15 hac. in a particular Forest Division, CA against smaller projects can be done in the Land Bank identified in another Division of the Circle or within the State. Similarly, the MOEF, GOI vide D.O. No 25-217/2013-ROC dated 16th January, 2013 directed that non forest land identified for CA in lieu of the forest land diverted for non forestry purposes, has to be transferred to the ownership of the Forest Department and declared 'Protected Forest' and after that the declared protected forest will be added to the total recorded forest area of the State.

The detail of Land Bank area identified in Rampur Forest Division is tabulated in table No.7.8

Table No. 7.8
Detail of Land Banks in respect of Rampur Forest Division

Sr. No.	Name of Range	Name of Block	Name of Beat	Name of area	Area in hectare	Plantation done
1	2	3	4	5	6	7
1	Rampur	Nogli	Duttnagar	Talaidhar	30 hac.	12.5 hac.
2	Rampur	Nogli	Duttnagar	Talaidhar (khaneoli)	10 hac.	10 hac.
3	Rampur	Nogli	Duttnagar	Childi	110 hac.	-
4	Rampur	Nogli	Dansa	Bahlidhar	20 hac	-
5	Rampur	Nogli	Dansa	Ruhan	25 hac	-
6	Sarahan	Gopalpur	Gopalpur	Khuda Zabbal	20 hac.	20 hac.
7	Sarahan	Phancha	Sarpara	Sukhachho C-215c	60 hac.	-
8	Sarahan	Sarahan	Bhagawat	Uchi Hurvi	30 hac.	-
9	Bahli	Surad	Beunthal	Paucha	56.70 hac	12.5 hac.
10	Nankhari	Gahan	Jahu	UF Chhachi	40-15-00 hac	16 hac.
11	Nankhari	Gahan	Jahu	UF Chhachi (Jalthani)	41-31-00 hac.	-
12	Nankhari	Gahan	Jahu	DPF Sidhpura	60 hac.	
13	Nankhari	Gahan	Peojana	DPF Peojana C-82	70 hac	
14	Nankhari	Gahan	Peojana	DPF Peojana C-83	10 hac	
15	Nankhari	Gahan	Peojana	DPF Peojana C-84	60 hac	
16	Nankhari	Gahan	Adu	DPF Baghat C-88	65 hac	
17	Nankhari	Gahan	Adu	DPF Baghat C-89	65 hac	
18	Nankhari	Gahan	Adu	DPF Tangari C-91	70 hac	
19	Nankhari	Nankhari	Nankhari	DPF Punan C-114	80 hac	
20	Nankhari	Nankhari	Kungal Munder	DPF Punan C-115	70 hac	
21	Nankhari	Nankhari	Kungal Munder	DPF Kungal Munder C-116	70 hac	
22	Nankhari	Nankhari	Bai Bahli	DPF Bai Bahli C-122	80 hac	
23	Nankhari	Nankhari	Bai Bahli	DPF Banala C-125	65 hac	
G. Total					1208.16 hac	71 hac

It has been observed that in spite of instruction issued from time to time by the GOI, due care has not been taken regarding declaration of Protected Forests. Therefore, DFO (T) necessary step may take up in this regard and all the identified Land Bank shall be declared as Protected Forest (PF) under Section 29 of Indian Forest Act, 1927 and necessary revenue entries made in the revenue record under the provision of H.P Land Revenue Act, 1954.

7.20 Other Regulation

7.20.1 Closure: All the plantation areas will remain closed for grazing. The areas should be duly notified for closure under Section 30 (b) of Indian Forest Act, 1927 for a period of 15-20 years and the notification for closure should, therefore, be published well in time in advance of actual planting. Old plantation may be thrown open if these are beyond grazing damages. Effective closure is a must in order to reduce the total closure period of each plantation depending upon the progress of the new crops.

7.20.2 Grass Cutting: No grass cutting shall be allowed till the plants grow above the level of the grass or shall be allowed except under strict supervision of the forest guard under MGNREGA of the scheme and it should be ensured that no plants are cut along with grass. Removal of grass reduces competition and also mortality due to fire hazard and overhead shade. Or it is better if Panchayats are associated for the purpose. The ghasni should be put to open auction and amount from the auction can be suitably distributed amongst all the right holders or to generate income for the Panchayats.

7.20.3 Lopping: Tree standing in the plantation areas shall remain prohibited for lopping during the closure period and it should be got notified under Section 30 (b) of the Indian Forest Act, 1927. Therefore, notification for prohibition should be published well in time under Section 31 of Indian Forest Act, 1927.

7.20.4 Fire Protection: All the plantation area will be strictly fire protected. The measures suggested for different species in the respective Working Circle will apply. In case of Chil plantations, the burning as suggested in the Chil Working Circle will be followed. Legal measures as suggested in different Working Circles and Protection Working Circle shall be followed. No deviation be allowed.

7.20.5 Grazing: All plantations areas shall remain closed for grazing for 15 to 30 years period depending upon the progress success of plantation. The closure should be effective and for the minimum possible time, so that least hardships is experienced by right holders. However, depending upon the progress of the young crop, particular area may be thrown open to kith and kin grazing even before the period of closure expires. This will be so, especially in the case of Chil plantations when after 8-10 years of effective closure, the young crop will be nearly 2m in height and cattle grazing will also minimize damage by fire.

7.21 Plantation Records

- (i) Plantation journal will be maintained in accordance with the standing orders/instructions for each plantation area on the standard form prescribed for the purpose. A location map on 1:50,000 scales should also be prepared and prefixed to the journal.
- (ii) Plantation boards should be put at prominent places, and written in Hindi, giving name of plantation, area, year of commencement, and other details of work. A simple small wooden/tin board; written in Hindi by staff will be sufficient instead of commercial type of high priced one.

- (iii) Notes on germination, establishment, casualties' etc. are given regularly by the Range Officer, and inspection notes of visiting Officers are incorporated in the journal.
- (iv) A detailed map showing various species and its extent should be prepared on 1:15,000 scales and placed in plantation journal.

7.22 Monitoring and evaluation: Monitoring and evaluation of plantation activities have not received due attention in the past. It is, therefore, prescribed that regular review of the plantation area with respect to success percentage and suitability of species planted should be done till establishment. Various reports will also put before the revision committee of the Government of India/ State at the time of inspection for midterm reviews.

CHAPTER VIII

THE NON TIMBER FOREST PRODUCE OVERLAPING WORKING CIRCLE

8.1 General Constitution

This Working Circle overlaps with other Working Circle and is constituted to ensure systematic development and exploitation of non timber forest produce species that occurs in this division. The area is very rich in medicinal plants but so far not much scientific efforts has been made to preserve and propagate the minor forest produce.

With the thrust of forest management shifting from being “tree centered” to people centered, forests are now been viewed as a source of not only commercial timber but also of valuable non timber forest products as well. There is the need to emphasize on the study, exploitation and marketing of valuable medicinal plants found in this division. The main non timber forest produce found/extracted in the division are Resin, Medicinal plants like Dhup (*Jurinea macrocephala*), Karu (*Picrorhiza Kurrooa*), *Podophyllum emodi*, Chukkri, *Aconitum violaceum* (Tilla), *Dioscorea deltoids* and Kuth (*Saussurea lappa*) etc. The main emphasis/focus would be on medicinal plants and Resin.

8.2 General Character of Vegetation: This Working Circle overlaps and extends over several types of forests. Earlier, the management of forests was based on production of timber and earning of revenue rather than conservation of bio diversity. The non timber forest produce were considered to be much lesser importance. After 1980, the earning of revenue from forests and their management for commercial production of timber has been discouraged from the policy framework and objects of management. The 1988 National Forest Policy emphasizes on in situ conservation of natural environment. Conservation and propagation of non-timber forest produce and their contribution towards local/tribal economy has also given importance in the policy. The forest areas of this Working Circle are located in different altitudinal zones and therefore, there is marked variation in the non timber forest produce. The Non Timber Forest Produce found in this division along with their altitudinal zonation and brief description is tabulated in the table No.8.1.

Table No-8.1

Sr. No.	Botanical name of the Minor Forest Produce	Local name of the Item	Altitudinal zonation	Remarks
1	<i>Ainslaea aptera</i>	Sath jalori	2500-4500 mts.	Biennial herb
2	<i>Acotinum chasmanthum</i>	Karvi patish	3000-5000 mts.	Biennial herb
3	<i>Picrorhiza Kurrooa</i>	Karoo	3000-4000 mts.	Perennial herb
4	<i>Jurinea macrocephala</i>	Dhoop	3500-4500 mts.	Perennial herb
5	<i>Podophyllum hexandrum</i>	Ban Kakri	2600-4500 mts.	Perennial herb
6	<i>Angelica glauca</i>	Chora	2700-3000 mts.	Perennial herb
7	<i>Viola serpens</i>	Banafsha	upto 2000 mts.	Perennial herb
8	<i>Valeriana wallichii</i>	Mushbala	1600-3600 mts.	Common in forest under growth.
9	<i>Rheum emodi</i>	Rewand chini	3300-5200 mts.	Common as forest under growth.
10	<i>Dioscorea deltoidea</i>	Shingli Mingli	1500-2800 mts.	The species is dwindling due to over exploitation.
11	<i>Thalictrum spp</i>	Mamri	upto 3000 mts.	Perennial herb
12	<i>Artimisia brevifolia</i>	Siski	800-4000 mts.	Perennial herb
13	<i>Thymus serpyllum</i>	Banajwain	1500-4500 mts.	Evergreen Prennial herb
14	<i>Atropa acuminata</i>	Balladuna (Jhraka)	2500-3000 mts.	Perennial herb
15	<i>Morchella esculenta</i>	Guchhi	2200-3200 mts.	Ascomycetes fungi (perishable)
16	<i>Potentilla nepalensis</i>	Dori	2000-3000 mts.	Perennial herb
17	<i>Pistacia integerrima</i>	Kakarsinghi	350-2400 mts.	Moderate size deciduous tree.
18	<i>Polygonatum vaticilatum</i>	Salam Mishri	2000-2800 mts.	Perennial herb
19	<i>Aconitum heterophyllum</i>	Patish (Mithi)	3000-5000 mts.	Biennial herb
20	<i>Salvia moorcrotiana</i>	Thuth	upto 1800 mts.	Perennial herb
21	<i>Selinum vaginatum</i>	Butkesh	1800-3800 mts.	Perennial herb
22	<i>Taxus baccata</i>	Brimi	1800-3300 mts.	Evergreen tree.
23	<i>Rhododendron companulatum</i>	Kashmiri patta	2400-5200 mts.	Evergreen shrub.
24	<i>Tinospora cardifolia</i>	Gloe	upto 1200 mts.	Perennial climber.
25	<i>Dactylorhiza hatagirea</i>	Salam Panja	2800-4200 mts.	Terristrial orchid.
26	<i>Valeriana hardwickii</i>	Nihani	1500-4000 mts.	Biennial herb
27	<i>Acorus calamus</i>	Barian/Bach	upto 2600 mts.	Perennial herb
28	<i>Pinus wallichina</i>	Kail cones	2000-3500 mts.	Evergreen tree.
29	<i>Berberis aristata</i>	Rasaunt	1650-3400 mts.	Deciduous shrub.
30	<i>Adiantum lunulatum</i>	Dusgtuli	upto 2800 mts.	Perennial herb
31	<i>Lichens</i>	Chalora	600-3500 mts.	Perennial lichen.
32	<i>Abies spectabilis</i>	Talis patra	3600-4200 mts.	Evergreen tree.
33	<i>Saussurea lappa</i>	Kuth	2600-4000 mts.	Perennial herb
34	<i>Gerardiana heterophylla</i>	Bichhu buti	800-6000 mts.	Perennial herb
35	<i>Pyrus pashia</i>	Kainth	upto 3000 mts.	Deciduous tree.
36	<i>Rhododendron app</i>	Brass phool	1200-4000 mts.	Evergreen tree.

8.3 Special objects of Management

The State has formulated Himachal Pradesh Forestry Sector Medicinal Plants Policy, 2006 which is aimed at conserving and strengthening medicinal plant resource base in forest areas as well as outside for use towards enhancing health and livelihood security of the people of the State on sustainable basis. The special objects of management are:-

- (i) To identify economical NTFP and useful species of herbs, shrubs and fungi for exploitation.
- (ii) To preserve and improve the quantity and quality of NTFPs in this division and manage them on sustainable basis.
- (iii) To conserve and augment existing non timber forest produce including medicinal plants resource in its natural habitat.
- (iv) To encourage cultivation of commercially important species of medicinal plants on private lands.
- (v) To provide sustained employment and supplementary income to the local population by popularizing the conservation of natural resources.
- (vi) To develop a system of pricing the wild harvest so as to reflect both the conservation costs and the community benefits.
- (vii) To encourage public-private-community partnership for building capacity for cultivation, value addition and processing of raw material before exporting the forest produce from the state.
- (viii) To maximize yield of medicinal plants through sustainable natural and artificial regeneration and scientific exploitation of forest produce by enforcing legal control mechanism on exploitation etc.

8.4 Area Statement

The Working Circle is overlapping, no area statement is required.

8.5 Blocks and compartment: The entire tract of the division will be covered by taking beat as a unit.

8.6 Analysis and Valuation of the Crop

8.6.1 Non timber forest produce are an important source of livelihood for forest based poor people in State of H.P. Non timber forest products include fodder and grasses, raw materials like bamboo, can and babbar grass, herbal medicinal plants, leaves, gums, waxes, dyes and resins and

many forms of food including nuts, wild fruits, roots and honey. Gathering these from the forest for subsistence and sale forms an integral part of the livelihood strategies of the poor.

8.6.2 As far as medicinal plants are concerned, Himachal Pradesh is one among the major suppliers in Indian market. More than forty species, enlisted by the State Forest Department are exported from the State. But the actual list of produce could well be much. Collection and selling of medicinal plants occupy an important place in the household economy in some parts of rural Himachal Pradesh. It is difficult to estimate the extent of employment generated by this sector for rural people in the State since most of the activities under this sector are considered to be unorganized. It is not even easy to identify the linkages where by it has with organized sector. In other words the intersection of informal and formal linkages in this sector is another important issue of concern. In economic literature the phrase informal sector refers to the economy in which the employed persons do not enjoy the advantages of unionization, social security and other associated benefits, or any assurance of regular employment.

8.6.3 The entire tract is rich in many useful shrubs, herbs, fungi which have been exploited from time to time. The area produces large quantities of Banafsha, Karu, Dhup, Salam Panja, Chukri, Shingli mingli, Guchhi, Rakhal, Lichens, Berberis roots etc. A list of commonly used or economically extracted medicinal herbs, plants occurring naturally area is tabulated in table No. 8.2

Table 8.2
Medicinal Plants found in Rampur Forest Division

Sr. No.	Botanical Name	Common Name	Habit	Occurrence Zone	Parts Used
1	2	3	4	5	6
1.	Aconitum heterophyllum	Mithi Patish	Herb	Sub alpine	Root
2.	Aconatum chasmanthom	Patish, Atish	Herb	Sub alpine	Root
3.	Acorus calamus	Barian/Bach	Herb	900 to 2000m	Rhizome
4.	Angelica glauca	Chora	Herb	Above 2200m	Whole plant
5.	Artimisia nilagirica	Siski	Herb	1500-2500m	-do-
6.	Asparagus adscendens	Sufed Musli	Shurb	Upto 1800m	Root
7.	Berberis spp.	Rasaunt(Kashmal)	Shurb	1800-3200m	Root
8.	Ainslaea aptera	Sathjalori			
9.	Cannabis sativa	Bhang	Herb	Up to 1600m	Leaves
10.	Cinnamomum tamala	Tej patta	Shurb/tree	Up to 2200m	Leaves
11.	Dioscorea detoidea	Shingli Mingli	Climber	Up to 2200m	Tuber
12.	Ephedra spp.	Bhutshur		Above 2200m	Root

1	2	3	4	5	6
13.	<i>Heracleum candicans</i>	Patlain	Herb	2000-2500m	Root
14.	Lichens	Chalora	Herb	2000-2500m	Whole parts
15.	<i>Mallotus philippinensis</i>	Kemal	Tree	Up to 1000m	Root
16.	<i>Morchella esculenta</i>	Guchhi	Fungus	1500-2500m	Fruiting body
17.	<i>Myrica nagi</i>	Kaphal	Tree	1000-2100m	Fruit
18.	<i>Dactylorhiza hatagirea</i>	Salam Panja	Herb	Above 3000m	Roots
19.	<i>Picrorhiza Kurrooa</i>	Karoo	Herb	Above 3000m	Roots
20.	<i>Pistacia integerrima</i>	Kakarsinghi	Herb	Upto 1500m	Fruit
21.	<i>Podophyllum emodii/hexandrum</i>	Bankakri	Herb	Above 2200m	Rhizome
22.	<i>Polygonatum vaticilatum</i>	Salam Mishri	Herb	2300-3000m	Leaves
23.	<i>Potentilla fulges</i>	Bajardanti	Herb	1500-3000m	Roots
24.	<i>Pinus wallichina</i>	Kail cons	Tree	1500-3000m	cones
25.	<i>Rhododendron arboreum</i>	Cheo (Brass)	Tree	1200-2400m	Leaves
26.	<i>Rhododendron companulatum</i>	Saranger	Tree	Sub alpine	Flower
27.	<i>Rheum emodi</i>	Rewandchini			
28.	<i>Bergenia ligulata</i>	Pathar Tor	Shrub	1800m & above	Whole plant
29.	<i>Swertia charata</i>	Chiryata	Herb	Sub alpine	Flower
30.	<i>Salvia moorcroftiana</i>	Thuth	Herb	Sub alpine	Flower
31.	<i>Sassuria lappa</i>	Kuth	Herb	Sub alpine	Roots
32.	<i>Gerardiana heterophylla</i>	Bichhu buti	Herb	Sub alpine	Leaves
33.	<i>Taxus wallichiana</i>	Rakhal	Herb	2400-3000m	Leaves
34.	<i>Thumus surphyllum</i>	Banajwain	Herb	1200-1800m	Seeds, leaves
35.	<i>Tinospora cardifolia</i>	Gloe	Herb	1500-2200 m	Leaves
36.	<i>Viola serpens</i>	Banafsha	Herb	1000-3000m	Flower
37.	<i>Valeriana wallichii</i>	Mushbala	Herb	2100-3000m	Root stock
38.	<i>Valeriana hardwickii</i>	Nihani	Herb	1200-3600m	-do-
39.	<i>Hippophae</i>	Seabuck thorn	Shrub	2400-3000m	Seeds
40.	<i>Centella asiatica</i>	Brahmi	Herb	Sub-temperate/ temperate	Leaves

8.6.4 The existing method of collection, extraction and marketing are as per the provision on the Forest Settlement Report, 1921. The people use to exercise these rights and have been collecting medicinal herbs and plants for the preparation of medicine for local use and consumption. With the establishment of new pharmaceutical units, the demand of these medicinal plants has increase many folds. With the increased demand coupled with lucrative

prices of these herbs and plants has seen a sudden spurt, in extraction of these plants in all the forest areas. The local right holders are now using all sorts of unscrupulous method in order to extract/collect more and more quantities of these NTFP species.

8.6.5 A wide variety of wild medicinal and aromatic plants and other genetic resources are found in the high hills of wet temperate zone. The gathering and sale of high value medicinal plants from the surrounding forests as well as pasture lands above/ human settlements has traditionally been an important source of cash income in these areas. The collection of the herbs from the alpine pastures and distant forests is considered to be as specialized task undertaken by physically stronger and young members. The men live in groups with bags stocked with food and bedding for long journey. The grazing of cattle is usually combined with the extraction activities the collector gathers and dries the herbs on the alpine pastures and brings to home for marketing. Along with herbs for marketing these men also brings home other plants with either medicinal or religious use in the house hold. The seasonal pattern of collection varies considerably with the bulk of collection concentrated between March and November and conceding and interspersed with agricultural and live stocks activities. Time of extraction described as scientific for some of the medicinal plants is tabulated in table No. 8.3

Table 8.3

Sr. No.	Species		Month of extraction
	(Common name	Scientific name	
1	2	3	4
1	Singli-mingli	Dioscorea deltoideis	July-October
2	Bach	Acorus calamus	March-May
3	Banfasha	Viola serpens	April-July
4	Brahmi	Centella asiatica	April-June, September-December
5	Harar, Behra, Amla	Terminalia chebula, Tbeleric, Embelica officinalis	January, October-December
6	Kakarsinghi	Pistacia integerrima	September-November
7	Neelkanthi	Ajuga bracteosa	August-September
8	Tejpatta	Cinnamomum tamala	Jan-March, December
9	Dhoop	Jurinea macrocephale	August-October
10	Guchhi	Morchella esculanta	April –July
11	Salam panja	Dactylorhiza hatagirea	August-October
12	Karoo	Picrorrhiza kurroa	August-October
13	Patish	Aconitum chasmanthom	August-October
14	Kuth	Sassuria lappa	August-October
15	Thuth	Salvia moorscroftiana	August-October

1	2	3	4
16	Salam Mishri	Polygenatum verticillatum	July-October
17	Rakhal	Taxus baccata	September – November
18	Mushkbala	Valerian wallichii	June – September
19	Sapdotri	Berginia species	July-October
20	Mehandi	Lichens	July-August
21	Chora	Angelica glauca	August-October
22	Bankakri	Podophyllum emodi	July – October

Source:- (ISST survey 1998 and Navrachna)

Pre mature and destructive extraction also takes place due to the open access to all collecting villagers as also a competition for resources within the collectors of a village.

8.6.6 The local people sell the medicinal herbs and plants collected seasonally and few people extract/collect these medicinal plants on whole time basis and spend several months in high reaches for collection of these plants to the local contractors. The contractors in turn sell/export these produce to the market situated outside the state. These contractors pay the prices to the local people much below the prevailing market rates. The collection permits are issued by the forest department on payment of nominal fees and export permits are issued by the local concerned Pradhans and DFOs. Since, the medicinal herbs and plants fall under the category of forest produce, the movement and export of these NTFP is regulated under the H.P. Forest Produce Transit Land Routes/ Rule, 1978.

8.6.7 The continuous extraction of herbs and its parts has posed a great threat for the natural use which are being extracted continuously unscientifically and through faulty means by the local people or the labourers engaged in extraction of NTFP. Alarmed with the serious state of affairs, the State Government, by its notification has increased the export fee of the medicinal plants in order to rationalize the export of medicinal herbs. Further, the HP Forest Department has also issued many regulatory instructions for the exploitation of the medicinal wealth. The Divisional Forest Officer used to issue export permit for the 51 species after releasing the export permit fee fixed by the HP State Govt. vide HP Govt. Notification dated 17-8-1993 and dated 4-8-2000. (See Appendix No.-XLI and XLII). Later on, vide HP Govt. Notification No. FFE-B-G(9)-9/94-II dated Shimla-2, 28th February, 2003, the concerned Pradhan Gram Panchyat has been empowered to issue transit/export permits for 38 species subject to the fulfillment of conditions prescribed under the relevant Act and Rules. As per this notification, the President of the Gram Panchayat in Himachal Pradesh has been declared as Forest Officer to carry out the purpose of Rule 11 of the Himachal Pradesh Forest Produce, transit (land Routes) Rules, notified vide Notification No.

Fts.(A)/3-1/77 dated 20-11-1978. The Pradhans of the concerned Gram Panchayat shall issue pass for the item/species given below as per export fee prescribed therein and the fee so realized shall form the revenue of the Gram Panchayat. The Forest Guard of the area shall make recommendations to issue the pass after verifying the species for which such pass/export permit is to be issued and it will be ensured that the species are extracted from the prescribed area and in the approved extraction cycle. Further the extraction has to be done in a sustainable manner without causing any ecological or environment damage. Non adherence to this condition may debar the Pradhan from issuing the pass for export and in such cases the powers shall be reverted to the concerned officer of the forest department who are exercising these powers. The list of species for which the local pradhan issue the permits is given in *Appendix- XLIV*.

The export permit for the remaining listed species as notified by the Government should be issued by the DFO (T).

8.6.8 Stock Map: As the medicinal plants are mostly herbs and shrubs found on annual or perennial basis, stock mapping is not possible.

8.7 Silvicultural System

As no silvicultural system is prescribed, no specific operations are proposed. However, when the medicinal plants are raised in the nurseries or plantations, the regular operations like closure, weeding, bush cutting, protection from fire, grazing etc. are to be carried as in case of tree species.

8.8 Calculation of Yield

No yield can be prescribed as the most NTFPs are extracted through right holders. However, proper record of all the NTFPs exported through Panchayats and the department, should be maintained annually and entered in respective compartment history files. The detail of various NTFPs exported outside from Rampur Forest Division since 1993-94 to 2012-13 is tabulated in table No. 3.4 of Chapter-I of Part-I.

8.9 Method of Treatment: No data or information is available for laying down the method of propagation, management, conservation, extraction or fixing any rotation for obtaining maximum yield of the medicinal plants without damage to its multiplication in the settlement Reports, 1921 and previous Working Plan. To put a stop of excessive extraction year after year or degradation of environment and ecosystem, it is felt necessary to give rest for the area at least once in the three years for regeneration of resources and to avoid further degradation. Therefore four year extraction cycle of medicinal plants has been regulated by the State Government.

8.9.1 Rotational Extraction: The unscientific and unsystematic extractions of medicinal plants are likely to reduce the yield and quality of plants and may even lead to disappearance of the species. In order to avoid the chances of over exploitation of the NTFP by the right holders or the traders has regulated the extraction of various medicinal plants, herbs and shrubs by laying 4 years collection cycle as per instruction contained in the Pr. CCF H.P letter No. Ft. 12-306/57 (M) dated 8-2-1994 (*See Appendix No-XLIII*). Regeneration operations include raising of nursery stock, planting, weeding and the maintenance etc. No species are allowed to extraction from the prescribed area which has not been approved in extraction cycle by the competent authority. The extraction shall be done in a sustainable manner and has not to be caused any ecological or environmental damages.

Therefore, a four year extraction cycle of medicinal plants is already enforcing in this division. This cycle will continue and is extended further during the plan period as given in table No. 8.4.

Table 8.4

<i>Name of Range</i>	<i>Year when extraction will be allowed</i>			
Nankhari	2013	2017	2021	2025
Bahli	2014	2018	2022	2026
Rampur	2015	2019	2023	2027
Sarahan	2016	2020	2024	2028

8.10 Artificial Propagation and Conservation

Keeping in view the economic importance and demand of medicinal herbs, it is desirable to encourage naturally occurring medicinal plants in suitable localities. The demand of medicinal plants has picked up with setting up of pharmaceutical industries in the state. The existing germplasm of different herbs needs to be conserved. Following measures are suggested for the conservation, protection and propagation of medicinal plants:-

- i) Systematic rotational collection as per approved four year cycle should be followed strictly.
- ii) Heavy grazing and destruction of medicinal herbs should be checked as these species do not produce sufficient seeds/vegetative form of regeneration.
- iii) The raising of nurseries/herbal gardens, drug farms should be developed through various research institutes like HFRI, UHF, Nauni, HPKVV Palampur, CSIR Palampur, ayurveda department who are engaged in medicinal and aromatic plants.

- iv) Medicinal plant collectors should be educated and provided proper information or guidelines so that there is continuous regeneration of medicinal herbs.
- v) The community based organizations like Mahila Mandals, Yuvak Mandals, VFDCs and other rural co-operatives should be involved in the development, protection, propagation and conservation of medicinal plants through Gram Panchayat.
- vi) The local organizations should also be encouraged to propagate the indigenous medicinal plants through the centrally sponsored schemes like State Medicinal Plant Board/National Medicinal Plant Board etc.

8.11 Community versus official efforts in Conservation of Medicinal Plants

The growing demand for rare Indian herbs in the ayurvedic and cosmetic industries inside and outside the country is a cause for concerned to environmentalists, who fear this burgeoning demand might soon lead to the total extinction of wild plants from their natural habitat. Unfortunately there is little or next to no statistical data available on many of these slow growing wild species. Several of these cannot be grown artificially without leading to a loss of their medicinal properties, according to experts in the field. Himachal has witnessed one of the oldest initiatives in involving local communities in natural resource management in the form of forest co-operatives in Kangra. In the past independence era community involvement was first envisaged under the social forestry programme in the form of protection of fuel wood plantations on community lands.

In 1993, the State Government issued an order regarding the involvement of local communities in rehabilitating degraded forests in a programme widely known as joint forest management.

Traditional efforts in conservation had received a big blow in areas where they have come to a direct conflict with the interest of the collected or the traders, as a possible source of higher income. Forest department has taken steps to stop and reduce extraction of few medicinal plants. Department is controlling the extraction of some species by allowing its collection on rational basis.

Every year only a single Range will be open for collection in one division. In this way the closed areas will get some time for regeneration of that particular species. The forest department claims that the extraction of *Taxus baccata* has been closed in the area for couple of years.

8.11.1 Demand from outside markets and impact on State Market

From the talks with traders in Himachal Pradesh, it seems that entire market in the state is operating on the demand from outside the state. There is no report of government purchase of medicinal plants from the villagers, neither any report of helping them directly or indirectly to sell out the herbs. It has to be noted down at this point that, there are 14 Ayurveda hospitals in the state and over 200 Ayurveda dispensaries spread all over the State.

Probably they procure raw herbal medicines, but information on it is yet to be gathered. As far as processing of herbal medicines in the state is concerned, there are not many processing units in the state. The entire market in the State runs on the basis of personal and oral contract.

A change in market structure has been noticed during recent years. Earlier Rampur used to hold a very important position in the trading of medicinal plants for entire Kinnaur district and western part of Shimla district. The importance of the Rampur as nodal market has declined in last few years. The main reason is emergence of a number of valley level traders in the region. The valley traders either directly purchase from the right holders collectors or they recruit Gorkha labours to extract medicinal plants directly from the forest before exporting them directly to Amritsar or Delhi. As a result huge volumes of medicinal plants are going out of the State, bypassing the nodal markets like Rampur. Secondly the improvement of transport facilities also has influenced the market structure to some extent. Previously the medicinal herbs / produce used to come to the nodal markets on foot from the distant inaccessible area. Now a day's transport facilities have made it easier for the trader to send the materials by trucks from many of those areas which were inaccessible earlier.

8.11.2 Income and Employment Generation

Extraction of medicinal plants by the villagers for sale is an age old practice, in various parts of Himachal Pradesh extraction is undertaken largely by the family members of different age and sex groups. Presently the estimation of income generated by villagers is not known but is undoubtedly a fact that some of the villagers are earning hand some amounts by selling medicinal plants legally as well as illegally. The ups and downs in the annual earnings are corresponding to the intensity of collections during the peak extraction period and the season happened to a peak or trough year for collection.

8.12 Propagation Techniques: Whereas method of propagation and harvesting of important plants be standardized after research in puts, the technique of propagation and harvesting of some important plants is described in the table No 8.5

Table 8.5
Method of Propagation of Medicinal Plant

Name	Method of Propagation	Harvesting/ Collection	Uses
1	2	3	4
Artemisia nilagirica	The seeds are minute. The sowing is done in Feb./March. Seedlings are transplanted in June-July in pits at a spacing of 0.5mx0.5m.	The crop is harvested in October when the plants flower.	The flowers are used in extraction of drug used as wormicide.
Acorus calamus	The species is propagated by sowing as well as planting rhizomes at 15m deep at 30cmx30cm spacing during Feb.-March. If direct sowing is decided, then the soil is worked up to a depth of 15 cm. Sowing is done in patches which may be spaced at 30cmx30cm.	Harvesting is done after one year during Nov.-Dec.	The dried rhizome is generally used in the form of infusion. It produces best results in case of dyspepsia and chronic diarrhea.
Aconitum heterophyllum	The species is propagated by direct sowing in patches at 30cmx30cm during Feb.-March.	Roots are dug out in the month of Oct.-Nov.	Roots are used as astringent, tonic and in diarrhea, cough.
Angelia glauca	The species is easily propagated by sowing in patches at spacing of 3'x3'. Sowing is carried out in Feb.-March.	Collection/harvesting is done in Sep.-Oct.	Roots, fruits used for flavouring. Used in medicines for digestion, heart burn, flatulence.
Dioscorea deltoidea	It is propagated by planting rhizomes in 15cm deep pit at the spacing of 60cmx45cm during March. About 15-18 Qtls. of rhizomes are required for one hectare area.	Tubers are dug out in Nov.-Dec.	Tubers yield steroidal sapogenin which is a source for manufacture of oral contraceptive.
Heracleum candicans	The species is propagated by seeds and root cuttings. Seeds@ 10-15 Kg/ha are required. The root cuttings 2.5cm to 4 cm long should be planted in 30cm deep pits at a spacing of 75cmx50cm in March-Apr.	After one year, the roots/tubers are dug out in Oct.-Nov.	Roots are source of xantotoxin, a furocoumarin which is used in treatment of leucoderma, fruits as aphrodisiac and nervetonic
Podophyllum emodi	The rhizomes are planted in 15cm deep pits in the zone of natural occurrence. The seeds germinate in about 3 years but if sowing is done in bores at low altitudes, it can germinate in 6 months, then the seedlings can be taken to sub alpine region and transplanted.	The rhizomes are collected when fully developed.	Roots and rhizomes are considered hepatic, stimulant, cholagogue, purgative alternative and bitter tonic. The resin or podophyllin is a drastic purgative and produces copious watery stool and is given with Belladuna and Hyscyamus to avoid griping.
Picrorhiza kurrooa	It is easily propagated by planting rhizomes in 15 cm deep pits at a spacing of 60cmx60cm during Nov.-Dec.	Collection is done after 3-5 years when rhizomes are fully developed.	Roots are used as stomachic, tonic, improve appetite and stimulate gastric secretion
Swertia chirayita	It is propagated by sowing of seeds in patches at a spacing of 30cmx30cm during Feb.-March.	Harvesting is done in following November-December.	The dried plant yields drug used as tonic, stomachic, bronchial asthma and liver disorders.

1	2	3	4
Valerina wallichii	The species is propagated by direct sowing or planting rhizomes in 15cm deep pits at espacement of 30cmx30cm during Feb.-March. About 25-40 Qtls. of root stock is sufficient for one hectare.	Rhizomes are dug out after 3-5 years when fully developed.	Dried rhizomes are employed for hair and perfumes, as incense and in drugs for hysteria and nervous problems.
Viola serpens	The species is propagated by sowing or planting root suckers at a spacing of 15cmx15cm during June-July.	Flowers are collected in Feb.-March in low lying area and in April-May in higher reaches.	Used for lung trouble, eye and ear diseases. Also used as blood purifier
Jurinea macrocephala (Dhoop)	The species is propagated by sowing seeds and divisions of root stock at colaar level.	It occurs in the alpine pastures	Decoction of roots is given in colic and puerperal fever and bruised root is applied to eruptions
Ephedra gerardiana (Som lata)	Propagation is through seed, sukers and layers. It is desirable for plantation in dry rocky slopes and sandy banks of the temperate region.	It occur in dry region of temperate and alpine Himalayas	Decoction of stems and roots are used as remedy for rheumatism and syphilis. Tincture of Ephedra is also used as a cardiac and circulatory stimulant.

The distribution, description, marketing, uses and propagation techniques of various medicinal and aromatic plants are well defined in the book “Medicinal and Aromatic plants of Himachal Pradesh” by Dr. N.S. Chauhan Prof. Department of Forest Products, University of Horticulture and Forestry Nauni, Solan.

The best time of collection is generally during dormancy.

8.13 Other Non Timber Forest Produce

8.13.1 Gucchhi: Gucchhi is a highly valued morel mushroom that grows over wide swathes of the country side under deodar or mixed coniferous forests. It grows in March or early April (depending upon the altitude) and is collected by local people (men, women and children) as soon as one is spotted. This has led to extensive free riding and consequently, gucchhi collections are said to be dwindling all over the state. Another reason for the decline is the manner in which the morel is collected. It is wrenched off the ground, possibly also yanking out the substrate mycelium as well. There is neither time nor patience to allow the mushroom to shed its spores. So the next crops are getting less and less.

If locals can be organized and trained to do two simple things, gucchhi might have a chance to bounce back. One, the species needs to be collected after it has shed its spores. This might vary according to weather and altitude, but the local people know when. Secondly, a simple training to get the collectors to use a blade to cut the mushroom stem (instead of yanking it out) is all that is needed to help the species recover. Of course to do this is apparently simple

job, there is a need to find out some good NGO or trainers who can take up this with the collectors (who are numerous) and sort of organize them into monitoring collection methods as well.

The royalty or export permit fee rate on guchhi is high: Rs 10,000 per quintal. While a quintal of guchhi is a lot and given the current market rates (between Rs 5000 to 7000/kg), they might seem reasonable; but people are not tuned to paying such taxes on forest produce (agriculture income is tax free). This high rate is a reason why much of the guchhi trade seems to have gone underground. There is, therefore, a need to review these export permit rates for guchhi and bring about a more transparent system in its trade.

8.13.2 Dioscorea Deltoides: It is propagated both through rhizomes and stem cuttings. In case of rhizomes it is propagated by putting the sprouting buds of the rhizomes in prepared soil, (March- April) in the rainy season (July- August). The plant prefers light sandy loam soils and a warm temperate climate, which permits a long growing season. The soil should be manure with old rotted leaf mould before planting. The plants are planted at a distance of 0.3 meter in rows spaces 0.6 meters apart and are provided with supports or dry branch stubs on which the vines can climb. The plants raised in spring and rainy season come up very nicely. Similarly, the plant can be propagated through stem cutting. In this case the new wood, which will not wilt, is divided into single node cuttings, consisting of a leaf with the auxiliary bud and a short portion of the stem. The cuttings are placed in coarse sand and watered immediately. They are shaded and protected from the direct sun. In about three weeks time the rooted cuttings are produced, which are then planted in the field.

8.13.3 Resin: The Chil forests exist in about 9.95% of the total area of the Rampur Forest Division. The Chil forest plays a vital role in the generation of revenue in this division. The very important produce resin is tapped from the Chil trees and the detail of resin tapping is given in Chapter II under Chil Working Circle.

8.14 Campaign for Conservation and Preservation of Endangered Species

For conservation of medicinal plant wealth, sequential field surveys should be launched so as to assess the conservation status from time to time. Extraction of such species should be banned for such period as may be necessary to restock them. Further, following action is recommended for the endangered species.

- (i) Propagation of endangered species both in ex-situ and in-situ.
- (ii) Exploration of substitutes to save the endangered species from over exploitation.

- (iii) Compensation to the right holders and particularly to the people actually affected where the species are growing.
- (iv) To create public awareness amongst the local people to save the endangered plant species.
- (v) Such NTFPs should be given the due thrust and species yielding them should be included in the plantation programme.

8.14.1 Threats to *Taxus* and *Berberis*

- (i) Lack of inventorisation. We know next to nothing about the approximate number of trees of *Taxus wallichiana*, their regeneration status and their pockets of occurrence across the appropriate altitudinal zone in the division.
- (ii) This tree, though on the List of THREATENED TREES (IUCN, RED LISTING FOR HP), is not enumerated as part of the enumeration done in forests. There appears to be no nursery stock grown nor are there any efforts for planting this species in appropriate location.
- (iii) Though collection and export of *Taxus* leaves has been banned since 1994 and still continues, but there are reports of its illegal collection and export, either as it is or in the name of *Talis patra* (*Abies pindrow* leaves), which is permitted and under present regulations export of which can be allowed by the Panchyat Pradhan.
- (iv) *Taxus wallichiana* is a very slow growing tree and unless successful plantations of it are raised annually, in the long term, this tree will eventually disappear.
- (v) *Berberis* as one can see is being extracted in huge quantity. It is not clear how this is done, but there must be implications for soil conservation.

8.14.2 Urgent Action on *Taxus wallichiana*

- (i) There is an urgent need to locate pockets/distribution of this tree in the forests of Rampur Forest Division, map these sites by using GPS and inventory the trees class wise.
- (ii) A suitable nursery to be identified and stock of *Taxus wallichiana* raised from cuttings (done in February using rooting hormones). One lakh such cuttings to be raised in poly bags every year for the next 5 to 6 years. The nursery stock has been retained for two and half to three and a half years in the nursery before planting out. Since this is a long term, cyclic affair with a long nursery period, it is important that cuttings are raised on the recommended scale annually. A planting schedule for *Taxus* can be developed after 3 to

4 years. But this must continue every year for a long time to come; across the next many future management plans.

- (iii) If we have sufficient well grown stock of *Taxus*, it is feasible to grow the live hedges with the species around our closed areas and also to encourage farmers to use this as a live hedge. Such practices that can be incentivized in suitable areas through payment for environmental services.

8.14.3 Action on *Berberis* Conservation

- (i) A study to answer the question raised must be commissioned soonest possible.
- (ii) A PAR (Participatory Action Research) study be undertaken to evolve and adopt and monitor non destructive ways of harvesting this species.
- (iii) *Berberis* should be raised in large numbers in nurseries, as it is a very versatile species for use in Bio-engineering.

8.14.4 Policy on Introduction of Medicinal Trees in Forests: It is now the state policy that in different plantations of the forest department about 30% of the trees being planted need to be of medicinal value and also native to the tract where plantation is being done. Planting of medicinal and aromatic plant will increase the biological/ecological value of the forest in undergrowth level as well as it will also help in breaking of monoculture. Beside this it will also help in controlling the soil erosion in the plantation areas. There is thus a need to identify and grow suitable medicinal trees for different altitude zones in a particular forest division. While most trees may be technically “medicinal”, it is important that species like deodar, kail, chil etc. which are normally grown in forest plantations are not reckoned as medicinal trees. In Rampur Forest Division, the low lying nurseries i.e. less than 1200 mtrs. have needs to grow species like Amla, Harar, Behra, Bel (bil) etc. in sufficient numbers. It is important that these species need to be grown as Tall plants in the nurseries before being planted out. Similarly, between 1200 and 2400 mts. species like *Myrica nage* (kaphal), *Pistachia integerrima*, walnut, bird cherry, hazelnut etc, need to be grown in nurseries.

8.15 Other regulations

8.15.1 Legal Measures

The export of NTFP is regulated under the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 1978. The season for extraction and collection of NTFP is from the mid of September till snowfall and export is generally completed by the end of the December in each calendar year. The transit rules framed by the State Govt. under Section 41/42 of India Forest

Act, 1927 shows that the rules are intended for regulating the movement of forest produce by land routes into “from and within the territorial limits of the Himachal Pradesh”.

Rules 5 provides for registration of property marks and its use with regard to forest produce whenever a person wants to transport or cause to transport such forest produce.

Rule 6 deals with registration of property and its use. Rule 8 provides for issue of certificate of registration. Rule 9 fixes the validity period of registration certificate. Rule 10 deals with issue of pass for export or transport of forest produce. It provides that no pass shall be issued for any unmarked timber or for such timber as bears the marks not registered as provided therein.

Rule 11 deals with prohibition on transport of forest produce. Rule 14 provides for production of pass challan for examination. Rule 16 provides for seizure of forest produce and other articles etc. Rule 17 provides for exemption to right holders from obtaining a pass. Rule 18 imposes a ban on booking of forest produce by rail.

Thus, the transit rules framed under Section 41 of Indian Forest Act, 1927 applies to the private forests as well as forests grown by private individuals also and as such any transit of such forest produce requires transit pass for movement. It merely provides for a license for removals of timber or other forest produce from or within the state and also for setting up or establishing a trading depot within the state.

Section 42 deals only with penalty for breach of rules made under Section 41 of the Act.

Local people/right holders have recorded rights to collect fruits, edible seeds, medicinal roots and leaves, roots for the preparation of dyes and honey for their own use and for sale of forest product free of cost as per the recorded rights given in Forest Settlement Report, 1921. This means that right holders can avail the facilities only from the forest in which they have recorded right subject to condition that forest produce can be used for domestic purpose free of cost and forest product can be sale in open market only not forest produce collected from the forest as per recorded rights in Forest Settlement Report, 1921. Therefore, DFO (T) may take up the matter with the Government to notify for fixing of quantity of forest produce to be collected by right holders for domestic use so that malpractices or over-exploitation of NTFP could be checked and controlled.

In practice the traders purchase the medicinal herbs and shrubs from the rights holders and transport the same to the Amritsar, Chandigarh and Delhi & other markets of demand after obtaining export permits from the concerned Divisional Forest Officer under the H.P. Forest

Produce Transit (Land Routes) Rules, 1978 by payment of rates as prescribed by the State Govt. from time to time.

Now in exercise of the powers conferred under Sub-Section (2) of Section 2 of the Indian Forest Act, 1927, the President Gram Panchayats in Himachal Pradesh is also appointed as Forest Officer to carry out the purpose of rule 11 of the H.P. Forest produce Transit (Land Routes) Rules, 1978 for the issuance of pass for transport of minor forest produce collected from the forest in the concerned Panchayats. The Pradhans of the concerned Panchayats shall issue pass for the items/species numbering 38 as listed species in the notification as per export free prescribed therein and the fee so realized shall form the revenue of the Gram Panchayats (*See Appendix No.-XLIV*).

The Forest Guard of the area shall make recommendations to issue pass after verifying the species for which such pass is to be issued are not banned for export and that the species are extracted from the prescribed area in the approved extraction cycle and that the extraction has been done in a sustainable manner and has not caused any ecological or environmental damage.

Non-adherence to the above conditions may debar a Pradhan from issuing the pass for export and in such a case the powers shall revert to the concerned officer of the Forest Department who was exercising these powers prior to issuance of the H.P. Govt. notification dated 28th February, 2003.

The question as to the meaning and purport of the words “in transit” came up for consideration before a Division Bench of Patna High Court in ***Ranchi Timber Association & Other V. State of Bihar and Others, AIR 1984 Patna 261***. It was held that the provisions of Section 41/42 of the Act and rules framed there under would apply only while the timber or other forest produce is in transit. It will not apply once such timber or other forest produce has reached its destination. The Division Bench further held that any rules framed by the State Govt. under Section 41 of the Act dealing with the timber or forest produce not in transit would be ultra vires.

The Hon’ble H.P. High Court in ***Prem Kumar Malik V. State of H.P., 2000 (2) Shim L.C. 520***, held that since the timber was not seized while in transit, it cannot be said that there has been a violation of the rules 1978 and as such Section 42 of the Act would have no application. The timber was neither detained nor seized while in transit. It was seized from the site where the accused was carrying out the work of construction of a building. On this ground alone the conviction and sentence of the accused for the offence under Section 41/42 of Indian forest Act, 1927 cannot be sustained.

Similarly, the police had seized the Red Sanders Logs total weighting 27.719 tonnes from the ware house at Kochari village, Jeori, Rampur H.P. and FIR No. 17/2011 dated 9-12-2011 under Section 41/42 of IFA, 1927 read with Section 34/379 of IPC was registered against the accused, the same is not sustainable in the eyes of law as the forest produce in question was neither detained nor seized in transit. Hence it may be said that there has been a violation of the H.P. Transit (Land Routes) Rules, 1978 and as such Section 42 of the Act would have no application except theft under Section 379 of IPC. Therefore, field functionaries must take precaution and act accordingly.

8.15.2 Fire Protection

The whole working cycle will be under strict vigil against fire hazard. The floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds and grass etc. and adequate fire watchers should be employed.

8.15.3 Right Holder's Demand

Demand of right holders for medicinal plants, herbs and shrubs will be met from the forest in which they have recorded rights. These rights shall be exercised by the right holders to meet the demand of domestic purpose free of cost whereas for commercial purpose, the species shall be extracted from the prescribed area only in the approved extraction cycle by the competent authority and that the extraction shall be done in sustainable manner and has not to be caused any ecological or environmental damages under the supervision of Forest Guard concerned. Non-adherence to the above condition shall debar the collection and extraction of NTFP from forest by DFO after giving prior show cause notice to the right holders/traders under the principle of natural justice read with the provision of Indian Forest Act, 1927 besides criminal proceeding under the provisions of Indian Forest Act read with Indian Penal Code.

CHAPTER IX

THE FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

9.1 General Constitution

This Working Circle includes all forests which overlaps with other Working Circles and is constituted to address the forest protection problems like Fire, Illicit felling, Encroachment, boundary pillars, Illegal mining and Poaching etc. The forest areas which are vulnerable to encroachments, status of damage reports, progress in prosecution/ compounding, disposal of seized timber and illicit felling etc. along with their future strategies are also discussed in detail under this Working Circle. This Working Circle is overlapping Working Circle which includes other land as defined by the Supreme Court also.

9.2 General character of vegetation

The forests allotted to this Working Circle have their scattered distribution throughout the tract; hence they represent almost all the forest types starting from scrub in lower elevations and high lying forests which extends upto higher elevation. These types are described in detail in Chapter-II of Part-I and briefly under the different Working Circles constituted under this plan.

9.3 Special objects of Management

The special objects of management of the forest allotted to this Working Circle are:

- (i) To protect all the forests and other valuable broad leaved forests from all types of forest offences, including indiscriminate exploitation and to preserve eco-systems of the region.
- (ii) To protect and conserve all forest land to ensure no illegal mining, encroachment and non forestry activities on forest land under the provision of Indian Forest Act, 1927, HP Mines & Mineral (Concession) Revised Rules, 1971, Mines & Minerals (Development & Regulation) Act, 1957, Forest (Conservation) Act, 1980, HP Land Revenue Act, 1954 and HP Public Premises & Land (Eviction & Rent Recovery) Act, 1971 etc.
- (iii) To address the problem of forest fire to the best possible extent by adopting the legal measures and other preventive measures under the provision of Law i.e. IFA, 1927, IPC and Prevention of Damage to Public Property Act, 1984.
- (iv) To provide protection of Wild life against poaching/hunting under the Wild Life (Protection) Act, 1972 to ensuring the ecological and environment security of the tract.

9.4 Illicit Felling

9.4.1 General: Though organized and large scale illicit felling in this division has been halted by various administrative and legislative measures, but major cases of illicit felling still do occur in Nankhari Range. Open forest wealth is easily accessible to every person in the upper hill region especially nearby road side, as boundaries between private and Govt. forests are not well defined and destroyed the forest wealth to the large extent despite of steps taken by the forest field functionaries. Illicit fellings of trees by some unscrupulous persons is another factor responsible for damaging the forest property. A large number of cases pertaining to illicit felling of trees in tract dealt with this Working Plan had come to light. The details of cases of illicit felling of trees detected for the period 2000-01 to 2010-11 is tabulated in table No. 9.1

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Table No. -9.1

Year wise detail of illicit felling cases in respect of Rampur Forest Division for the year 2000-2001 to 2011-12.																	
Year	Opening balance at the beginning of the year		Cases detected during the Year			Total cases			Cases compounded during the year		No. of cases registered with police	Cases challaned in the court	Cases decided by the court	Balance cases at the end of the year			No of cases convicted by the Court
	No of Cases	Timber involved	No of Cases	Timber involved	Value of trees involved	No	Timber involved	Value of trees involved	No of Cases	Amount realized				No of Cases	Timber involved	Amount involved	
1	2	3	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20
2000-01	2	0	36	9.614	196877	38	9.614	289054	28	104700	0	8	2	2	0	92177	0
2001-02	2	0	19	3.087	21859	21	3.087	114036	16	55028	2	2	2	1	0.286	32472	0
2002-03	1	0.286	33	20.458	90404	34	20.744	122876	28	93062	0	3	0	3	2.709	8814	0
2003-04	3	2.709	16	22.019	82911	19	24.728	91725	9	66882	2	0	0	8	11.098	3343	0
2004-05	8	11.098	17	15.228	176058	25	26.326	179401	14	56439	3	0	0	8	17	23630	0
2005-06	8	17	20	37.56	597773	28	54.56	621403	13	37980	3	1	0	11	29.515	37980	0
2006-07	11	29.515	26	16	143534	37	45.515	181534	19	44482	0	0	0	15	23.448	137032	0
2007-08	15	23.448	16	49.308	850321	31	72.756	987353	18	22102	0	1	0	12	45.278	823373	0
2008-09	12	45.278	15	19.572	919392	27	64.85	1742765	13	72556	1	0	0	13	50.541	1670209	0
2009-10	13	50.541	20	34.877	1276996	33	85.418	2947205	12	117714	4	2	0	15	14.78	200642	0
2010-11	15	14.78	33	12.419	426162	48	27.199	626804	36	281158	2	0	0	10	6.553	97424	0
2011-12	10	6.553	29	10.161	854321	39	16.714	951745	29	235783	1	0	0	9	3.749	43929	0

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As per Indian Forest Act, 1927, any act causing damage by negligence or deliberately felling of a tree or breaking of land or clearing of land for cultivation or any other purpose in 'Protected Forest' etc., is an offence and punishable with imprisonment for a term may extend to two years or with fine up to five thousand rupees, or with both under Section 33 (2) of the Act in State of Himachal Pradesh vide Himachal Pradesh Act, 15 of 1991 dated 24-7-1991.

Sub section (3) of Section 2 of Indian Forest Act, 1927 defines the term "Forest Offences" to mean an offence punishable under the Indian Forest Act or rules made there under. Nature of forest offence is varied. There may be serious aggravation of offences perspective of money value involved and similarly, criminal intent behind the offence may not be that serious as compared to the damage caused for forest ecology and environment. There are two types of forest offenders that one comes across. A section of the poor people and forest dwellers i.e. right holders who break the law and rules to keep up their livelihood and to meet their basic needs. The other class of forest offenders belongs to a chain of criminal's e.g. forest mafia, encroachers or Company or Corporate bodies or Contractors who knowingly break the law and rules and commit forest offences to meet their illegal ends through innocent people, tribals, Nepali mazdoor and villagers etc.

9.4.2 Causes of Illicit Fellings

These are briefly enumerated as under:-

- i. With ever increasing human population the demand for constructional timber, fuelwood, and agricultural implements have increased manifolds. That is why some people indulge in illicit felling to satisfy their needs if their demands are not met with judiciously.
- ii. Poor economic conditions of forest dwellers have compelled them to resort to illicit felling of trees who further sell timber to wood smugglers and other persons or building contractors to earn their livelihood.
- iii. Installation of large number of wood based industries such as Saw Mills, furniture Industry and failure of the department to fulfill their requirement, some times, leads to illicit fellings in the forests.
- iv. Tremendous increase in market price of timber of various species, has brought the element of greed in the minds of unscrupulous persons to become millionaire over night. As such illegal timber traders do not spare any pains in felling of trees illegally through innocent villagers.

- v. Due to unemployment, youths have chosen this illegal timber trade and made their source of income with the help of forest mafia etc.
- vi. Local inhabitants resort to such illegal activities to increase their land holdings by way of encroachments and raised apple orchard and cultivation by potatoes and vegetables.
- vii. Deodar is the most important species occurring in this tract from economic point of view. It fetches the highest prices in the market of all the species that occur in this area.

9.4.3 Modus operandi of Illicit Fellings

Trees are usually cut flush to ground. Axe and Hand Saws are generally used for fellings and conversion of trees. Sometimes habitual offenders do this malicious act in well planned manners, they either remove or burn the illicitly felled stumps and felling refuses to destroy spot evidences. They occasionally cover the stumps with earth or burn the stumps to deceive the forest officials.

They generally fell class-III, IIA & IIB trees and rarely 1st class and above trees and convert them into non-standard sizes to facilitate the manual carriage of timber to vantage points within minimum possible time. Timber is sold to various contractors, wood based industries or local people who need more timber for house construction and hotels and rarely exported illegally outside the district, Shimla.

9.4.4 Forests area prone to illicit Fellings

Based on the field observation and record of illicit felling, following forests area are prone to illegal felling/cutting of trees which need effective protection and measures is tabulated in table No.-9.2

Table No.-9.2

Sr. No.	Name of Range	Name of sensitive forests	Compartment No.	Area in hac.
1	2	3	4	5
1	Nankhari	Demarcated Protected Forests		
	Nankhari	Banola	57	161.59
	Nankhari	Andela	56 (a)	121.5
	Nankhari	Andela	56 (b)	174.55
	Nankhari	Punan	48	82.21
	Nankhari	Garasu	49	92.74
	Nankhari	Punnan	47	307.8
	Nankhari	Kangal Mundar	51	150.66
	Nankhari	Kangal Mundar	52	141.75
	Nankhari	Punan	46	189.13

1	2	3	4	5
	Nankhari	Punan	45	103.27
	Nankhari	Punan	44	49.81
	Nankhari	Borja	32	27.94
	Nankhari	Nankhari	37	39.28
	Nankhari	Bhadral	29 (a)	40.5
	Nankhari	Bhadral	29 (b)	49.81
	Nankhari	Bhadral	29 (c)	76.14
	Nankhari	Bhadral	30	104.08
	Nankhari	Bhadral	31	108.94
	Nankhari	Baglati	28	38.88
	Nankhari	Khamotidhar	42	16.2
	Nankhari	Khamotidhar	39	39.28
	Nankhari	Thaili	34	115.02
	Nankhari	Tangri Dhar	23	144.58
	Nankhari	Baghat	22	141.34
	Nankhari	Baghat	21	184.27
	Nankhari	Peojna	13	58.32
	Nankhari	Peojna	14	119.07
	Nankhari	Peojna	15	20.25
	Nankhari	Peojna	16	102.46
	Nankhari	Gahan	10	24.7
	Nankhari	Gahan	8	60.75
	Nankhari	Gahan	9	123.12
	Nankhari	Keoli gad	7	91.12
	Nankhari	Sidhpur	1	131.22
	Nankhari	Maniknun	2	66.42
	Nankhari	Maniknun	3	78.16
	Nankhari	Maniknun	4	132.84
	Nankhari	Maniknun	5	52.65
Total				3762.35
	Nankhari	Un-demarcated Protected Forests		
	Nankhari	UF Tangri	21	36.04
	Nankhari	UF Tutoo	5	19.44
	Nankhari	UF Sandh	22	19.84
Total				75.32
G. Total				3837.67
2	Bahli	Demarcated Protected Forests		
	Bahli	Bhamrala	80	54.67
	Bahli	Bahli	82	46.57
	Bahli	Kandreri	59	166.45

1	2	3	4	5
	Bahli	Kandreri	60	185.08
	Bahli	Surad (N)	65	71.28
	Bahli	Seri Majhali	88	4.05
	Bahli	Majhali	NDPF1	122.6197
	Bahli	Barshol	NDPF21	12.4866
Total				663.2063
G. Total				663.2063
3	Rampur	Demarcated Protected Forests		
	Rampur	Munish (E)	91	110.56
	Rampur	Munish (W)	92	200.47
	Rampur	Sanathali(W)	109(a)	114.21
	Rampur	Tauni	110(a)	68.44
	Rampur	Banauli	110(c)	36.45
	Rampur	Darghati	50	57.3165
		Total		587.4465
G.Total				587.4465
4	Sarahan	Demarcated Protected Forests		
	Sarahan	Shraikot	112(a)	70.47
	Sarahan	Bhagawat	118	4.86
	Sarahan	Maglad	116	32.4
	Sarahan	Bari	117	78.97
	Sarahan	Sarpara	142(a)	122.71
	Sarahan	Margot	142(b)	81
	Sarahan	Sukha choa	145(c)	123.52
	Sarahan	Gauni	64	301.5065
	Sarahan	Ramagad	63	395.7387
Total				1211.1752
G. Total				1211.1752

9.4.5 Preventive/Remedial measures

1. **Requirement of right Holders:** Genuine demand of local right holders for timber, fuelwood etc. should be met with without any unreasonable delay so that they may not resort to illicit fellings.
2. **Plantation of fuel/fodder species:** Sincere efforts should be made to raise fuel and fodder species near the habitation so as to reduce pressure on valuable forests. Social forestry project has achieved this objective up to some extent in the low lying areas in H.P. Keeping in view of this fact it is suggested that indigenous fuel/fodder species should be raised under Green India Mission and MENREGA programme.

3. In-charge of sensitive beats may be assisted by forest worker, while patrolling the various forests.
4. **Intensive Patrolling/Inspection of Forests:** All Forest Guards must patrol the forests falling in jurisdiction of their respective beats regularly to avoid any chance of illicit fellings. Range Officer & Block Officer is equally responsible to prevent large scale illicit fellings in their respective jurisdiction and they should check all the sensitive forests periodically. Similarly, ACF should check all sensitive forests at least once in a year to plug any loopholes left by subordinate staff and Van Thana staff. DFO himself should review the progress of detection of forest offences regularly and inspect the forest area prone to illicit felling once in a year.
5. State Vigilance or police officer is required to be exercised on various developmental agencies working in the vicinity of forests, especially when building and road construction is involved.
6. Frequent checking of saw mills and wood based industries are indispensable to prevent illegal trade of timber.
7. DFO/ACF/R.O. must conduct night raids/Nakas to check illicit export of timber or their forest produce outside the division.
8. To check the illegal trade of timber within the division, two more check post one at near Sharaikoti temple, Kuhal and other at Nogli near Forest Rest House at Nogli must be created through NPV budget during the first two years of Working Plan period.
9. To check the illegal trade of timber and poaching, patrolling staff/R.O must be provided vehicle, mobile phone and gun etc. and immunity under Section 197 of Cr. P.C, Use of arms even in self defense in such situations results in immediate arrest of the concerned staff/officials, as unlike police force there is no immunity from immediate arrest under Section 197 of Cr. P.C available to Forest officials except in the State of Karnataka and Tamil Naidu.
10. Whenever a complaint is received by the Van Thana staff by any means whether orally, telephonically or in writing, whether by name or anonymously or pseudonymously it shall be entered in Roj Namcha i.e. Daily Diary Report. The preliminary enquiry shall be completed within two weeks if a forest offence is found to have been committed. Damage report shall be issued immediately and action shall be taken by following the rules and

procedure as given in the H.P. Forest (Van Thana) Rules, 2010 and Amendment Rules 2011 read with provision of Indian Forest Act, 1927 and Criminal Act etc.

11. In pursuance of the Section 72 (d) of Indian Forest Act it is mandatory that inquiry and record the statements of witnesses should be done by the ACF only in presence of the accused person. Under Section 72 (2) any evidence recorded under clause (d) of sub section (i) shall be admissible in any subsequent trial before a Magistrate. Therefore, mandatory provision should be followed strictly and discourage the present system adopted by the field staff.
12. There is no specific notification under Section 29, 30/31 of Indian Forest Act, 1927 presently available in the department. Similarly in Rampur Forest Circle there is no notification is available with regard to species of trees to be reserved under Section 30 (a) of Indian Forest Act, 1927 in Protected Forests. The Section 78 of the Evidence Act provides that the notification can be proved either tendering the Rajpatra in original or the certified copy duly signed by the Head of the Department. But in all the forest offence cases the copy of notification attached is either attested by the DFO or R.O. or Registrar or Supdt. Grade-I, which is not admissible or sustainable in the eyes of law. Therefore, DFO (T) necessary step may take up with Pr. CCF H.P Shimla in this regard. The Hon'ble ***H.P. High Court in State of H.P. V. Om Prakash, Cr. Appeal No. 576/2000 dated 14-11-2007*** held that in absence of any notification under Section 30 to 32 of the Act as required under Section 78 of the Evidence Act, 1872, the conviction under Section 33 of Indian Forest Act is bad (*see Appendix No.-L*).

9.4.6 Prosecution of forest offences

The cases of petty nature may be compounded or challaned in the court of law under the provision of Indian Forest Act, 1927, but the case involving large scale felling aggravate with Criminal offence under the provision of Indian Penal Code be registered with the Police. The first information report under Section 154 of Cr. PC is that information which is given to the police first in point of time, on the basis of which, investigation commences and relates to a cognizable offence. Non cognizable offences cannot be investigated by the police without the special order from a competent Magistrate, when a police officer receives information of a non-cognizable offence committed within the limits of his police station, he enters the substance in a prescribed book i.e. "Roj Namcha" daily diary report and refers the information to the

Magistrate. When the Police Officer receives the order from the Magistrate to investigate the case, he may exercise the same power in respect of investigation as in cognizable offence.

For the purpose of the Criminal Procedure Code all the offences have been classified into different categories but the code has not given any guidelines to determine whether a particular offence belong to one category or the other. It all depends upon whether it is shown as cognizable or non cognizable in the 1st schedule of the code. That schedule refers to all the offences under the Indian Penal Code and puts them into the cognizable and non-cognizable categories. The offences under the laws other than the Indian Penal Code which are punishable with imprisonment for three years or more have been in the 1st schedule as cognizable and those punishable with less than three years have been shown as non cognizable. This rule is of course subject to any rule to the contrary provided in that law. In case of a cognizable offence a police office can arrest the accused person without any warrant or authority issued by a Magistrate and can investigate into such a case without any order or direction from a Magistrate under Section 156 (I) and 157 of Cr. P.C.

In the case of forest offences under the Indian Forest Act, 1927 or any other special law all those that are punishable with imprisonment of less than three years or with fine only, are bail-able/non-cognizable offence unless there is a provision to the contrary. Hence all forest offences are non-cognizable-bail-able offence as at present.

Proceeding in a non-cognizable offences start by means of a complaint addressed to a Magistrate, whereas, no complaint needs to be made in the case of cognizable offences. In cognizable offence Police begins the investigation on getting information of the crime under Section 154 read with Section 156 of Cr. P.C. Section 2 (d) of Cr. P.C ‘Complaint’ means any allegation made orally or in writing to a Magistrate, with a view to his taking action under the code, that some person whether known or unknown has committed on offence but does not include a police report.

Therefore, the position with regard to forest offences under Indian Forest Act is that they are non-compoundable under the Criminal Procedure Code and treated as complaint cases under chapter XV of Cr. P.C. And under Section 68 of Indian Forest Act, all offences except those falling under Section 62/63 are declared as compoundable offence. Composition of forest offences is on a different footing and it is clearly distinguishable footing from the compounding of offences punishable under the Indian Penal Code as mentioned in Section 320 of Cr. P.C.

As per State Govt. instruction, 1951, it is the duty of every beat Guard to take cognizance of a forest offence committed to issue the damage report (DR) under Section 33 of Indian Forest Act, 1927 get the damage accepted by the offender also to seize the forest produce and the implements used in committing the offence. The forest offence cases can either be compounded by the forest officer himself or if he is not competent to compound the cases be registered with the police or prepare challan and put in court for prosecution under the provision of Indian Forest Act, 1927. If the offence is committed on non-forest land i.e. Govt. land other than Demarcated Protected Forests, Damage report shall not be issued under Section 33 of Indian Forest Act, 1927 and FIR shall be registered with the police by involving the provision of Indian Penal Code only and to take cognizance of offence which has been committed.

The Indian Forest Act is not self sufficient for dealing with all legal problems relating to forest protection and conservation of forests. So it becomes quite often necessary to invoke the provision of the Indian Penal Code along with Indian Forest Act, 1927. Any Forest or Police Officer may without orders from a Magistrate and without a warrant, arrest any person in any forest offence punishable with imprisonment for one month or upwards under Section 64 of the Act provided that nothing in this section shall be deemed to authorize such arrest for any act which is an offence under Chapter-IV unless such act has been prohibited under clause (C) of Section 30 of the Act (*see Appendix No.-XLV*). Meaning thereby arrest of offender cannot be made for the offences committed in protected forests in absence of notification under clause (C) of Section 30 of the Act.

Every officer making an arrest under sub section 2 of Section 64 shall, without unnecessary delay and subject to the provision of this Act as to release on bond take or send the person arrested before the Magistrate having jurisdiction in the case or to the office in-charge of the nearest Police Station. If there is reason to believe that such person comes under the provisions of Section 41 of Cr. P.C, a Police officer shall re-arrest him under Section 43 of Cr. P.C but no police officer or forest officer shall detain in custody a person arrested without warrant for exceeding twenty four hours exclusive of the time necessary for the journey from the place of arrest to the Magistrate's court under Section 57 of Cr. P.C. No person who has been arrested by a police officer shall be discharged except on his own bond, or on bail or under the special order of a Magistrate.

9.4.7 Compounding of Forest Offences

Under Section 68 of the Indian Forest Act, 1927, the Conservator of Forests are empowered to fixed the rates of compensation for compounding of various forests offences vide H.P. Govt. notification dated 5-5-2010 (*See Appendix No-XXVIII*). The Govt. of Himachal Pradesh, forest Department issued the ***notification dated 5-5-2010 in compliance of the Hon'ble High Court in Kuldeep Singh Chauhan V. Balbir Thakur case under Section 68 of Indian Forest Act, 1927*** which itself is contradictory and in violation of basic principles of Criminal Law (*See Appendix No-LIV*). By this notification all the forest offences are divided into different categories i.e. cases not liable to be compounded or compoundable, cases to be registered with the police and cases to be taken courts by the forest department etc. Not only to this it has created more confusion and complex as the State Govt. is not empowered to do so under Section 68 of the Act unless and until its amendment is made in the principle Act i.e. Section 68 of Indian Forest Act, 1927. In ***Bhajan Dass V. State of H.P & ors, CWP No. 9809/2011*** whereby petitioner filed writ petition before the Hon'ble High Court as against the H.P. Govt. notification dated 5-5-2010 and prayed that the impugned notification cannot be issued under the provision of Section 68 of the Act would clearly go to show that this Section only deals with the power to compounded offences, where by misreading and interpreting the direction of Hon'ble High Court or is not inconsonance with the direction passed by the court dated 28-8-2009 as such it need to be struck down, which is pending adjudication before the Hon'ble High Court.

9.4.8 Disposal of Forest Offences

It has been observed that in spite of instruction issued from time to time by the Govt. due care is not taken regarding prompt and timely disposal of forest offence cases. The cases are not being challaned in the court of Law within the limitation period under Section 468 of Cr. P.C with the result that the accused even in serious forest offence cases involving property worth lac of rupees are being acquitted simply on the technical ground of limitation and non production of certified copies of notification under Section 29, 30/31 of Indian Forest Act, 1927 as required under Section 78 of the Evidence Act, 1972, which is not desirable.

In order to avoid any such recurrence in future, it is hereby laid down that the following procedure will be followed for disposal of the forest offence cases ____

- i) It is the duty of every forest guard in beat to take cognizance of a forest offence which has been committed or is suspected to have been committed or is about to be committed. A report to the effect should be issued damage report immediately giving the date of

occurrence, time of offence, name and compartment of forest, detail of damage, name, age and address of offender and name and address of witnesses, if any.

- ii) In case repeated offence in the same year, reference to previous damage reports should be given.
- iii) The report should be prepared in triplicate. In case a witness is not available on the spot, circumstantial evidence to be collected through photograph or video film in presence of the offender and the offender must be taken to the nearest village Lambardar or Panchayat authority or any influential person or reliable person of village in whose presence the arresting officer will make a report of the offence committed and got the report witnessed.
- iv) The implements and the forest produce may be seized immediately at the time of arrest and will be placed in the custody of the Lambardar or any other reliable person near the place of offence under a proper receipt in the form of a *spurad nama* or seizure memo etc.
- v) If the offender admits the commission of the offence and express his willingness to compound the offence without being challaned in a court of law, he should be required to put signature or thumb impression on the '*Iqbal nama*' printed on the back of the damage report which should be got witnessed by two independent witnesses.
- vi) Thumb impression or signature on the '*Iqbal nama*' should be taken even if the offender merely admits the commission of the offence and yet is not willing to compound the offences under Section 68 of the Act in the presence of witnesses.
- vii) In case where the identity of an offender is not known to the Forest Officer, it is his duty to arrest him, seize implements or tools used in the commission of offence including mobile phone etc. as well as forest produce and take him to the village Lambardar or Panchayat authority or in his absence any respectable or reliable person with a view to establishing his identity. After ascertaining his full particulars the normal procedure prescribed above should be followed.
- viii) In a case where the offender has escaped arrest on the spot an immediate report will be made and got signed by the nearest Lambardar or an influential person or reliable person. The implements or tools or the forest produce seized will be entrusted to "*Sapurdar*" and efforts will be made to trace the offender. If the offender admits commission of the offence in his '*Iqbal nama*' or restrain to discharge his duty should be taken in the manner described above. In case an offender refuses to sign the '*Iqbal nama*' he must be

prosecuted through the Police and complete details of such case should be furnished to the police officer concerned for investigation. Wherever possible the Range Officer will release the offender on bond to appear, if and when so required, before the Magistrate or before the officer incharge of the nearest Police Station under Section 65 of Indian Forest Act.

- ix) Where an offender resists arrest, the nearest police officer or right holders may be called upon to render necessary assistance under Section 79 of Indian Forest Act, 1927.
- x) The Police help may also be sought in case of aggravated criminal offence or serious offences under the Indian Forest Act involving prolonged investigation. All cases of assault on departmental forest official or officers in the course of discharge of their official duties, voluntary causing of hurt to commit a forest offence, abetment of forest offence, criminal trespass, mischief by fire and injury to public property, giving false evidence, concealing offenders and forest produce, counterfeiting trade or property marks, selling goods marked with counterfeit trade mark or property mark and tempering with property mark with intent to cause injury or damage, theft of timber through organized fellings and damage to public property through setting fire etc or arrested person should be reported to the police for action under the Indian Penal Code read with IFA, 1927 or any other law applicable to the case. It is also emphasized that no premises can be searched without a search warrant either from the Conservator of Forests or DFO or from the Magistrate having jurisdiction.
- xi) Any damage report issued by a forest guard should be reported to the concerned Deputy Ranger within 48 hours and reported to Range Officer concerned within 3 days and thereafter within 4 days to the DFO concerned. If the matter is reported, it is the responsibility of the Forest Range Officer/ACF/DFO to take further action or otherwise in case of failure for the same field functionaries are responsible for lapses under H.P. Preservation of Specific Corrupt Practice Act, 1983 and CCS (CCA) Conduct Rules, 1965.
- xii) Forest Guards and Van Thana staff shall maintain a daily diary report on the lines of the “Roj namcha” maintained by the Police department, where they should record the events of the day, the forest/village visited and observation made or reports received. This daily diary should be inspected and maintained by the Block Officer and sent a fortnightly report to Range Officer concerned and Range Officer/ACF/DFO should inspect the daily

diary of the forest guard and Van Thana staff when the jurisdiction of the respective forest guard.

- xiii) On receipt of the damage report, the Range Officer will enter them in the Damage Report Register. In entering them he will ensure that the continuity of serial number of a damage report of beat is maintained and no damage report is missed or tempered. On the damage report itself the serial number of the 'Damage Report Register' will be filled. One copy of the damage report will be retained in the Range office and field by beats for record.
- xiv) The Range Officer is responsible to see that the damage reports are either compounded or taken to court and filed (with Divisional Forest Officers sanction) within six months of the commission of the offence.
- xv) The register of cases compounded with the Range Forest Officer will show the disposal of each case. The disposal of each case will either be compounded or prosecuted or filed. In each case of the DFO sanction will be quoted. In the case of prosecution, a cross reference to the prosecution report will be given.
- xvi) In complete or defective damage reports or tempered D.R. which can neither be compounded nor can be taken to court will be filed or written off by the DFO with prior concurrence of Conservator of Forests provided that he is satisfied about error of judgment on the part of the beat guard and Deputy Ranger etc.
- xvii) At the close of the financial year all undecided damage reports will be brought forward in red ink in the register of offences compounded with the Range Officer and dealt with in a normal way.
- xviii) The compounding of offences under Section-68, the compensation in all such cases must be realized within a period of 3 months of the commission of offences. In cases the offenders is/are not willing to compound the cases for which his/their statements must be recorded in presence of two independent witnesses. The cases should then be challaned in the court of law before the 6 months or expiry of limitation period under Section 468 of the Cr. P.C. However, all challan must be submitted by the Range Office to DFO for according sanction for the commission of offence.
- xix) The ACF will scrutinize the cases with the help of ADA (Assistant District Attorney) and enter the same in the Divisional prosecution register before these are put to DFO for his sanction. Thereafter these cases will be challaned in the court of law under the signature of the RO/DFO concerned.

- xx) The cases must be put in court before the expiry of 6 months period positively or before the expiry of limitation period under Section 468 of Cr. P.C, failing which the responsibility for delay will rest with concerned Range Officer (whatsoever delays the prosecution of cases) who will be personally responsible to make good the loss of Government.
- xxi) All FIR of forest offences under Section 154 of Cr. P.C issued by the Police officer may be sent to DFO within 3 days from the date of issuance of the FIR and should immediately entered in the damage register maintained in the Range Office.
- xxii) The Public Prosecutors have been entrusted the job of prosecuting the forest offence cases. However, Dy. Ranger or Range Officer should assist the Public Prosecutor in conducting the forest offence case in CJM court and ACF should assist the Deputy District Attorney or District Attorney in District and Session Judge Court. They will also keep the DFO and R.O's concerned and submits monthly progress report of the cases duly verified by the ADA/Dy. DA or DA concerned.

9.4.9 Indian Forest (HP 2nd Amendment) Act, 1991

Vide Indian Forest (HP 2nd Amendment) Act, 1991 certain changes have been made in the Chapter-IX of the Indian Forest Act, 1927 in order to check the large scale illicit felling and smuggling of forest produce particularly by engaging vehicle by certain unscrupulous person. The State Legislative in their wisdom amended the Indian Forest Act in many States in the country, creating another forum, namely the 'Authorized Officer' to order confiscation of property which is instrumental in the commission of forest offences. There was no provisions in the Act enabling the forest officer's to confiscate such timber or forest produce and implements or tools or vehicle etc. used for committing forest offences even in a case where he was satisfied that a forest offence had been committed. In view of this, the State Govt. necessary amendments have been made in Section 52 and after Section 52, inserted the provision of Section 52 A and 52 B, 58 and 59 A in the Act.

*In **Kailash Chand V. State of H.P., AIR 1995 MPI**, the Hon'ble Court held that confiscation proceeding is quasi-judicial proceedings and not a criminal proceeding. Criminal prosecution is not an alternative to confiscation proceedings. The two proceedings are parallel proceedings, each having a distinct purpose and object. The object of confiscation proceedings is to enable speedy and effective adjudication with regard to confiscation of the forest produce and the means used for committing the offence. Proof beyond reasonable doubt and mens rea are*

foreign to the scope of the confiscation proceeding. The provision for confiscation of the vehicle is introduced by the legislative not to punish the offender or the abettor, but to remove the vehicle out of circulation and as deterrent.

Under Section 52(3) Authorized Office can passed order for confiscation of property on being satisfied that forest offence has been committed in respect thereof. It is true, as pointed out by Learned Counsel that the standard of proof required for confiscation proceedings in one case and that required for conviction of offender in the other case is not the same. But for that reason, these provisions cannot be regarded as confiscating or repugnant to each other. Conviction may result in sentence of imprisonment involving deprivation of right to life and liberty and other serious consequences, while order of confiscation of property under Section 52A does not such grave or serious consequences except to remove the vehicle out of circulation and as deterrent. The intention of the legislative is to ensure that the vehicle used in the transaction is no longer available for such misuse and to act as deterrent for the offender and others. These objects can be well served by confiscating the vehicle. Thus the scheme of the Act providing for a separate confiscation procedure has a substantial public purpose to serve and is in tune with Articles 14, 48A and 51A(g) of the Constitution of India.

It is further provided under the provision to Section 52 B that no order confiscating the motor vehicle shall be made except after giving notice in writing to the registered owner of the vehicle and further after considering his objection, if any it is so found that the vehicle was being used or used for carrying the timber without knowledge or connivance of the owner confiscation order shall not be passed. The burden of the proof is generally on the parties seeking relief or having the affirmative of an issue. The burden then shift to the respondent to establish the contrary provision of the Act. In other words, in quasi-judicial proceedings there is no burden caste on any party similarly to the one in criminal proceeding. The law does not ordinarily recognize the principle of criminal proceeding and giving the benefit of doubt to a party or whom the burden of proof lies.

In Parveen Kumar Gautam V. State of H.P Criminal Revision No. 8/1995 dated 19-9-1995, the Hon'ble H.P. High Court held that there is no doubt there is practically no direct evidence examined before the Authorized Officer that the owner of the vehicle had the knowledge or was in connivance for the use of the track in the manner it has been so done. Under Section 52-B(2) of the Act, it is not only that connivance of the owner in the occurrence is to be taken note of, but in addition to that in order to gain the benefit of Section 52-B(2), it has to be

additionally seen that in the absence of the owner of the vehicle, whether he, or his agent, if any and the person in-charge of the vehicle and each of them had taken all reasonable and necessary precaution against such case with the satisfaction of Authorized Officer.

Therefore, it is relevant to consider the language of sub Section 2 of Section 52 B what reasonable and necessary precaution each of them had taken against such use of the vehicle under the Act to the satisfaction of the Authorized Officer. *The Hon'ble Supreme Court held in Mohd. Yasin V. forest Range Officer flying Squad Rayachoti, Andhra Pradesh (1980) that merely because these was acquittal of the accused in the trial court Magistrate due to paucity of evidence or otherwise, did not necessarily entail in nullifying of confiscation of seized timber and vehicle by the Authorized Officer based on his satisfaction that forest offence has been committed in respect thereof.*

In Mehboob Ali V. State of H.P, 1996 Cr. L.J 4089, the High Court held that while exercising the powers under the Section 52 A of the Act, the Authorized Officer, who is a quasi-judicial body, has to follow the principles of natural justice and as far as practicable the procedure and spirit of the Cr. P.C. The court further directed that the evidence of the prosecution should have been recorded first, and opportunity should have been given to the owner of the truck to cross examine the witnesses. Thereafter, the statement of the accused should have been recorded by putting questions and while doing so the statements of the witnesses should be specifically put in question form to the accused and he should be given a chance to reply. It is made absolutely clear that while recording statement of the owner of the truck, the authorized officer shall not put any question by way of cross examination. Thereafter, the accused should be allowed to afford an opportunity to produce his evidence. To safeguard the interest of the person, in the event of any person refuses to cross examine, signature of the person, in the event of any person of his counsel should be taken in the order sheet. The impugned order passed by the Learned Session Judge as well as Authorized Officer is directed to start with the proceeding de-novo. He shall also keep in mind the basic principles of criminal jurisprudence that a person shall be deemed to be innocent unless prosecution can prove that he is covered under the offence. The State Govt. may also consider if short course can be conducted to these offers so that they are acquainted properly with the procedure of the court as they will be exercising a power of confiscation, which affects the property of a person.

When any vehicle is seized by the Forest or Police under the Act, the same shall not normally be returned to a party till the culmination of all proceedings in respect of such offence, including confiscation proceedings.

In State of Karnataka V. K. Krishnan (2000) 7 SSC 80, the Hon'ble Supreme Court held that the liberal approach in the matter would perpetuate the commission of more offences with respect to the forest and its produce which, if not protected, is surely to affect mother earth and the atmosphere surrounding it. The courts cannot shut their eyes and ignore their obligations indicated in the Act enacted for the purposes of protecting and safeguarding both the forests and their produce. The forests are not only the natural wealth of the country but also the protector of human life by providing a clean and unpolluted atmosphere. When any vehicle is seized on the allegation that it was used for committing a forest offence, the same shall not normally be returned to a party till the culmination of all the proceedings in respect of such offence, including confiscation proceedings, if any, Nonetheless, if for any exceptional reasons a court is inclined to release the vehicle during such pendency, furnishing a bank guarantee should be the minimum condition. No party shall be under the impression that release of vehicle would be possible on easier terms, when such vehicle is alleged to have been involved in commission of a forest offence. Any such easy release would tempt the forest offenders to repeat commission of such offences. Its casualty will be the forests as the same cannot be replenished for years to come”.

The details of cases admitted and decided in the Authorize Officer, Rampur Forest Division is tabulated in table No.-9.3

Table No. -9.3

Year	Balance cases of previous year	No. of cases admitted	Total	No. of cases decided	Property confiscated to the Govt.	Cases pending in Appellate Court/ High Court	Balance cases for disposal
1	2	3	4	5	6	7	8
1993-94	-	1	1	-	-	-	1
1994-95	1	1	2	-	-	-	2
1995-96	2	-	2	-	-	-	2
1996-97	2	-	2	1	Confiscated to the Govt.	-	1
1997-98	1	-	1	-	-	-	1

1	2	3	4	5	6	7	8
1998-99	1	-	1	-	-	-	1
1999-2000	1	1	2	1	Release in favour of owner	-	1
2000-01	1	1	2	-	-	-	2
2001-02	2	-	2	-	-	-	2
2002-03	2	1	3	1	Release in favour of owner	-	2
2003-04	2	1	3	1	Release in favour of owner	-	2
2004-05	2	-	2	-	-	-	2
2005-06	2	-	2	-	-	-	2
2006-07	2	2	4		-	-	4
2007-08	4	-	4	-	-	-	4
2008-09	4	-	4	-	-	-	4
2009-10	4		4	-	-		4
2010-11	4	-	4	1	-	1	3
2011-12	3	-	3	-	-		3

9.5 Fire Protection

9.5.1 General

The incidence of forest fire in the State is increasing and more area is burned each year. Fire is a major factor that causes considerable damage to the forests of this division. The fires both accidental and incendiary are very common in this tract due to the reason that majority of forests are easily approachable by roads/paths etc. Also most of the forests lie in dry/low lying areas. As most of the forests are either chil or scrub forests, any incident of server fire have a considerable adverse effect not only on the incident of severe fire has a considerable adverse effect not only on the vegetation but it also deteriorates the habitat.

In State of Himachal Pradesh, in 2012 more than 20,000 hectare of forests has been destroyed in wild fires which are more than 10 times compared to the loss of 1758 hectare during the year 2011. The loss to the forest wealth in 2012 was estimated at Rs. 2.44 crore whereas it was just Rs. 43 lac. in 2011.

According to forest survey of India report of 2009 Himachal Pradesh has 37033 Sq. Kms. of forest area out of which 3224 Sq. Kms. is very dense forests which need to be safeguarded by putting all efforts.

The total forest loss in 2010 was 7654 hectares in the state while it was 24849 hectare in 2009. Records of the H.P. Forest Department say 22% or 8267 Sq. Kms. of the total forest area in the state is fire prone.

Fire has an adverse effect on soil, water and ecological balance of the affected area. Soil becomes vulnerable to soil erosion and its structure gets affected, thereby retarding plant growth. The soil building micro-organisms are destroyed and the area is ultimately rendered susceptible to erosion and decreasing productivity. The young regeneration is wiped out, growth of surviving vegetation is adversely affected, the yield of forest produce is immensely reduced and the vegetation damaged by the fire becomes vulnerable to insect and fungal attack. The high salvage removals are attributed to this. In the fire burnt forests change in crop pattern takes place, resulting in mixed crop in the forests. Many ban oak areas have now been invaded by fire resistant species like Chil as a result of repeated fires. A mention of fire as a factor causes injury to the forest crop has already been made in Chapter-II “Flora and Fauna” of Part-I of this plan.

The Chil forests in this division are highly susceptible and are subjected to frequent fire in the month of April to June and September to November. If fires are not controlled in time, these cause serious damage. Between the years 1993-94 to 2012-13, as per records of the division, there were **288** no.s of fire incidences and total **5808.16** hac. forest area was damaged by fire. The approximate total loss occurred was Rs. **1,07,07,210**. Fire incidents occurred every year, except in the year **1997-98**. Maximum annual forest area recorded as burnt has been **1219.49** hac. in the year **1999-2000**. After field observations, it is also apparent that some fire incidents are not reflected in the records of the division. In reality wild fires do occur frequently in at least some of the areas, in the division.

Because of all these reasons prevention and control of forest fire assumes great importance in Rampur Forest Division and there is an urgent need to take effective steps to counter the menace of forest fires, with the aim of:

- a) Protecting forests from damaging fires by taking up all preventive measures like administrative, technical, social, legal etc.
- b) Preparing adequately and taking appropriate action for controlling, suppressing and extinguishing forest fires, in order minimize the loss caused by them;
- c) Educating local people about fire damage and eliciting their cooperation in preventing, controlling and extinguishing fires.

9.5.2 Causes of Forest Fires

The main causes attributable for the out break of forest are various and can be summarized as under:-

i. Natural:

This caused due to lightening, friction between quartzite stones and dry grasses. However such natural incidents of forest fires in the tract are not met with so far.

ii. Accidental: Such fires are more common and are caused due to

- a) Throwing of burning cigarette/Bidi pieces in forest areas by the passers-by without visualizing possibility of causing forest fire there-from.
- b) Burning fire left behind in forests by hunters, workers, fuelwood collectors and grazers-again without contemplating possibility of incidence of fire there from.
- c) The scintilla's fallen from wooden torches, used as source of light during dark nights also cause forest fires.
- d) Honey from honey-comb of wild bees in the forests is extracted by villagers during night hours, by burning wooden torches. The ember of burning torches fall on dry grasses and leaves and become cause of forest fires.
- e) Sometimes, fires spreads to forests, from adjoining private fields/land where local inhabitants set fire to burn useless bushy growth, or to get new flush or grass shoots in Ghasanis.
- f) The forest fires are also sometimes caused from the spread of embers/scintilla's from charcoal kiln, if proper supervision precaution is not exercised/taken during burning of charcoal kilns in forest areas.
- g) Un-controlled/ill-supervised departmental debris burning also cause forest fires.
- h) Control burning of Chil forest, during February if not properly supervised goes out of control and cause forest fires.

iii. Incendiarism:

The out break of fire may be due to incendiarism. The general motives behind the cause of incendiarism in forest are given below:-

- a) In case of illicit fellings and illicit resin tapping, the defaulters maliciously burn such forests to conceal their illegal actions.
- b) Hunters/Poachers burn forests to facilitate killings.
- c) Local people burn forests, plantations if their genuine requirement of timber, fuel are not catered judiciously by the department.
- d) Local inhabitants set fire in the forests deliberately to get new flush of grass for their cattle.

- e) Sometimes encroachers intentionally burn forest area, adjacent to their cultivated lands, orchards to extend their holdings illegally in Government land.

9.5.3 Factors contributing to Fire Damage

Fire is the product of fire environment, which has mainly following components:

(i) High temperature.

(ii) Low humidity.

(iii) Inflammable material.

(i) High Temperature: With the increase in temperature during summer season, the possibility of fire increases. In this area 35° is considered the critical temperature, above which the cases of fires keep on increasing with increasing temperature. The detection of fire danger day can be assessed with the help of thermometer.

(ii) Low Humidity: This factor also contributes towards spread of fire. The areas which are more humid are less prone to fire, than the areas, which have low humidity in summers. This is the reason that the casual rain fall reduces the fire risk for a few days.

(iii) Inflammable Material: In most of the forests, grasses, Chil needles, resin, fallen trees, bushes etc., make ample inflammable material. The possibility of forest fire depends upon the quantity of inflammable material on forest floor. To reduce the inflammable material in forests, control burning is done.

9.5.4 Fire Season

The greatest danger of fire occurrence is during summer months from April to early July, up to the commencement of monsoon rains. During autumn, normally, the danger of forest fire is less but occasionally the fires do occur in this period also.

9.5.5 Special Fire Risk Zones

The areas burnt during previous years indicate that the following blocks of forests are especially prone to fire is given in table No.9.4

Table No.-9.4

Showing Fire Prone Areas

Sr. No.	Name of Forest Block	Range
1	2	3
1.	Taklech	Bahli
2.	Surad	Bahli
3.	Bahali	Bahli
4.	Deothi	Rampur
5.	Rampur	Rampur

1	2	3
6.	Nogli	Rampur
7.	Sarahan	Sarahan
8.	Gopalpur	Sarahan
9.	Jaghor	Sarahan

Special attention is required for the above forest zones during the fire season.

9.5.6 Management of Fire Protection

The following steps will prove effective in fire management.

- (a) Fire prevention measures.
- (b) Timely detection of forest fires and information to concerned staff.
- (c) Process of fire control and fire fighting.
- (d) Penal provisions and a system of rewards.

a. Fire Preventive Measures

“Prevention is better than cure”, and this holds good in case of forest fires too. Prevention of fire is more beneficial and cost effective than fighting the fire. For this effective steps should be taken well in time, such as summarized below:-

i. Earning good will of Local People

The forests cannot be protected against fire without winning the good will and co-operation of the local people. This can be done by making regular contact with local villagers and meeting the reasonable bonafide demands of right holders, well in time. Also the closures made should be affected for the minimum required period.

ii. Education and Publicity

Wide publicity especially in villages nearby forests should be given against the harms caused by forest fires. For this, timely action should be taken for distribution of pamphlets and other educative material during the fire season, well in advance, so as to acquaint the villagers/local people through Panchayats. The staff should hold regular meetings with local villagers in their areas to create awareness. Also, hoardings, notice boards and banners should be displayed at prominent points to make aware the tourists and local public regarding the damage caused by fires.

iii. Restriction on Tarring of Roads

During fire season, tarring of roads in forest areas should be banned, as PWD staff/labour burns fire underneath drums of bitumen leading to wild fires

iv. Concept of Joint Forest Management

Joint Forest Management may help in preventing and controlling fires. For this active participation of local villagers should be sought by involving people in forestry activities.

v. Removal of Pine Needles

Local villagers should be allowed and encouraged to collect and remove the fire needles, before hand, for domestic purposes and use as packing material for fruits and vegetables. In low lying area/forest division a lot of pine needles were collected and used by some cement factory for being burnt as fuel in the furnace. The possibility of using these material may be explored under State/Centre Scheme or MNERGA Scheme so that one of the most inflammable substances from the forest areas i.e. pine needles can be removed which by itself will reduce the number of fires. Therefore we need comprehensive Policy or Plan to deal with fires. This will definitely reduce the fire hazard and increase the livelihood of poor people to a great extent.

vi. Cleaning and Thinning in Regeneration Areas

All regeneration areas, should be isolated by cleaning a strip of 1 meter width, all around, from all inflammable material, leaves, bushes etc. Early cleanings and thinning in young regeneration should be done, to give an escapement of 1 meter.

The pruning of trees, which have attained a height of 1.5 meters, should be done upto 1/3rd of their height and debris should be collected at suitable Nallah/place and control burnt.

b. Fire Protection Staff

Divisional Forest Officer will engage sufficient number of fire watchers in consultation with the Conservator of Forests, during the fire season. Fire watchers (preferably the local villagers), will patrol the areas extensively for detection and protection against fires and will ensure all preventive measures with the local forest field staff. During fire season fire fighting squad be formed out of the daily waged who have been regularized. This squad should always be ready at every Range H.Q and as soon as any information of fire occurrence is received, they be rushed on “Fire Pick up Van”, to that spot.

A latest guideline in respect of prevention and control of Forest fires are laid down by Govt. of India vide No. 9-6/99-FFD dated 22-6-2001 has appended at *Appendix No-XXIX*.

c. Fire Protection Equipments

The field staff (near the fire prone forests) should be provided with sufficient fire equipments such as brooms, shovels, slashes, axes, hatches, forks, buckets, gunny bags etc., so as

to meet any emergency and for facilitating the speedy extinguishing of fire. Field staff should be imparted training for effectively controlling forest fires.

9.5.7 Fire Lines

The existing fire lines be properly maintained and kept clear of all bushes, needles etc. to avoid any chance of fire. It is laid down that all such roads/paths and fire lines should be kept clear of all inflammable material especially during the fire season, so as to act as fire lines. The detail of fire lines existing and the fire lines which are proposed are tabulated and given in table No.-9.5 & 9.6

**Table No.-9.5
Existing Fire Lines**

Sr. No.	Name of Range	Name of Beat	Particular of fire lines	Apprx. Length (in Km.)
1	Nankhari	Thaily	i) Nankhari to Thaily	1 Km
		Bagalti	ii) C-31 (old C-99) Bhadril to Punan	1 Km
		Kungal Mundar	iii) C-48 Punan to C-50 Kungal mundar (old C-116 to C-118)	1 Km
2	Bahli	Kaleda	i) Natal to Kaleda	3.5km
		Taklech	ii) Agadhar to Taklech	4 km
3	Rampur	Pashada	i) UF C-54 (old UF-2) to Tauni	2.5 km
4	Sarahan	Ruwancha	i) C-124 to C 125 (old C-194 to C-195) along ridge	4.5km
		Gopalpur	ii) Phaneoti Dhar Fire line	2 Km
		Ruwancha	iii) C-128 a to 128 b (old C-198 (a) to C-198 (b))	2.5 Km
		Ruwancha	iv) C-128 b to 128 c (old C-198 (b) to C-198 c)	1.50 Km
		Ruwancha	v) C-120 a (old C-190 a) to along ridge	3 Km
		Badhal	vi) Maneoti Dhar upto 10000 mts. height	5 Km
		Total		31.5 Km

Table No.-9.6

Proposed Fire Lines

Sr. No.	Name of Range	Name of Beat	Particular of fire lines proposed	Apprx. Length (in Km.)
1	2	3	4	5
1	Nankhari	-	The existing road running in the Range will act as the fire lines. Hence, no new fire lines are proposed	-
2	Bahli	Bahli Jarashi Khamadi Bionthal Theda	i) Bahli to Sobli ii) Bamrala to Jarashi iii) Khatli to Khanog iv) Beonthal to Paucha v) Rajpura to Taklech	6km 8km 4km 5km 4km

1	2	3	4	5
3	Rampur	Duttnagar Munish Deothi Pashada	i) Kumsu to Nona Bai ii) Shariri to Munish Bahli iii) Bahli Dhar to Rahnu iv) Oddi to Jabah	5km 2km 2km 3.5km
4	Sarahan	Rawancha Badhal Sarpara Kaobil/Phancha	i) C-120a to C-124 ii) Maneoti Dhar to C-119 iii) C-144 to 145d iv) C-139a to C-141	8km 4km 8km 6km
			Total	65.5 Km

9.5.8 Construction of Watch Towers

A network of watch towers, at suitable commanding locations, should be developed. These should be permanently manned by fire watchers/Forest Workers during the fire season. The fire watcher will immediately come to know and report to the beat guard, any out break of fire that may occur. The beat guard will take further necessary action for fire fighting.

9.5.9 Control Burning

The Chil forms a thick bark at an early age, by virtue of which it can resist the effects of slow fire and this property is of great advantage and development of control burning. The burning should be thoroughly planned and organized and should be carried out under the supervision of competent officials.

All the forests must be isolated by clearing a strip of 1 meter width, of all inflammable material, leaves, bushes etc. to act as fire barrier during the fire season. Grazing by cattle, should be permitted, in order to reduce inflammable material in the forests.

It is most essential, that forests, allotted to, Chil Working Circle are adequately protected against fire. The control burning is the most important operation and should never be neglected. The triennial programme for control burning is the most important operation and should never be neglected. The triennial programme for control burning is chalked out and is given in table No.- 9.7

Table No. -9.7

Triennial Programme for Control Burning

Sr. No.	Name of Range	Name of Beat	Name of Forest	Compartment. No.	Area in hac.
1	2	3	4	5	6
1	Bahli	Taklech	Majhali	NDPF1	122.6197
		Bionthal	Shangral	NDPF2	38.5961
		Bahali	Sobali	NDPF14	46.8091
		Chowka	Chowka	NDPF15	50.1989

1	2	3	4	5	6
		Taklech	Chalali	NDPF16	16.0011
		Taklech	Khanotu	NDPF17	40.1297
		Taklech	Taklech	NDPF22	5.9545
		Darkali	Mandali	NDPF23	35.3032
		Darkali	Gandla Seri	96	132.84
		Taklech	Aagadhar	97	157.14
		Taklech	Karapla	98	39.69
		Taklech	Chalali	103	102.06
		Taklech	Rajpura	104	143.37
		Taklech	Kareri	105	29.97
		Taklech	Kanotu	106	60.75
		Taklech	Kuban	107	57.51
Total					1078.9423
2	Rampur	Darshal	Darshal	101	77.76
		Darshal	Darshal	102	58.72
		Pashada	Tauni	110(a)	68.44
		Pashada	Pashada	110(c)	36.45
		Pashada	Baltidhar	110(g)	40.5
		Pashada	Brauni Upper	111(a)	84.64
		Pashada	Brauni Lower Khanewali	111(b)	132.84
		Dauttnagar	Talaidhar	NDPF 31	139.909
		Dauttnagar	Shikaridhar	NDPF 32	121.2809
		Dansa	Sanatali 1st	NDPF 58	179.4679
		Sanatali		NDPF 29	160.5427
Total					1100.5505
3	Sarahan	Badhal	Kundlu chonda	NDPF 65	154.1058
		Badhal	Kundlu chonda	NDPF 66	71.0296
		Ruwancha	Dilpa	122	83.83
		Ruwancha	Ruwanch (E)	123(a)	42.93
		Ruwancha	Ruwancha (W)	123(b)	86.67
		Ruwancha	Chalandidhar	124	56.7
		Gopalpur	UF Rattanpur		
Total					495.2654
G. Total					2674.7582

The forest areas have been prescribed in full, however it is laid done that all the forest areas planted therein should not be controlled burnt, until the plants attain a height of 1.5 meter.

The detailed instructions on control burning are contained in the H.P. Forest Manual Vol. IV and are summarized as below:-

- i) The control burning should be done during winters in February-March.
- ii) Burning should progress from uphill to downhill in calm weather and special care should be taken, to keep the line of fire as straight as possible and under control.
- iii) The fire should start along the ridge, a cleared path or specially cleared lines.

- iv) Chil needles and other inflammable material should be fully raked to ensure through burning.
- v) In forests under resin tapping, it must be ensured that all chips, fallen resin, needles etc. are cleared about 1.5 m away from the base of the trees by the resin labourers.
- vi) Cleanings and early thinning in young regeneration areas must be completed before the control burning.
- vii) Burning shall be done always under strict supervision and control of the executive staff and shall never be left to the engaged labour.
- viii) The existing fire lines should be properly maintained and kept clear. The roads, bridle and inspection path etc. must be kept clear of all inflammable material, so as to act as fire lines.
- ix) Sufficient number of trained fire watchers should be employed during the fire season to help the field staff and provided with necessary equipments. No felling operations, even to the right holders, should be allowed during the fire season.

It is, however, to be noted that areas under regeneration should not be control burnt, until the regeneration reaches a height of about 2.5 m. In Such areas, however, the grass cutting/needle collection by right holders be encouraged.

9.5.10 Fire Fighting

When a fire is observed, Forest Guard or the fire watcher should at once inform the Block Officer (Dy. Ranger) and the Range Forest Officer. He should also inform the president of the local panchayats immediately, as well as, the staff of the Government Offices or institutions situated in the vicinity and seek their help in the fire fighting operations. In case of alarming situations, immediate help of organizations, like S.S.B Sarahan/Kumarsain, various Army Cantonment Head Quarters, Fire Brigade, N.C.C., N.S.S., situated near the vicinity of each range, the services of such institution can be availed. District Administration may be requested for immediate help, as and when, required. The fire is normally controlled by beating with a broom of green bushes.

Fire fighting methods have been given in the Punjab leaf let No.-8 and practical Forest Management by Trevor and Smithies. For guidance of field staff, the method is given in brief here. The Senior Officer present will immediately, take command of the operations. He should know the local geography and have some idea of labour force. The labour force should be organized in sections of suitable strength each under the order of one man and given definite

task. A couple of men should be kept in waiting to take messages and instructions to the various sections. In case the fire goes beyond control, it is necessary to localize it by counter firing. Counter firing should only be done under order of a senior officer in-charge of operations and attempted from a defined line such as road or ridge or fire line. A line is formed along the ridge by clearing the forest floor and cutting bushes and from this fire is started, so as to consume the fuel in advance of the oncoming fire. Wind direction and gradient should always be kept in mind, while counter firing. Roads/paths are useful, provided, enough man power is present. After the fire has been brought under control, the smoldering stumps should be extinguished by putting the dug earth on them and strict vigilance be kept till all dangers of fire spreading are taken care of. Arrangement for the transport of food, water and adequate fire fighting tools are essential. The rolls of right holders, who helped to fight the fire, should be kept in record, so that the rights of defaulting right holders can be suspended.

9.5.11 Preparation of Annual Plan

Preparation of an exhaustive annual plan for the fire protection is also, recommended.

9.5.12 Administrative measures

Administrative aspects are also very important in connection with fire protection efforts. Encouragement should be given to good staff, while negligent staff should be punished appropriately so that the officials remain vigilant and cautious in their work. The concerned Conservator of Forests can give suitable reward, in case of exemplary work done by any official or any other person. So that temptation is more towards the fire fighting operations.

9.5.13 Legal Measures

All cases of incendiarism should be properly investigated and punitive measures should be taken against the culprits. Legal provisions regarding forest fires are available under Indian Forest Act, 1927. Setting fire to Protected Forest is punishable under Section 33 of the Act with imprisonment up to two years or fine up to Rs. Five thousand or both. Similarly under Section 33 (2) whenever fire is caused willfully or by gross negligence in a protected forest, the State Government may, notwithstanding that any penalty has been inflicted under this section, direct that in such forest or any portion thereof the exercise of any right of pasture or to forest produce shall be suspended for such period as it thinks fit.

Section 79 (1) of the Indian Forest Act, 1927 makes obligatory on every person, who exercises any right in a reserved or protected forest or who is permitted to take any forest produce from forest or Govt. employee shall be bound to furnish without un-necessary delay to

the nearest Forest Officer or Police Officer any information with respect to any commission of forest offence, and shall forthwith take steps, whether so required by Forest Officer or Police Officer or not _____

- (a) to extinguish any forest fire in such forest of which he has knowledge or information;
- (b) to prevent by any lawful means in his power any fire in the vicinity of such forest of which he has knowledge or information from spreading to such forest, and shall assist any Forest Officer or Police Officer demanding his aid.....
- (c) in preventing the commission in such forest of any forest offence; and
- (d) when there is reason to believe that any such offence has been committed in such forest in discovering and arresting the offender.

And any violation of the provision of this Section is punishable under Section 79(2) with imprisonment for term which may extend to one month, or with fine which may extend to two hundred rupees or with both.

In ***M.C. Mehta V. State AIR 1982 Orissa 225***, the court pointed out “right and duty co-exist. There cannot be any right without any duty and there cannot be any duty without any right” Our Constitution lays down the fundamental duty of every citizen “to protect and improve the natural environment including forests, lakes, rivers and wild life and to have a compassion for living creatures”. A feeling should be generated in them that there should be decreased dependence on the forests and encourage them to avail acceptance of the alternatives. It is a social obligation and get let every citizen be reminded that it is his fundamental duty as enshrined in Art. 51 A(g) of the Constitution of India. The ***Hon’ble H.P. High Court relied on our Constitutional duty & M.C. Mehta case*** and pointed out that all citizens of this country have certain rights and duties. Article 51-A deals with fundamental duties of every citizen, one of the fundamental duties prescribed in Sub clause (g) is to protect and improve the natural environment including forest. Similarly Sub clause (i) deals with another fundamental duty which to safeguard public property (***Sumitra Devi V. State of H.P CWP No. 1507/2011 dated 20-4-2011***).

The Hon’ble High Court further held that there is no right to claim compensation by means of filing writ petition. When a person performs his duties unfortunately suffers injury or dies. It is far the State to decide whether it should grant adequate compensation to its citizen or not. No doubt sum of Rs. 1 Lac in the case of a death while on controlling the forest fire does

appear to be on the lower side. However this court cannot direct the State Govt. to enhance the compensation. Therefore, the writ petition is rejected.

Therefore, field functionaries/staffs must take action accordingly so that the object of fundamental duty could be achieved as enjoined in Art. 51 A (g) of the Constitution of India.

Further the H.P. Govt. has framed rules regarding fire protection known as Himachal Pradesh Forest (Protection from Fires) Rules, 1999 vide H.P. Govt. Notification No. FFE-A(C)7-1/96 dated 7-11-1999 (*See Appendix No-XXX*).

Vide this notification setting of fire to a protected forest is prohibited under Section 32 of the Act as under:-

- (i) Kindling of fire within one hundred meters from a forest without permission of the Divisional Forest Officer, or his authorized representative shall be prohibited.
- (ii) Any person lighting a fire even beyond one hundred meter from the boundary of a forest shall take precautions, by clearing a fire path, not less than 10 meters in width between such place and such boundary, or by employing watchers or otherwise, to prevent the fire from spreading.
- (iii) Precautions to be taken in burning agriculture residue bushes or “Ghasnies” near forest. No person shall ignite agriculture residue or set fire to “Ghasnies”, clear by fire any land, within a distance of one hundred meter from the boundary of the forest, unless;
 - (a) he gives notice of his intention to burn or clear the land by fire, at least one week before doing so, to the nearest Forest Range Officer under whose jurisdiction such land lies; and
 - (b) there is between such boundary, and the spot on which such materials are ignited, a space at least ten meters in width which is clear of all vegetation capable of carrying fire from such spot to the forest.
- (iv) Restrictions on collection and stacking of inflammable forest produce of inflammable material outside the boundary of or in the forest. Any person collecting such inflammable material, that is to say, forest produce such as grass, dried leaves and pine needles, firewood, timber, bamboo and resin, on a land adjoining a forest, or a holder of a pass or permit issued by a Forest Officer, or a person exercising his privilege or right to collect such forest produce from a forest, shall stack it at, as the case may be, in an open space in the forest as the Division Forest Officer may, by general or special order, specify, and

shall isolate such stacks in such manner that, if it catches fire, the fire shall not spread to the surrounding area to endanger the forests.

Fire cases may also be registered with Police under Section 435 of IPC or Prevention of Damage to Public Property Act, 1984 to punish unscrupulous persons who set the fire to forests willfully, and with ulterior motives. Therefore, all cases of fires are to be registered with the Police against the offender or un-known offender or Jumaladaran for investigation and bringing the culprits to book soon after the outbreak or cause of fire.

The ingredients of Section 435 of IPC and the provision of Prevention of Damage to Public Property Act, 1984 must be followed before registering the FIR under Section 154 of Cr. P.C. If any refusal on the part of an officer in-charge of Police Station to record the information under sub Section (1) of Section 154 of Cr. P.C may send the substance of such information, in writing by post or E-mail to the Superintendent of Police concerned by R.O. concerned under sub Section 3 of Section 154 of Cr. P.C. A copy of the information as recorded by the police under Section 154 shall be given forthwith, free of cost, to the informant and the same may be sent to DFO for record, Section 154 speaks of an information relating to the commission of cognizable offence given to an officer in-charge of police station. No police officer shall investigate a non-cognizable case without the order of a Magistrate having power to try such case or commit the case for trial.

9.5.14 Assessment of loss caused by Fire

Fire causes tangible and intangible damages to the forests & wild life. Loss of timber, resins etc. are tangible, whereas loss of soil fertility and soil constituent are intangible. Fire causes adverse effect on regeneration and destroys under growth leading to invasion by weeds. Being afraid of disciplinary action, the loss caused by forest fire is often not actually recorded by field staff and is also under estimated because of which calculation of exact magnitude of loss is hardly possible. The methodology for assessment of fire loss developed by the CCF, Forest Protection, Bilaspur shall be followed as under:-

Sr. No.	Type of loss	Loss/hac.	Remarks
1	2	3	4
Conifer Forests			
1.	plantation areas 1 st year	Area in hac.(No. of plants planted/hac.)x (Survival %) x (Current planting cost/plant)	

1	2	3	4
2.	Plantation areas 2 nd to 10 th year	(Total expenditure on plantation including maintenance upto date x No. of plants burnt) / (No. of plants as per norms) 10% increase on fire loss for each year upto 10 years.	
3.	Area under Natural Regeneration (Seedling loss)	Can be assessed for fully stocked area as in case of plantation.	Loss of natural regenerated seedlings due to fire burning.
4.	Area consisting pole stage crop, middle age crop and mature crop	.....	The loss sustained due to forest fire can be assessed after rainy season and 50% value of the dried or salvage trees (due to fire) can be applied for calculating loss. (with salvage, the royalty is taken as 50% of the total market value of tree)
5.	Resin blazes	.....	As per royalty rate fixed by the Govt. of H.P. from time to time.
6.	Fodder & Grasses	.....	No fodder is available in the Chil forests. However grasses are usually cut by the right holder before fire season. Hence no loss sustained in conifer forests.
7.	Beneficial Herbs, Shrubs & Wild fruits.	.....	Beneficial Herbs, Shrubs & Wild fruits which are collected by the right holder and food for the wildlife is an indirect loss and can be assessed keeping in view of the availability in particular forests and loss can be calculated on average annual yield which can be ascertained from the permit issued in the past or local subsistence usage.
8.	Other Environmental and Wildlife loss.	.....	Difficult to assess in term of money due to lack of requisite methodology.
9.	Domestic losses	Should not be considered as it is assessed by revenue department.	The loss caused due to fire to the domestic property in habitants like houses, cattle sheds, domestic animals, human life can be assessed separately per each individual case.
10.	Costs in anticipation (Pre dominantly cost for protection and preventive measures under taken by Forest Department and also for potential victims of Fire)	The actual expenditure incurred for prevention purposes like control burning etc.	The cost is based on average expenditure incurred for such activities in previous years. The focus of these activities is generally on the pine forests to save the pine forests from fire during summer season the funds are required to be further increased.
Miscellaneous Broad Leaved Forests			
1.	Plantation areas.	(Area in hac.)x(No. of plants per hac.)x(Survival%)x(Current planting cost/plant)	
2.	Regeneration areas/coppice	Can be assessed in case of fully stocked areas as is in the case of applications.	Loss caused due to forest fire by burning of seedlings/coppice shoots.
3.	Areas consisting young crop	.....	No loss sustained to young crop of B/L trees due to forest fire in these forests. If some trees are dried up after rains the value of same can be assessed @ 50% of the market rate.

1	2	3	4
4.	Beneficial herbs, shrubs & wild fruits.	.....	Beneficial herbs, shrubs & wild fruits which are collected by the right holders and food for the wildlife is a indirect loss and can be assessed keeping in view of the availability in particular forests and loss can be calculated on average annual yield which be can ascertained from the permit issued in the past or subsistence usage by locals.
5.	Fodder & Grasses	Since these resources are renewable the loss should not be considered	Loss caused due to burning of leaves of fodder trees and grass. Availability of fodder and grasses is more in broadleaved forests as compared to conifers.
6.	Other environmental and wildlife loss.	.....	Difficult to assess in term of money due to lack of requisite tools/methodology. However the loss sustained to environment and wildlife is long term loss and can not compensated easily.
7.	Domestic losses	Should not be considered as it is assessed by revenue department.	The loss caused due to fire to the domestic property in habitants like houses, cattle sheds, domestic animals, human life can be assessed separately per each individual case.
Scrub Forests			
1.	Plantation areas.	(Area in hac.)x(No. of plants per hac.)x(Survival%)x(Current planting cost/plant)	
2.	Areas consisting young crop	.....	No loss sustained to young crop of B/L trees because of forest fire in these forests. If some trees are dried up after rains the value of same can be assessed @ 50% of the market rate.
3.	Beneficial herbs, shrubs & wild fruits.	.....	Beneficial herbs, shrubs & wild fruits which are collected by the right holders and food for the wildlife is a indirect loss and can be assessed keeping in view of the availability in particular forests and loss can be calculated on average annual yield which be can ascertained from the permit issued in the past or subsistence usage by locals.
4.	Fodder & Grasses	It is renewable resource, hence, should not be considered	Loss caused due to burning of leaves of fodder trees.
5.	Other environmental and wildlife loss.	.....	Difficult to assess in term of money due to lack of requisite tools/methodology. However the loss sustained to environment and wildlife is long term loss and can not compensated easily.
6.	Domestic losses	Should not be considered as it is assessed by revenue department.	The loss caused due to fire to the domestic property in habitants like houses, cattle sheds, domestic animals, human life can be assessed separately per each individual case.

9.5.15 Fire Record

A complete record of fires will be maintained, both in Range, as well as Divisional office. Maps of the forests showing the area burnt by fire will be maintained along with other relevant

details regarding fire. The fire reports should contain a map of the area burnt. All the fire reports are sent to higher authorities on the prescribed proforma along with inspection report of R.O/ACF and DFO and follow up action taken accordingly.

9.6 Encroachment

The problem of encroachment is seriously persistent in forested region of Himachal Pradesh especially in Shimla, Kullu, Mandi, Chamba & Kinnaur Districts at large. There can be no denying fact that during the past three decades forest areas have been shaved off extensively for non-forestry purpose. Year by year, more and more land under forest cover is being brought under the plough even by way of large scale encroachments. The land grabbers have evolved a strangely novel method to eliminate the forest growth.

Under the Forest (Conservation) Act, 1980, diverting of forest lands for non-forestry purpose without the prior approval of Govt. of India is not permissible. As such even the settlement staff of the revenue department cannot divert forest land for non-forestry purposes without the permission of the Govt. of India. The provision of Indian Forest Act, 1927 are only punitive. For eviction of the encroachers, simultaneous action is to be taken to file a challan before the Assistant Collector Grade-I concerned for taking up proceeding under Section 163 of H.P. Land Revenue Act, 1954 for ejectment of the encroachers on the Govt. land i.e. other than forest land and whereas in respect of the encroachment on forest land eviction proceedings by the DFO-cum-Collector shall be commenced under the Himachal Pradesh Public Premises and Land (Eviction & Rent Recovery) Act, 1971, unless the proceedings are initiated under the Act, eviction of the encroachers will not be possible under the Indian Forest Act, 1927. The latest position of encroachment cases in Rampur Forest Division has been given in Table No.-1.9 paragraph No. 1.18 of Chapter-I.

9.6.1 Causes of Encroachment

The main causes of encroachment can be summarized as under:-

- i) Due to increase in population, the greed for having more and more land for fulfilling their basic needs amongst the local people has increased.
- ii) The grant of Nautor land inside the forests in the past are also responsible for encroachment on the forest land.
- iii) The forest boundaries are not properly demarcated either on the ground or in the record etc.

- iv) In a very large number of cases the notified forest areas have not been recorded properly in the land records, maintained by the revenue department and continue to be shown as non-forest areas i.e Charagah Bila Darakhtan and Charagah Darakhtan etc. Secondly, the department of forest has failed to proof or placed on the record the notification declaring the forest in question 'Protected Forest' under the provision of Indian Forest Act, 1927. In the absence of evidence (under Section 78 of Evidence Act, 1872) of Circulation of the notification under Section 29 read with Section 30/31 of Indian Forest Act, 1927, the conviction under Section 33 of the Act would be bad in the eyes of law. Many cases are lost in the courts on this account alone.
- v) There is no provision or mechanism to book and punish the abettors of encroachments. This encourages the highly organized land mafia, politicians and influential Section of Society to actively support and encourage large scale encroachments as they derive financial, political and social benefit from such benefits.
- vi) Influential persons with political affiliations not only promote encroachments but also abet the entire process.
- vii) The punishment meted out to the offenders is insignificant compared to the gravity of the offence committed.
- viii) The existing provisions for removal of encroachments are time consuming and grossly ineffective. In respect of UPFs or Un-classed forest areas recorded as Govt. land in revenue records, which are not legally notified and constituted forests under Section 29, 30, 31 and 32 of the Act, the provision under which an offence can be booked are not clear except Section 447 of IPC only.
- ix) There is no special provision provided in the Indian Forest Act, 1927 for eviction of encroachment as like provision provided in the Wild Life (Protection) Act, 1972. Similarly, there is no provision for recovering environmental losses from the encroachers caused due to the damage to flora and fauna and for the loss of productivity of the forest land. This emboldens them to encroach more forest land.
- x) There is a specific provision in the H.P. Prevention of Specific Corrupt Practices Act, 1983, forest official/officer shall be responsible for stopping encroachments in RF and DPF and whereas Revenue Officer is duty bound to prevent any encroachment on Govt. land i.e. other than RF and DPF. Despite of these provisions in the Act Revenue officials are reluctant to stop the encroachment and get the demarcation of disputed land in

question under Section 107 of the H.P. Land Revenue Act, 1954 and initiating eviction proceedings against the encroachers under Section 163 of the H.P. Land revenue Act, 1954.

- xi) Demarcation of disputed land as given by the Patwari/Kanungo who under the law is not competent to demarcate the same. In the absence of proper demarcation under Section 107 of the H.P. Land Revenue Act, 1954 by the competent Revenue Authority, the proceeding initiated against encroachers cannot be held to be legal and valid.
- xii) Large scale encroachment removals result in serious law and order problem requiring a strong political will, contingent of police force and presence of a magistrate. These are not available to the forest department whenever needed, which results abandoning such drives or eviction on spot in the past.

9.6.2 Preventive Measures

- i) Forest officials must be well conversant with boundaries of the forests falling in their respective jurisdictions. Range Officer, Block Officers and Forest Guards must check the boundary pillars frequently and if anything is found wrong, immediate step should be taken for maintenance of boundary pillars and booked the wrongdoer under the Act.
- ii) Forest Guard must issue the damage report under the provision of Indian Forest Act, 1927 and information in this regard be sent to his superior within 3 days. On the report of incharge beat guard, Block Officer/Range Officer, should get the area encroached upon demarcated under Section 107 of the H.P. Land Revenue Act, 1954 and challan the case before the DFO-cum-Collector court for initiating eviction proceedings under the H.P. Public Premises and Land (Eviction & rent Recovery) Act, 1971, unless under this Act, eviction of the encroacher will not be possible under Section 33 of the Indian Forest Act, 1927. It is further pertinent to mention here that there is no bar for registering the FIR against the encroacher under Section 447 of IPC read with Section 32/33 of IFA, 1927. Limitation period for challaning the forest offence under Section 468 of Cr. P.C is 3 years but challans should not be delayed unreasonably.
- iii) Periodic checking of all forest offence cases and review of progress etc. by ACF/DFO and CF is therefore necessary.

9.6.3 Steps taken for Eviction on Forest Land

All Divisional Forest Officer have been delegated with the powers of Collector under H.P. Public Premises and Land (Eviction & Rent Recovery) Act, 1971 within their respective

jurisdiction vide H.P. Govt. Notification No. 1-21/71-SLG dated 8-6-1994 besides taking punitive action against the encroachers under Section 447 of IPC read with Section 32/33 of Indian Forest Act, 1927 (See *Appendix No-XXXI*).. Now the H.P. Govt. delegated the powers of Collector to the Assistant Conservator of Forests (ACFs) to function of the collector within their respective jurisdiction of Forest Division vide H.P. Govt. notification dated 9-11-2012 (See *Appendix No-XXXII*).

Powers of carrying out demarcation of disputed land in question are vested with Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954. In ***Manna V. State of H.P. 2007 (3) Shim. L.C. 331***, the Hon'ble High Court held that till and so long such identification by demarcation is not made by following the procedure prescribed under Section 107 of the H.P. Land Revenue Act, 1954 the appellant will not be evicted from the land in dispute. Similarly in ***Salig Ram & Ors V. Ram Lal LHLJ 2008 (1) 484***, the Hon'ble High Court held that demarcation of Land, boundary dispute prescribed procedure to be adopted and demarcating officer has to locate three permanent point on the different site of the area/spot to be demarcated etc.

In ***Radha Swami Bayas V. State of H.P. ILR 1984, H.P 307***, the Hon'ble High Court held that demarcation of boundary of the dispute land under Section 107 of the H.P. Land Revenue Act is a quasi-judicial and statutory function and therefore, it is necessary for a Revenue Officer to discharge function of demarcation of disputed land in accordance with the procedure of law and order passed by the H.P. High Court. The function of the Forest Department and Revenue Department altogether is separate as statutory authority. Further encroachment in forest land, if any, is to be verified and identified only after getting demarcation of disputed land by the Revenue Authority under Section 107 of the H.P. Land Revenue Act. In case it is found so, that appropriate proceeding shall be initiated and eviction order can be passed under H.P. Public Premises Act, 1971 with reference to H.P. Govt. notification dated 8-6-1994, whereas if encroachment is found on Govt. land i.e. other than forest land eviction proceeding shall be initiated under Section 163 of the H.P. Land Revenue Act 1954 before the court of Assistant Collector Grade-I.

The forest and revenue officers/officials are responsible and liable for detection/removal of encroachment cases ***under the provision of H.P. Prevention of Specific Corrupt Practice Act, 1983***. The provision of Section 30 of the Act is re-produced as under:-

Whoever _____

- (i) being an officer of the Forest Department duty bound to prevent an encroachment over the reserve and demarcated protected forest land or
- (ii) being a Revenue Officer duty bound to prevent any encroachment over Govt. land belonging to the Govt. intentionally or knowingly permits, abets or account of this jurisdiction shall be punished with imprisonment of either description which shall not be less than one year but which can be extended to three years and shall also be liable to fine.

Therefore, revenue officers/official are responsible for initiating eviction proceeding under Section 163 of the H.P. Land Revenue Act, 1954 against the encroacher who have encroached upon the Govt. land i.e. other than forest land which is not a notified forest land under the provision of Indian Forest Act, 1927.

In ***Yogender Singh V. State of H.P. Cr. MP (M) No. 1299/2008 dated 7-1-2009***, the Hon'ble High Court passed the order that FIR shall be registered against the persons who have encroached upon the Govt. land, more particularly, the forest land within four weeks. During the pendency of these cases another case being ***Contempt Petition No. 56/2009 titled as Kuldeep Chauhan V. Balbir Singh Thakur*** has came up for consideration before the Hon'ble High Court on 28-8-2009. It is pertinent to mention here that one of the direction passed in the aforesaid Contempt Petition vide para (vi) was to effect that respondent State was suggested to issue necessary notification under Section 68 of IFA, 1927 dealing with the cases of illicit felling. It was further observed that "the court hopes and trust that strong action will be taken against the persons who are involved in the illicit felling of the trees".

That in compliance of the Hon'ble High Court order dated 28-8-2009, Pr. Secretary Forests issued notification on dated 5-5-2010. The operative part of the sub para-IV of para 5 of this notification is material and same is extracted herein below:

(Para-IV)- when encroachment is detected on forest land, action for removal of such encroachment shall be initiated under the Himachal Pradesh Public Premises and Land (Eviction and Rent Recovery) Act, 1971 and also action for committing forest offence by the encroacher shall be initiated under the Indian Forest Act, 1927. FIR under various provisions of Indian Penal Code shall be registered with Police in case:-

- (i) *Boundary pillars have been tempered with;*
- (ii) *Permanent structure has been made;*
- (iii) *Area encroached more than 10 bighas;*

- (iv) *There is encroachment within the Protected Area Network (PAN) i.e. in a Wild Life Sanctuary or National Park.*
- (v) *The cases involving avoidable damages exceeding rupees 10 lacs caused by the Companies or Corporate Bodies.*

That during the pendency of these cases the ***Hon'ble High Court passed the order in Yoginder Singh V. State of H.P. Cr. MP(M) No. 1299/2008 dated 20-5-2011*** that FIR shall be registered against the persons who have encroached upon more than 10 bighas of forest land within a period of one month. Thereafter the matter shall be investigated within a further period of four months, challan shall be put up immediately after the completion of investigation i.e. after four months. Mr. Deepak Sanan, IAS Pr. Secretary (Revenue) to the Govt. of H.P. has assured the Court that all the necessary assistance shall be rendered by the Department of Revenue to the Department of Forests to detect the encroachment on the forest land by supplying the necessary revenue record to the Forest Department (*See Appendix No.-LV*). That during the pendency of the above mentioned cases another case came up ***before Hon'ble High Court in CWP No. 9809/2011 titled as Bhajan Dass V. State of H.P. and others*** whereby petitioner filed the case before the Hon'ble High Court as against the said notification dated 5-5-2010 and registration of FIR against the petitioner under Section 33 of IFA, 1927 read with Section 447 of IPC, which is pending adjudication in the Hon'ble High Court.

During the pendency of these cases, the Hon'ble High Court passed the order dated 29-3-2012 in Yoginder Singh case that the demarcation will be carried out in the remaining cases within a further period of six weeks. Respondent State is directed to put up challans in those cases where the demarcation process is complete. It is made clear to the respondent State by way of abundant precautions that the process of registering FIR will continue after the detection of encroachment upon the forest and Govt. land. The members of the committee, constituted by this court, shall be personally responsible to comply with the directions made here in above.

Thus it should be made clear to the field executive staff that encroachments on DPFs are their direct responsibility. If any encroachments are allowed, the Forest Guard concerned shall be personally responsible for allowing such encroachment. In case the Forest Guard issue a damage reports and submit the cases to the B.O. and the Block Officers/Range Officer do not take further action under the provision of law, they shall be responsible for the encroachment. The Range Officer and the Divisional Forest Officer shall also be held responsible for such cases, if these are kept pending in their respective office without taking further action in compliance of the

Hon'ble H.P. High Court order. Therefore the Range Officer has to ensure that no encroachments take place in DPFs and wherever such encroachments have already taken place or to be taken, the case should be detected and challan be prepared for eviction and punishment after following the due process of law in compliance of the Hon'ble High Court order dated 20-5-2011 and 29-3-2012.

In compliance of the Hon'ble H.P. High Court till date total 175 Nos. of cases have been challaned before the CJM Court under Section 447 of IPC read with Section 32/33 of the Indian Forest Act, 1927 which is now pending adjudication in the court. And the process of registering FIR against the person who has encroached upon the forest land is continuing in compliance of Hon'ble High Court order dated 29-3-2012. It is pertinent to mention here that the Hon'ble H.P. High Court on 18-12-2012 has pointed out that in case the Demarcation and filing challans in the cases of above than 10 bighas and proceedings in all the cases under H.P. Public Premises (Eviction and Rent Recovery) Act, 1971 and H.P. Revenue Act, 1954 are not done/completed within 8 weeks of time then concerned DFOs will be placed under suspension by the Hon'ble Court.

During field inspection heavy encroachments have been noticed especially along private cultivated land in most of the forests and a brief note in this regard has been given in the individual compartment history files. However, exact extent of forest are encroached upon can be ascertained by carrying out proper demarcation of land under section 107 of HP Land Revenue Act, 1954. The preliminary survey for detection of encroachment on forest land must be done with the help of forest Patwari/Kanungo before getting demarcation from the commitment revenue authority by the field functionary authorities. The annual programme for detection of encroachment cases and further proceeding in compliance of the Hon'ble H.P. High Court order dated 20-5-2011 and 29-3-2012 is given in table No.9.8

Table No. 9.8

**Annual programme for detection of encroachment cases in Rampur Forest Division
Demarcated Protected Forests**

Year	Name of Range							
	Nankhari Range		Bahli Range		Rampur Range		Sarahan Range	
	Name of Compartment		Name of Compartment		Name of Compartment		Name of Compartment	
	Old compart ment No.	New compart ment No.	Old compart ment No.	New compart ment No.	Old compart ment No.	New compart ment No.	Old compart ment No.	New compart ment No.
1	2	3	4	5	6	7	8	9
	a) Demarcated Protected Forest							
2013-14	69	1	49	NDPF 1	164	94	C-182 a	C-112 a
	70	2	57 b	NDPF 2	169	99	C-182 b	C-112 b
	125	57	58	NDPF 3	170	100	C-183	C-113
	122	54	59	NDPF 4	117	NDPF 60	C-22	NDPF C-81
	121	53	92	NDPF 25	116	NDPF 59	C-4	NDPF C-63
	117	49	91	NFPF 24	115	NDPF 58	C-5	NDPF C-64
	72	4	90	NDPF 23	98	NDPF 41	C-6 c	NDPF C-67
	73	5	84	NDPF 18	99	NDPF 42	C- 6b	NDPF C-66
	74	6	68	NDPF 13	100	NDPF 43	C- 6a	NDPF C-65
	83	15	64	NDPF 9	179 a	109 a	C-184	C-114
	84	16			179 b	109 b	C-182 c	C-112 c
	94	26			180 b1	110 c	C-198 a	C-128 a
	95	27			C-70	NDPF C-31	C-198 b	C-128 b
	96	28			C-118	NDPF C-61	C-198 c	C-128 c
	99	31					C-208	C-138
							C-193 a	C-123a
							C-193 b	C-123 b
							C-210 a	C-140 a
	b) Undemarcated Protected Forest							
2013-14	UF 172	UF 37	UF 57 a	UF 50	UF 1 a	UF 53		
	UF 27	UF 5	UF 56	UF 49				
	UF 168	UF 33	UF 55	UF 48				
	UF 28	UF 6	UF 77	UF 51				
	UF 167	UF 32	UF 87	UF 52				
	UF 29	UF 7	UF 44	UF 38				
	UF 166	UF 31	UF 45	UF 39				
	UF 30	UF 8	UF 46	UF 40				

1	2	3	4	5	6	7	8	9
	UF 31	UF 9						
	UF 165	UF 30						
	UF 164	UF 29						
	UF 35	UF 13						
	a) Demarcated Protected Forest							
2014-15	76	8	176	106	101	NDPF C-44	C-189	C-119
	78	10	174	104	102	NDPF C-45	C-188	C-118
	79	11	173	103	105	NDPF C-48	C-185 h	C-115
	80	12	61	NDPF 6	C-107	NDPF C-50	C-186	C-116
	87	19	67	NDPF 12	113	NDPF C-56	C-187	C-117
	88	20	85	NDPF 19	C-111	NDPF C-54	C-190 d	C-120 d
	106	38	86	NDPF 20	C-110	NDPF C-53	C-190 c	C-120 c
	105	37	88	NDPF 21	C-109	NDPF C-52	C-190 b	C-120 b
	100	32	89	NDPF 22	C-108	NDPF C-51	C-192	C-122
	101	33			104	NDPF C-47	C-195	C-125
	103	35			C-103	NDPF C-46	C-194	C-124
	104	36			C-79	NDPF C-36	C-191 f	C-121 g
	112	44			C-71	NDPF C-32	C-191 e1	C-121 e
	110	42			C-1 b	NDPF C-29	C-191 b	C-121 b
	111	43					C-191 a	C-121 a
							C-201	C-131
							C-200	C-130
							C-199	C-129
	b) Undemarcated Protected Forest							
2014-15	UF 37	UF 15	UF 47	UF 41	UF 74	UF 56	UF 15	UF 58
	UF 163	UF 28	UF 54	UF 47				
	UF 38	UF 16	UF 48	UF 42				
	UF 162	UF 27	UF 53	UF 46				
	UF 39	UF 17	UF 50	UF 43				
	UF 161	UF 26	UF 52	UF 45				
	UF 41	UF 19	UF 51	UF 44				
	UF 160	UF 25						
	UF 157	UF 122						
	UF 42	UF 20						
	UF 43	UF 21						

In Tatkola Reserved Forest in Chikamagalur Forest Division Karnataka, the Hon'ble Supreme Court held that the encroachment especially when the land encroached upon was utilized for commercial purposes. However the court decided to take a lenient view and at the same time directed that if the encroachment voluntarily vacated the encroached land and handed over the same to the Chief Conservator of Forests within three months i.e. on or before 31st January, 2003 they would not be liable to pay any compensation. But if they continued to remain in occupation then they would have to pay Rs. 5 lac per hectare per month to the State Govt. Money so recovered shall be kept in a separate account and shall be used exclusively for forest protection and rehabilitation of the encroached area with the concurrence of the Central Empowered Committee.

In Pyare Lal V. State of H.P. RSA No. 259/2002 dated 24-9-2012, the Hon'ble H.P. High Court relied on Ramremeshwari Devi & Ors V. Nirmala Devi & Ors (2011) 8 SCC 249 case has pointed out and held that the income derived by the plaintiff from the sale of apples was more than Rs. One lac per year. The plaintiff has also been growing potatoes on the encroached land. Plaintiff was not evicted due to stay orders passed by the Revenue Courts and Civil Courts. He has derived benefits from the land on the basis of interim orders and the same is required to be neutralized. He has remained in unauthorized occupation of the land for a considerable period and is liable to pay to the State Govt. a sum of Rs. 5 lac by way of mesne profits, penal and exemplary costs.

There is no merit in this regular second appeal and the same is dismissed. The plaintiff is directed to pay a sum of Rs. 5 lac to the State Govt. within a period of six weeks from the date of the order. In case the amount is not deposited, the Deputy Commissioner, Shimla is directed to recover the same by way of arrears of land revenue.

All the revenue Officers in the State of Himachal Pradesh are directed that while passing the orders of eviction, they must take steps for neutralizing the interim orders by awarding compensation, mesne profits and exemplary/penal costs.

As we are well aware that applicant's application along with revenue papers were received from the revenue authority for regularization of encroachment cases under H.P. regularization of encroachment on Govt. land and disposal of Govt. land Rules 2002. During the pendency of regularization of encroachment cases, the Govt. decided to take action against the encroachers instead of regularization of these cases. After that DFO(T) Rampur has taken action and these cases were sent back to the concerned revenue authority to the effect that the revenue

authorities shall take eviction proceeding under Section 163 of the H.P. Land Revenue Act, 1954 against the encroachers as the land in dispute is a Govt. land i.e other than forest land and recorded in the ownership of the State Govt. and nature of the land is “Charagah Bila Darakhatan and Charagah Darakhatan etc. and possession shown as dCtk Lo;a rkcs gdwd crZunkju eqrkfc dU’kk crZu in revenue record. ***In T.N. Godavarman V. Union of India in CWP No. 202/95 dated 12-12-1996***, the court held that any forest land cannot be diverted for non forestry purpose by the State Govt. or any authority without prior concurrence of the Govt. of India under Section 2 of the Forest (Conservation) Act, 1980, whereby no encroachments cases have been regularized in this division till date. But during the pendency of regularization of encroachment cases under the Forest (Conservation) Act, 1980, the H.P. Regularization of Encroachment on Govt. Land and Disposal of Govt. Land Rules 2002, were challenged in the Hon’ble H.P. High Court in ***CWP No. 1082/2002 titled as Punam Gupta & Ors V. State of H.P.***, the Hon’ble High Court held that the proceeding for regularization on Govt. land may go on, but patta will not be issued in impugned rules till further order, which is now pending adjudication in the court.

That during the pendency of ***Cr. MP(M) No. 1299/2008 titled as Yoginder Singh V. State of H.P.*** has came up for consideration before the court and the court passed the order on 7-1-2009 and 20-5-2011 that FIR shall be registered against the persons who have encroached upon more than 10 bighas of forest land. After that another case came up before the Hon’ble High Court in ***CWP No. 9809/2011 titled as Bhajan Dass V. State of H.P.***, where by petitioner filed the case in the Hon’ble High Court against the H.P. Govt., Forest Department Notification dated 5-5-2010 and registration of FIR under Section 447 of IPC read with Section 32/33 of Indian Forest Act, 1927, which is now pending adjudication in the court. However, no regularization of encroachment cases are pending with DFO (T) Rampur.

The encroachment detected during the field inspection and stock mapping of forests, have been mentioned in the compartment history files. It is difficult to know the extent of encroachment area in absence of demarcation of land in dispute. Therefore, DFO (T) necessary step may take up with the Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954 and ensure to detection of encroachment in each forest/compartment especially DPF areas in compliance of the Hon’ble High Court order and act accordingly.

9.7 Mining

9.7.1 General

The Western Himalayas and its foothills are a treasure house of the minerals being exploited by human being since time immemorial with the advent of society. The methods of extraction of the minerals became more and more mechanized which resulted in extraction of the minerals at a pace much faster than the pace at which the nature could meet itself with such a situation is recover from the onslaughts of human beings. The production of aggregate in a particular area is a function of the availability of resources, the size of population, the economy of the area and various development and infrastructural works being undertaken in the area i.e. road construction and Hydro power projects etc. It brought into sharp focus the conflict between development and conservation of natural resources, which served to emphasize need for reconciling the twin objectives into the large interest of the society.

9.7.2 Supreme Court on Mining

Mining in forest area another cause of forest degradation and environmental pollution but in State of Himachal Pradesh there is few number of cases of mining in protected forest. Mining operation is being carried out in this tract on Govt. waste land i.e. River/streambed such as Gair Mumkin Khad/Nallah, Na-Kabil Charand and private land under the administrative Central of Himachal Pradesh Industries Department and State Environment Protection and Pollution Control Board. The State Geologist in the Director of Industries designated as Authority on behalf of the State Govt. to supervise and control of such work w.e.f. 19-12-1998. Thus the forest department has major role only under Section 2 of the Forest (Conservation) Act, 1980 for granting or renewal of mining lease in forest area in compliance of the Hon'ble Supreme Court order dated 12-12-1996. The area applied for lease on non forest land shall be inspected by a committee constituted as per River/Stream Bed Mining Policy guidelines for the State of Himachal Pradesh, 2004 dated 28-2-2004. Based on the approval of the sites for setting up of the Stone Crusher unit & grant of mining lease after obtaining consent to operate from the State Pollution Control Board, Forest Department and Mining Department etc. The permanent registration shall be issued to the owner of the Stone Crusher by the Geological Wing, Department of Industries is under the provisions of the Himachal Pradesh Minor Minerals (Concession) Revised) Rules, 1971.

Thus, it clears that no mining operation is allowed on forest land without prior permission of Central Govt. under Section 2 of the Forest (Conservation) Act, 1980. In series of orders in the ***T.N. Godavarman case, the Supreme Court*** dealt at length and at times in minute details about

instances of mining taking place in forest area. The Supreme Court however, made it clear that it was not against mining per-se but against mining which is in violation of the Forest (Conservation) Act, 1980 and also mining in National Park and Sanctuaries in compliance of the court order dated 14-2-2000.

The Supreme Court kept a strict watch on the implementation of the order. Not only was it concerned about the fact that no illegal mining activities should take place in forest areas, but it also kept a vigil against any leniency shown to those involved in illegal mining. The court made it amply clear that it has to be informed about all development, which relate to illegal mining.

The Kudremukh case, the Hon'ble Supreme Court also emphasized the need to implement the provisions of the Convention on Bio-logical Diversity.

"Duty is cast upon the Government under Article 21 of the Constitution of India to protect the environment and the two salutary principles which govern the law of the environment are; (i) the principles of sustainable development and (ii) the precautionary principle. It needs to be highlighted that our country has acceded to the Convention on Biological Diversity and therefore, it has to implement the same. As was observed by this the Hon'ble Supreme Court in Vishaka V. State of Rajasthan, 1997 (6) SCC, 241 in the absence of any inconsistency between the domestic law and international conventions, the rule of judicial construction is that regard must be had to international conventions, and norms in constructing the domestic law. It is therefore, necessary for the Government to keep in view the international obligations while exercising discretionary power under the Conservation Act unless there are compelling reasons to depart there from".

In May 2009, the court in **M.C. Mehta case**, broadened the scope of its order and suspended all mining operations in the Aravali Hills falling in Haryana within the area of approximately 448 Sq. Km in the district of Faridabad and Gurgaon including Mewat. This suspension was to continue till a reclamation plan was submitted by the State of Haryana, MOEF and CEC. The reclamation plan was to include the step needed to be taken to rehabilitate the landscape.

It is pertinent of point out here as per directions given by the Hon'ble Supreme Court of India, in mining matters in case AIR 1997 S.C. 1233, the mining of any mineral is a non forest purpose and is therefore, not permissible without prior approval of the Central Government.

A copy of advice of Law Department received vide letter No. FFE-BE (8) 76/96-loose dated 26-3-1998 from Additional Chief Secretary cum Secretary (Forests) to the Govt. of H.P.

addressed to Principal Chief Conservator of Forests, H.P in connection with granting of Mineral Concessions in Government/private land in the State is reproduced below:-

Government of Himachal Pradesh Law Department

N20 (ante)- Examined in the Law Department. After taking into consideration the record available on the file and in the light of the law laid down by the Hon'ble Supreme Court of India in the case ***T.N. Godavarman Thirumulkpad versus Union of India and others (AIR 1997 S.C. 1228)*** and directions given by the Apex Court in mining matters in case AIR 1997 S.C.1233, the mining of any minerals is a non forest purpose and is therefore, not permissible without prior approval of the Central Government. The Apex Court has also directed that in accordance with Section 2 of the Forest (Conservation) Act, 1980, all on going activities, within in any forest in any State throughout the country, without the prior approval of the Central Government must cease forthwith. The points raised by the AD at No. 8 (a) (b) and (c) and at No. 16 are answered as under:-

- a) The meaning of Forest shall be understood strictly in accordance with the law laid down by the Hon'ble Supreme Court of India in the case ***T.N. Godavarman Thirumulkpad etc. versus Union of India and others (AIR 1997 SC 1228)***. The word 'Forest' must be understood according to its dictionary meaning. This description covers all statutorily recognized forests, whether designated as reserved protected or otherwise for the purpose of Section 2(1) of the Forest (Conservation) Act, 1980.
- b) Though the expression 'Government Record' not defined in the judgement of their Apex Court referred to above but from the combined reading of the said judgement, the word 'Government record' would mean revenue record, all statutorily recognized forests, whether designated as reserved, protected or otherwise for the purpose of Section 2(1) of the Act. The record of the Forest Settlement Department like Working Plans, notifications under the Indian Forest Act, Forest Settlement reports can also be understood to be Government Record has been constructed and maintained under the statutory provisions of any Act.
- c) For the purpose of application of Forest (Conservation) Act, 1980, the expression 'Forest' land would mean a tract of land covered with trees, shrubs, vegetation and undergrowth under mingled with trees with pastures, be it of natural growth or manmade forestation (AIR 1997 SC 3297) At. N.8(c), A/D has stated that forests like R.Fs/DPFs/UPFs are having Gair Mumkin area i.e. river beds, nallas, khalas/dhank/junglejhari, but still A/D has doubt whether such areas falls within the ambit of expression forest land. There is no manner of doubt, that if such areas, falls

within the area of any RFs/DPFs/UPFs it will consider as 'Forest land' for the purpose of Forest (Conservation) Act, 1980. In view of the law laid down by the Apex Court in case (AIR 1997 SC 3297), the recommendation of Expert Committee has become in effective.

In compliance to directions of Hon'ble Supreme Court, all the cases of mining lease already granted by Industries Department as mentioned above, are required to be processed, reopened again for obtaining necessary permission from Central Government under Forest (Conservation) Act, 1980 and in future mining operation may be allowed subject to the following conditions:-

- i) No mining operation shall be allowed in forest land unless or until permission for its non forestry purpose is obtained from Central Government under the provisions of Forest (Conservation) Act, 1980.
- ii) Mining operation in private land may be allowed only if it does not cause any damage to the adjoining forests that too after obtaining prior permission from the competent authority.
- iii) The mining shall be started from top to bottom by making benches 6mx6m keeping general angle of repose as 45°.
- iv) Dumping sites for mine works and top of soil shall be provided in such a way so that there is no damage to the adjoining land; the same does not roll down the slope. Top soil shall be used for Afforestation purpose in the barren/exhausted paths.
- v) The lessee shall erect check dams of undressed stones at different suitable sites along the slope of the area and also along nalla to avert the flow of debris rolling down the slope and to check soil erosion.
- vi) The lessee shall take all necessary precaution while carrying out blasting operations if needs.
- vii) Adequate measures shall be taken to check the air pollution.
- viii) Sufficient funds should be provided to Forest Department to carryout Afforestation and soil conservation works after the lease is over apart from minor works carried out as mentioned above during the mining operations.
- ix) No extraction of sand, gravels, and stone shall be allowed along the roads and river bank to check the menace of erosion.
- x) Trees of suitable species shall be planted to develop a green belt within and along the boundary of the premises.

The court further held that before any mining operations commence, the lease holders shall obtain all statutory clearances including environmental clearance in term of MOEF notification dated 14-9-2006 and also the approval under the Forest (Conservation) Act, 1980 read with the Environment Protection Act, 1986. However, no stone crusher unit and mining lease area are granted in RF and DPF except in un-demarcated protected forests in Rampur Forest Division, the details of stone crusher units is tabulated in table No.-9.9

Table No.-9.8

S. No.	Name of stone crusher	Govt./Pvt. Land	Khasra No.	Location with area (Mauza)	Approval accorded by GOI/State Govt.	Remarks (permitted upto)
1	2	3	4	5	6	7
1.	M/S Mehta Stone Crusher	Govt. land	493/480/33/1, 109/15/1, 111/21/1, 110/15/2, 113/21/2/1	1-10-78 hac. (Pashada)	9-HPB476/1997-CHA/1763 dated 18/5/2010	18/11/2024 (15 years)
2.	M/S Mohanti Devi Stone crusher	Govt. land	477/33/1	0-45-50 hac.(Pashada)	9-558/1998-ROC/3610 dated 7-7-2009	22/6/2013 (5years)
3.	M/S Bushahr Laghu Udyog.	Govt. Land	112/21/1, 38/1, 494/480/33/1, 38, 113/21/3/1	0-28-98 hac. (Pashada)	9-HPB 414/1997-CHA dated 18-8-2006	Expiry date not mentioned.
4.	M/S Himalaya Stone Crusher & Quarry	Govt. Land	215/1	0-93-00 hac. (Sanathali)	9-HPB 471/2006-CHA/3952 dated 19-4-2007	19/11/2010 (5 years) and the case is under process for further approval
5	Ashok Kumar Sood Crusher	Govt land	668/1	0-19-00 hac. (Pashada)	9-471-97-ROC/508 dated 31/3/2000	30/3/2002 (two years) Now the Crusher has been shifted to Khasra No. 215/1
6.	Bhima Stone Crusher	Govt land	33/2	0.3935 hac. (pashada)	9-407/2004-ROC/641 dated 28/7/2004	27/7/2005 (one year)

1	2	3	4	5	6	7
7	R. Industries	Govt. land	1995/1	0-97-28 (Jhakri)	No. Udyog- Bhu(Khani) Laghu- 147/97dated 17/3/2005	Earlier this land was private land and vested to the H. P. Govt. under Land Ceiling Act and does not attract FCA, 1980 vide H.P. Govt. Notification Rev. B.A. (4) 8/2004-loose dated 21/4/2006.

The mining activities in the Govt. land i.e. River beds/waste land which fall under the provisions of forest department notification dated 25-12-1952. According to this notification every Govt. waste land over which the State Govt. has the proprietary right or the property of the Govt. is a forest land for the application of Forest (Conservation) Act, 1980 in compliance of the Hon'ble Supreme Court order dated 12-12-1996. Thus River beds/waste lands of the tract in this division attract the provisions of Forest (Conservation) Act, 1980. Therefore, it is the duty of the forest department to keep watch and ward over their properties primarily as nodal officer under the Forest (Conservation) Act, 1980. And after registration of stone crusher unit and mining lease area by the Geological Wing, Department of Industries under the provisions of H.P. Minor Minerals (Concessions) Revised rules, 1971, the Sub-Divisional Level Flying Squad or Committee under the chairmanship of the Sub-Divisional Magistrate constituted by the Govt. of H.P. vide notification No. Udyog-II(F) 6-20/2005 dated 30-4-2001 is responsible for all unauthorized or illegal and unscientific mining and stone crushing operation without realizing the proper compounding fee in terms of the law laid down by the Hon'ble High Court.

Vide H.P. Govt. Notification No. Rev. B.A (4)8/2004-loose dated 21-4-2006 notified that notification issued in the year 1952 by the Govt. of Himachal Pradesh, Forest Department, the provision of Indian Forest Act, 1927 and Forest (Conservation) Act, 1980 will not apply to the lands vested in the State Govt. under the provision of the H.P. Ceiling on Land Holding Act, 1972 and H.P. Village Common Lands Vesting and Utilization Act, 1974 unless any land which vested in the State Govt. under the aforesaid enactments was recorded as forest land in the revenue record before vestment etc. (See Appendix No-XXVI). The Hon'ble Supreme Court vide

its order in the special leave petition (SLP) filed by the State of H.P against the judgment of the H.P. High Court in CWP No. 726/2010 titled as Kesari Devi V. State of H.P has set-aside the impugned order and has remanded this matter to the High Court with request to decide it afresh on merit in accordance with law after hearing all the parties.

The Apex Court directed that since the minor minerals i.e. Sand, Bajri and Stone was recorded under the ownership and possession of H.P Govt., hence before forwarding auction proposals of these quarries it was essential to ensure that the land under references does not attract the provisions of FCA in the light of classification issued by the Forest Department. In order to ensure this all the concerned revenue officers in the district to issue certificate after verification in the revenue records pertaining to vestment of land in the State under the provisions of H.P. Village Common Land (Vesting and Utilization) Act, 1974 and Land Holding Act, 1972 w.r.t. H.P Govt. notification dated 21-4-2006.

9.7.3 Mining Lease mandatory for running a Stone Crusher Unit

In order to ensure legal and regular supply of minor minerals, every owner of stone crusher, shall have a valid mining lease for this purpose.

No person shall install or run any stone crusher in any area within the State of Himachal Pradesh unless he obtains a provisional registration from the Geological Wing, Department of Industries. For this an application Form “A” shall be submitted and it shall be accompanied by fee of Rs. 2500/- only. Permanent registration shall be issued to the owner of the stone crusher by the Geological Wing, Department of Industries after obtaining consent to operate from the Pollution Control Board on Form-‘B’. in case of renewal of the registration, the owner of stone crusher shall apply for the renewal at least six months prior to the expiry of the registration in Form-“A”.

9.7.4 Other condition for running of stone crusher

The owner of the stone crusher shall observe the provisions of-----

- i) The Forest (Conservation) Act, 1980 and rules framed there under.
- ii) The Air (Prevention and Control of Population) Act, 1981 and rules framed there under.
- iii) The Water (Prevention & Control of Population) Act, 1974 and rules framed there under.
- iv) The Environment (Protection) Act, 1986 and rules framed there under.
- v) The Noise Pollution (Regulation and Control) Rules, 2000.

9.7.5 Condition for Mining Lease

As per strategy No. 9.6 of River/Stream Bed Mining Policy guidelines and Rule 21 (4) (i) of the H.P. Minor Mineral (Concession) Revised Rules, 1971 (as amended on 10-6-2004) every applicant shall submit Working-cum-Environment Management Plan for carrying out systematic and scientific mining.

9.7.6 Mining in Hill Slopes shall be subject to following General Conditions

I. Environment Considerations

- i) No mining shall be allowed within 100 meters of thickly forested area.
- ii) No mining shall be allowed in areas, which may cause aesthetic/visual degradation near any known tourist spot.
- iii) No mining shall be allowed where it is likely to disrupt the existing water regime IPH schemes, roads, bridges etc.
- iv) No mining shall be allowed where danger to site of culture, religions, historical, archeological or scenic importance is likely.
- v) No mining shall be allowed near habitation, where it is likely to cause noise and vibration problems, due to blasting or operation of machinery.
- vi) No mining shall be allowed where proper disposal of mine waste cannot be arranged, i.e. Dumping Yard etc.
- vii) Conditions shall be imposed that the lease holder will take adequate steps to control and check soil erosion, debris flow etc. by raising various engineering structures.

II. Geological and Geomorphological Considerations

- i) No mining shall be allowed where the slope angles are more than 45° from horizontal and in case of mid slope mining, the foot wall should be of hard strata.
- ii) No mining lease shall be granted where the ore to overburden ratio is not economical i.e. 1:0.2, that is, the waste generation should not be more than 20%.
- iii) Proper appraisal of the deposit for its qualitative and quantitative assessment shall be made in the form of Geological and topographical plans.

III. Technical Consideration

- i) The area should not be highly jointed, fractured or consisting of weak planes.
- ii) Relation of slope angle to angle of repose should be within mining parameters where 6x6 meter benches by keeping overall angle of repose as 45° can be made.

- iii) No mining shall be allowed where subsidence of rocks is likely due to steep angle of slope.
- iv) No overhangs shall be allowed to be formed during the course of mining.
- v) The gradient of approach roads shall be gentle with side drains and parapet walls. Adequate number of waiting and crossing points shall be provided for safe plying of vehicles.
- vi) No blasting shall be resorted to without taking proper licence under Explosive Act.

IV. General Conditions

- i) Mining site shall only be handed over to the lease holder after it is duly demarcated by permanent boundary pillars and certified by concerned Mining Officer.
- ii) Junction at take off point of approach road with main road shall be developed with proper width and geometric required for safe movement of traffic by crusher owner at his own cost and in consultation with Executive Engineer, HPPWD.
- iii) No lease holder shall store/stack any material in the acquired width of PWD road without the specific permission of the competent authority.
- iv) In addition to above, the mining operation shall be subject to provisions of various Acts and Rules in force.
- v) Dumping of waste shall be done in earmarked places as per the approved Working Plans.

9.7.7 Delegation of Powers

All Deputy Commissioners/ CFs, Divisional Forest Officers/ACF's and Range Forest Officers have been delegated with the powers under Sub Section (2) of Section 26 read with Section 21 (4) of the Mines & Minerals (Development & Regulation) Act, 1957 to empower to seize any minerals raised or transported or caused to be raised or transported by any person without any lawful authority, any mineral from any land for that purpose use any tool/equipment, vehicle or any other thing for this purpose (*See Appendix No.-XXXIII*).

All forest guards have been delegated with powers under Section 22 of the Mines & Minerals (Development & Regulation) Act, 1957 to make complaint in written in the court of competent jurisdiction in respect of any offence punishable under the said Act or any rules made there under (*See Appendix No.-XXXIV*). Similarly Assistant Conservator of Forests and Range Officers have also been delegated with powers under the Act to make complaints in courts in writing in respect of any offence punishable under the Act or any rules made there under in their respective jurisdiction (*See Appendix No.-XXXV*).

The powers also have already been delegated to all Deputy Commissioner/Executive Magistrates and SP in HP within their jurisdiction to seize any material raised by any person without any lawful or any tool, equipment, vehicle or any other thing brought on the land for the purpose, under Section 21 of Mines & Minerals (Development & Regulation) Act, 1957. Similarly all Directors, State Geologist, Deputy Commissioners, Executive Magistrate and Police Officers have also been delegated with powers under the act to make complaint in writing in the court of competent jurisdiction in respect on any offense punishable under the Mines & Minerals (Development & Regulation) Act, 1957. (*See Appendix No.-XXXVI*).

Following Sub-Divisional Level Flying Squad has been constituted vide Notification No. Udyog (Chh) 7-3/90 dated 11-3-1993 and revised vide notification No. Udyog (Chh) 7-3/90 dated 20-11-1993.

1.	Sub Divisional Magistrate	-	Chairman
2.	Assistant Conservator of Forests	-	Member
3.	DSP or his representative having local jurisdiction-		Member

The above committee is authorized to requisition the relevant record from the office of Mining Officer and the Services of Mining Officers and his staff for the purpose of carrying out such inspections.

Whereas the Hon'ble High Court of Himachal Pradesh in ***CWP-228/2002 titled as Desh Raj versus State of Himachal Pradesh*** and others, vide its interim order dated 3-3-2003, has directed the State Government to frame appropriate guidelines to carry out purposes and objectives of the Environment Protection Act, 1986;

In pursuance of the H.P. High Court order dated 3-3-2003, the Govt. of H.P. notified the notification vide Notification No. STE-E (4)-1/2003, dated Shimla 2, 29-4-2003. Taking into consideration the hill topography, availability of less land and requirement to maintain the fragile ecology of the hills, the units shall be setup keeping in view the following criteria namely:-

Sr. No.	Criteria	Distance
1	2	3
1.	Minimum distance from National highway/nearest State highway.	100 Mtrs.
2.	Minimum distance from the District Headquarter.	1.5 Kms.
3.	Minimum distance from any Town/Notified Area Committee.	1.00 Kms.
4.	Minimum distance from village Abadi deh.	250 Mtrs.
5.	Minimum distance from Hospital or Educational Institute.	1.00 Kms.
6.	Minimum distance from Springs, Canals, reservoirs and functional water supply schemes.	100 Mtrs.

1	2	3
7.	Minimum distance from notified lakes and wetlands.	500 Mtrs.
8.	Minimum distance from Link roads/Other Distt. roads	75 mtrs
9.	Minimum distance from Natural water springs	500 mtrs.
10	Minimum distance from Notified parks	2 Kms.
11.	Minimum distance from Bridge sites	200 mtrs up stream 300 mtrs. down stream.

9.7.8 Illegal Mining

Under Sub Rule (I) of rule 53 of the H.P. Minor Minerals (Concession) Revised Rules, 1971, no person shall undertake any operations in any area, except under and in accordance with the terms and conditions of the mining lease, contract or permit granted under these rules.

Under Sub Rule (2) of rule 53, any contravention of sub-rule (1) shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to five thousand rupees, or with both and in case of a continuing contravention, with an additional fine which may extended to five hundred rupees for every day during which the contravention continues after conviction for the first such contravention.

On the observation of the Hon'ble ***H.P. High Court given in CWP No. 188/2001 titled as Jagjit Singh Dhukla V. State of H.P in its order dated 16-12-2003*** that indiscriminate compounding was being done by realizing paltry sum of money and disapproval of this approach by the Hon'ble High Court, the Director of Industries on these observations had issued instruction on 3-1-2004 that cases detected to be lodged under rule 53 of H.P. Minor Mineral (Concession) revised Rules, 1971 may not be compounded for less than minimum fine prescribed for violation of such offence, which presently provides for Rs. 5000/-. The Principal Secretary of Industries had also filed affidavit in the Hon'ble High Court on 23-2-2004 stating that all the mining officers have been directed not to compound the cases with less than the maximum amount provided in rule 53 in addition to recovering price, royalty fee, taxes etc. Under Sub Rule (I) of rule 53 of the H.P. Minor Minerals (Concession) Revised Rules, 1971, no person shall undertake any operations in any area, except under and in accordance with the terms and conditions of the mining lease, contract or permit granted under these rules.

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9.7.9 Cognizance of Offences

Under Rule 54, no court shall take cognizance of any punishable under these rules except upon a complaint in writing made by the Director or any other officer authorized by him in this behalf within six months of the date on which said offence is alleged to have been committed.

9.7.10 Restrictions on Transport of the Minerals under Rule 57

- (i) The holder of a mining lease or mining permit or a person authorized by him in this behalf shall issue a pass in Form 'M' duly countersigned by the concerned Mining Officer/General Manager, District Industries centre or any officer authorized in this behalf to every person carrying a consignment of minor mineral by a vehicle, animal or any other mode of transport.
- (ii) No person shall carry within Himachal Pradesh a minor mineral by a vehicle, animal or any other mode of transport, excepting railway, without carrying a pass in Form 'M' issued under sub-rule (1)
- (iii) Every person carrying any minor mineral shall on demand by any officer of the State Government authorized in this behalf, show the said pass to such officer and allow him to verify the correctness of the particulars of the pass with reference to the quantity of the minor mineral.
- (iv) The State Government may establish a check post for any area included in any mining lease or permit, and when a check post is so established, public notice shall be given of

this fact, by publication in the Gazette and in such other manner as may be considered suitable by the State Government.

- (v) No person shall transport a minor mineral to which these rules apply from such area without first presenting the mineral at the check post fixed for that area for purposes of verification of the weighment or measurement of the quantity of the mineral.
- (vi) Any person found to have contravened any provision of sub-rule (2), (3) or (5) above shall, on conviction, be punishable with imprisonment of either description for a term which may extend upto six months or with fine which may extend to one thousand rupees or both.

Besides this the Himachal Pradesh Minerals (Prevention of illegal Mining Transportation & Storage) Rules, where stringent provision have been made in case of violation have been notified by the Govt. vide notification No. Ind. II (F) 11-3/2000 dated 11-8-2004. To curtail illegal mining, instructions have also been issued to all the Mining Officers that no case of illegal extraction of mineral shall be compounded for less than five thousand rupees. If the offence is repeated, the case shall not be compounded and shall be lodged in the court of law.

9.7.11 Compounding of offences under the Mines & Minerals (Development & Regulation) Act, 1957.

Rule 23 A (1) any offence punishable under this Act or any rule made there under may, either before or after the institution of the prosecution be compounded by the person authorized under Section 22 to make a complaint to the court with respect to that offence, on payment to that person, for credit to the Government, of such sum as that person may specify:

Provided that in the case of an offence punishable with fine only, no such sum shall exceed the maximum amount of fine which may be imposed for that offence.

(2) Where an offence is compounded under sub Section (1) no proceeding or further proceeding, as the case may be, shall be taken against the offender in respect of the offence so compounded, and the offender, if in custody, shall be released forthwith.

9.7.12 Rule 23 B Power of Search

If any gazetted officer of the Central or a State Government authorized by the Central Government or a State Government, as the case may be in this behalf by general or special order has reason to believe that any mineral has been raised in contravention of the provisions of this Act or rules made there under or any document or thing in relation to such mineral is secreted in

any place or vehicle, he may search for such mineral, document or thing and the provisions of Section 100 of the Code of Criminal Procedure, 1973 shall apply to every such search.

Rule 23C (1) the State Government may, by notification in the Official Gazette, make rules for preventing illegal mining, transportation and storage of minerals and for the purposes connected therewith.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:-

- a) establishment of check-posts for checking of minerals under transit;
- b) establishment of weigh-bridges to measure the quantity of mineral being transported;
- c) regulation of mineral being transported from the area granted under a prospecting licence or a mining lease or a quarrying licence or a permit, in whatever name the permission to excavate minerals, has been given;
- d) inspection, checking and search of minerals at the place of excavation or storage or during transit;
- e) maintenance of registers and forms for the purposes of these rules;
- f) the period within which and the authority to which applications for revision of any order passed by any authority be preferred under any rule made under this section and the fees to be paid therefore and powers of such authority for disposing of such applications; and
- g) any other matter which is required to be or may be prescribed for the purpose of prevention of illegal mining, transportation and storage of minerals.

(3) Notwithstanding anything contained in Section 30, the Central Government shall have no power to revise any order passed by a State Government or any of its authorized officers or any authority under the rules made under sub-Sections (1) and (2).

9.7.13 Power of Entry and Inspection

Rule 24 (1) for the purpose of ascertaining the position of the working, actual or prospective, of any mine or abandoned mine or for any other purpose connected with this Act or the rules made thereunder, any person authorized by the Central Government or a State Government in this behalf, by general order, may-

- a) enter and inspect any mine;
- b) survey and take measurements in any such mine;
- c) weight, measure or take measurements of the stocks of minerals lying at any mine;

- d) examine any document, book, register or record in the possession or power of any person having the control of, or connected with, any mine and place marks of identification thereon, and take extracts from or make copies of such document, book, register or record;
- e) order the production of any such document, book, register, record, as is referred to in clause (d); and
- f) examine any person having the control of, or connected with, any mine.

(2) Every person authorized by the Central Government or a State Government under sub-Section (1) shall be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code, and every person to whom an order or summons is issued by virtue of the power conferred by clause (c) or clause (f) of that sub-section shall be legally bound to comply with such order or summons, as the case may be.

9.7.14 Penalties

Rule 21 (1) Whoever contravenes the provisions of sub-Section (1) or sub-Section (IA) of Section 4 shall be punished with imprisonment for a term which may extend to two years, or with fine which may extend to twenty five thousand rupees, or with both.

(2) Any rule made under any provision of this Act any provide that any contravention thereof shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to five thousand rupees, or with both and in the case of continuing contravention, with an additional fine which may extend to five hundred rupees for every day during which such contravention continues after conviction for the first such contravention.

(3) Where any person trespasses into any land in contravention of the provisions of sub-Section (1) of Section 4, such trespasser may be served with an order of eviction by the State Government or any authority authorized in this behalf by that Government and the State Government or such authorized authority may, if necessary, obtain the help of the police to evict the trespasser from the land.

(4) Whenever any person raises, transports or causes to be raised or transported, without any lawful authority, any mineral from any land, and for that purpose, uses any tool, equipment, vehicle or any other thing, such mineral, tool, equipment, vehicle or any other thing shall be liable to be seized by an officer or authority specially empowered in this behalf.

(4A) Any mineral, tool, equipment, vehicle or any other thing seized under sub-section (4) shall be liable to be confiscated by an order of the court competent to take cognizance of the offence under sub-section (1) and shall be disposed of in accordance with the directions of such court.

(5) Whenever any person raises, without any lawful authority, any mineral from any land, the State Government may recover from such person the mineral so raised, or where such minerals has already been disposed of the price thereof, and may also recover from such person, rent, royalty or tax, as the case may be, for the period during which the land was occupied by such person without any lawful authority.

(6) Notwithstanding anything contained in the Code of Criminal Procedure, 1973, an offence under sub-section (1) shall be cognizable.

9.7.15 Preventive/Remedial Measures

The provision given in Rule 53 and 57 of H.P. Minor Minerals (Concession) Revised Rules, 1971 is not sufficient to deal the cases and offenders are coming forward for compounding the offences or prefers to contest cases in the court of law. Therefore, forest field functionaries must ensure that cases may not be compounded in case of violation of the provision of Forest (Conservation) Act, 1980 and the Hon'ble Supreme Court order dated 12-12-1996 and 4-3-1997. After taking cognizance, the matter may be taken up with MoEF, Govt. of India under Section 3A/3B of the Forest (Conservation) Act, 1980 read with rule 9 of the Forest (Conservation) Rules, 2003. Thus no mining operation is allowed on forest land in compliance of the Hon'ble Supreme Court order dated 12-12-1996 without prior permission of the Central Govt. under Section 2 of the Forest (Conservation) Act, 1980. Therefore, violation of mining cases or breaking of forest land under the provision of Indian Forest Act, 1927 may not be booked or detected until and unless sufficient material evidences are available and mandatory provisions are fulfilled under Section 30 to 32 of the Act against the offender.

That the field functionaries are advised to take action against the mining mafia or offender under the Mines and Minerals (Development and Regulation) Act, 1957 read with Forest (Conservation) Act, 1980 so that illegal mining could be halted/checked on the forest land including Charagah Billa Darakhatan, Gair Mumkin Khad, Nallah, River Bed/Stream etc. in compliance of the Hon'ble Supreme Court order dated 12-12-1996. All vehicle carrying stone, sand, bajri etc. are required to carry with them "M" Form duly signed by the Mining Officer or authorized officer. Action need to be taken against vehicle not accompanied by 'M' Form signed by authorized signatory as it shall be presumed that the mineral has been brought from forest if the vehicle incharge or owner of the vehicle failed to proof the legal source of material with satisfaction of the forest officer, police officer or mining officer etc. under the provisions of the Mines & Minerals (Development & Regulation) Act, 1957. Similarly incharge check post Jeori

should also check all vehicle carrying minerals i.e. Sand, Bajri and Stone etc. for 'M' Form and a record of all such vehicle checked should be maintained at check post's register and fortnightly report may be submitted to Range Officer, Rampur. With regard to control of mining activities in private areas the forest department has no role to regulate mining on such lands in order to ensure availability of stone/minerals for various department activities except transportation of forest produce under Section 41/42 of Indian Forest Act, 1927. However, in order to control soil erosion and conservation of forests, notification issued by the Land Preservation Act, 1978 for felling of trees regulation must be followed. The cutting/felling of trees in private land could be done in accordance with the rules after approval from the Govt. in compliance of the Hon'ble Supreme Court's order dated 12-12-1996 and H.P. High Court order dated 28-5-2008.

9.7.16 Monitoring and review of the mining lease area

Monitoring and review of the mining lease area shall be conducted by Geologist/Mining Officer.

It shall be ensured by the concerned Mining Officer that possession of land or area is handed over to the lessee only after permanent boundary pillars are raised. In fact this condition is being now incorporated in the grant order by Geologist, Department of Industries, H.P.

The renewal of the mining lease shall be based on monitoring and review reports of the officers of Geological Wing, Department of Industries, and H.P.

9.8 Poaching

9.8.1 General

Poaching of animals for meat and sometimes as trophy in the division are not very common. Presently only three wild life offence cases are under trial in the Court for illegal possession of animal skin and poaching incident etc. The H.P. Wild Life (Protection) Rules, 1975 provides shooting and Hunting Rules which are applicable to the RF and DPF in the State vide Notification No. 6-9/73-SF dated 24-2-1975. Now hunting and shooting in schedule I, II, III & IV is prohibited under the Wild Life (Protection) Act, 1972. Hence, there is a complete ban on hunting in the State since 1983 vide H.P. Govt. Notification No. 6-2/73-SF-II dated 24-5-1983. In certain cases where the wild animals becomes a man eater, dangerous to human life or is so disabled or diseased as to be beyond recovery then it can be killed any wild animal specified in schedule after seeking permission from the Chief Wild Life Warden to this effect under Section 11 (1)(a) of the Wild Life (Protection) Act, 1972 that such animal cannot be captured, tranquilized or translocated. And under Section II(1) (b) a person having obtained a permit

therefore would hunt any wild animal specified in scheduled II, III & IV, when it has become dangerous not only to human life, but also to property including standing crops on any land or is so disabled or diseased as to be beyond recovery. It is true so far as wild animal specified in schedule-I, is concerned a person cannot obtain permission to hunt it even if it becomes dangerous to property including standing crops on any land from that it is not possible to say that it has abridged the right to protect one's property from wild animal specified in schedule-I under the Wild Life (Protection) Act, 1972.

9.8.2 Detection of Offences

Section 50 of the Wild Life (Protection) Act, 1972 makes it clear those police officer or forest officers are empowered to investigate the offence and search and seize the offending articles. Section 51 provides for penalties which would indicate that certain offences are cognizable offences meaning thereby police officer can arrest without warrant. Sub Section (5) of Section 51 provides that nothing contained in Section 360 of the Cr. P.C or the Probation of Offender Act, 1958 shall apply to a person convicted of an offence with respect to hunting in a Sanctuary or a National Park or of an offence against any provision of chapter-5A unless such person is under 18 years of age. The aforesaid specific provisions are contrary to the provisions contained in Cr. P.C and that would prevail during the trial court. However, from this, it cannot be said that operation of the rest of the provisions of the Cr. P.C are excluded. The power to compound offences is also conferred under Section 54 of the Act provided that no offence, for which a minimum period of imprisonment has been prescribed in Section 51, shall be compounded.

9.8.3 Preventive/Remedial Measures

The cases pertaining to poaching of wild animals be dealt with promptly under the Wild Life (Protection) Act, 1972. The Wild Life (Protection) Act, is not self sufficient for dealing will all legal problems relating to poaching & trading of trophy etc. so it becomes quite often necessary to invoice the provision of Indian Penal Code also. This open nation forest wealth including wild life can be saved by adopting various following measures.

- i) To check the illegal poaching or trade of illegal timber or smuggling within the division, two more check post one at near Sharaikoti Temple, Kuhal and other at Nogli near Forest Rest House at Nogli must be created through NPV budget during the 1st two years of Working Plan period.

- ii) To check the illegal trade of timber and poaching, R.O and Patrolling staff must be provided vehicle, mobile phone and gun etc. and also immunity under Section 197 of Cr. P.C. By an order of the Supreme Court dated 22-8-1997, it was directed that in order to effectively control the growing menace of poaching in the Sanctuaries/National Parks or forests, the Central Govt. as well as the State Govt. should ensure that the forest guards in Protected Areas are provided modern arms. Communication facilities viz, wireless sets and other necessary equipments in that regard within six months from the date of order.
- iii) DFO/ACF/RO must conduct night raids/Nakas to check illegal trading & poaching in a planned manner regularly especially on Nepali Majdoor, Hydro power projects employee and labour and also any suspected person in forest.

9.8.4 Penalties, Bail and Cognizance of Offences

Any person who contravenes any provision of this Act or any rule or order made thereunder or who commits a breach of any of the conditions of any licence or permit granted under the Act, shall be guilty of an offence against this Act, and shall, on conviction, be punished with imprisonment for a term which may extend to three years or with fine which may extend to twenty five thousand rupees or with both order Section 51 of the Act.

Provided that where the offence committed is in relation to any animal specified in schedule I or Part-II of schedule-II or meat of any such animal or animal article, trophy or uncured trophy derived from such animal or where the offence relates to hunting in a Sanctuary or a National Park or altering the boundaries of Protected Areas, such offence shall be punishable with imprisonment for a term which shall not be less than three years but may extend to seven years and also with fine which shall not be less than ten thousand rupees.

Provided further that when any person accused of the commission of any offence relating to schedule-I or Part-II of schedule-II or offences relating to hunting inside the boundaries of the Protected Areas, is arrested under the provisions of the Act, then notwithstanding anything contained in the Cr. P.C, 1973, no such person who had been previously convicted of an offence under Section 51-A of the Act shall be released on bail unless _____

- (a) The Public Prosecutor has been given an opportunity of opposing the release on bail, and
- (b) Where the Public Prosecutor opposes the application, the court is satisfied that there are reasonable grounds for believing that he is not guilty of such offence and that he is not likely to commit any offence while on bail.

The Act is intended only for the protection of the wild animals. Thus, there is no major differences in respect of such offence in “Protected Area and Non Protected Areas” except bail granting procedure etc. under the Wild Life (Protection) Act, 1972. Cognizance of offence order Section 55 of the Act should be taken only a complaint filed by an officer not below the rank of Deputy Conservator of Forests or DFO or any other officer authorized in this behalf by the State and Central Government otherwise, no court shall take cognizance of any offence against the Act.

CHAPTER X

THE JFM (OVERLAPPING) WORKING CIRCLE

10.1 General Constitution

This Working Circle includes all DPFs and others the forest areas or forest land near to the habitations, where active participation of local people has been taken in the past along with potential new areas. It is an overlapping Working Circle and fulfils the objectives of the National Forest Policy 1988 by involving the rural communities living close to forests eco-system. This Working Circle also lays emphasis on man-forest interface and canalizing human resources for conservation of forests and vice versa. The National Forest Policy, 1988 emphasis on participatory management of forests and wild life. It also specifically mentions that to achieve the objectives of the Policy, a massive people's movement should be created, especially involving women. In pursuance of National Forest Policy, the Govt. of India, on 1st June 1990, issued policy instruction to all State Governments supporting greater participation of village communities in regeneration, management, protection of forests and conservation of natural resources. This led to the initiation of Joint Forest Management (JFM) programme and importance of the programme is evident from the fact that the Government of India has constituted a "JFM Network" with the Inspector General of Forests, Govt. of India as the Chairman. The objectives of the network are:

- (i) to act as a regular mechanism of consultation between various agencies engaged in JFM work in the country, and
- (ii) to obtain constant feedback from various stakeholders on the JFM programme for proper policy formulation and suitable direction to States.

In keeping with the above notification, the GOHP has formulated policy vide its No. Forest (C) 3-4/80-V dated 12-5-1993 on the involvement of people for participatory forest management. Ever since the village communities are being involved by the forest department to further the aim of protection and management of forests and continuation of forest cover. The recognition of the link between socio economic incentives and forest development has been singularly responsible in eliciting the community participation. A new resolution of the Ministry of Environment and Forests, Govt. of India, dated February 21, 2000 has further strengthened the JFM programme are:

- (a) Legal backup to the JFM committees

(b) 50% members of the General Body should be women.

(c) Extension of JFM in good forest areas, with sharper focus on activities concentrating on NTFP management.

Though, no separate and exclusive Working Circle has been proposed in this Plan under which the JFM activities are to be confined but this Working Circle overlaps with other Working Circles of this Working Plan. It is suggested that all the activities as far as possible, should be carried out after involving local people but the general prescription of Working Plan will be adhered to. The species of local importance should be preferred in afforestation activities which should have meet out the basic needs of local people and their livelihood issues.

10.2 Emergence of Joint Forest Management

In the colonial India the princely rulers proclaimed the power of eminent domain over the territories they ruled and specified hunting rights for themselves in the forests. Traditional customary rights of local people living in and around forest were respected and this enabled them to utilize the produce of the forests for their livelihoods. During the 19th and the early part of the 20th century these rights were modified, reduced and in some cases eliminated at the state to cover control of forest resources. This was finally consolidated in 1927 with the enactment of the Indian Forest Act, which is still in force today.

A related development was the emergence of “Scientific” forest management by the state, which had the primary objectives of production forestry. Local people’s needs were provided through rights. The use of forest resources has also been influenced by the rapid increase in population in recent decades. With the explosion of population as well as expansion of industry, demand of timber and fuel wood increased dramatically, resulting in uncontrolled exploitation of forests at an ever increasing pace. By the seventies, it was understood that treating forests products as a national resources for industrial development without proper concern for local demand would result in total destruction of forests, which, in turn would endanger environmental security of the country. So, a modified approach to forestry on the international scene, which in India was labeled Social Forestry, was adopted in the 1970’s. This attempted to address the forest based needs of local people more directly but did this within the existing framework of State control through the forest departments. The forestry sector was dominated by this approach to forestry which can be rather starkly characterizes as forestry for the people by the State on the People’s land. Although not as successful as anticipated, many valuable lessons were learned and

this Social Forestry legacy is being transformed into a more meaningful partnership between local communities and the forest departments as Joint Forest Management.

As pressure on the forest resource mounted in the 1960's and 1970's, foresters in different parts of India realized that conditions had changed to such an extent that the forest protection model they had inherited would not work. Rather than protecting the forests from the depredations of the local people (as the model described things) this minority of forward looking foresters realized that the local communities had to be directly involved in and benefit from forest protection and management.

The lead in experimenting with this was taken during the 1970's in West Bengal, Haryana and Gujarat where forests protection communities were formed and given the responsibility of protecting degraded forests, department land from illegal cuttings, fires, over grazing, and encroachments. In return they were granted access to a range of non timber forests products and in West Bengal to 25% share of the returns from the coppice fuel-wood harvest in regenerated Sal forests. Other protection movements also developed at the same time in Uttar Pradesh, and many tribal forest protection communities emerged spontaneously in part of Bihar, Orissa and M.P.

The successes that these "experiments" generated gradually begin to influence opinion throughout in India and the forestry debated reached substantial proportions in the 1980's. This culminated in the issue of a new commercial value and concentrated on ensuring environmental stability, maintenance of ecological balance and specified that the domestic requirement of tribal and the poor living within the vicinity of the forests should have the first charge on the forest produce.

In 1990's this was complemented by another Govt. order directing all states to undertake participatory forest management on degraded forest land based on the experiences of states such as West Bengal, Gujarat and Haryana. This order also encouraged forest departments to involve NGO's as intermediaries and facilitators.

This was the first time that the rapidly developing Joint Forest Management had been given official sanctions and marked a watershed in India's forestry development. Since that time 15 states have issued Govt. orders for the implementation of JFPM programme. These JFPM initiatives have many of the following characteristics in common:-

- (i) The formation of local community based institution to participate with the forest department in forest management decision making;

- (ii) Rules and regulations about responsibilities and sharing decision making;
- (iii) Involvement of NGOs particularly in documentation, training, research and community level organizing and facilitation;
- (iv) Reorientation and training of forest department staff and local communities.
- (v) The joint preparation of micro-plan for forest management which often on the basis of formal agreements between the forest department and the local institution;
- (vi) The formation of state level working groups to co-ordinate their Joint Forest management;

10.3 The Concept of Joint Participatory Forest Management

The concept of Joint Participatory Forest Management is an intervention to evolve organised and collective thinking on the issues of forest management keeping in view the fact that the forest resources are limited and the claim over these are varied. No single solution can satisfy the needs of all. The philosophy aims at involving all the stakeholders in resource generation activities through motivation, active involvement in the process of management and sharing of benefits through adequate institutional arrangement.

Efforts were made under the Social Forestry project in the late eighties to raise rural fuel wood plantations to cater to the requirement of people, but in this scheme only limited success was achieved in Apple belt areas of Himachal Pradesh. But in the lower areas this Social Forestry scheme has achieved better results. In pursuance of this project of “Van Lagao Rozi Kamao” scheme launched by Forest Department during the early nineties also could not take off very well in apple belt area as compared to low lying areas of H.P.

The present Rampur Forest Division was constituted by bifurcating the erstwhile Kotgarh Forest Division into two separate Divisions of Rampur and Kotgarh in 1984. The total geographical area of the Division is 1024sq. Km. whole of the tract drains into river Satluj. Machadda, Nogli, Manglad, Ghanvi, Koot and Suga are the main side streams confluence in the river Satluj and dividing the whole division into well defined sub-catchments. The tract corresponds to the Rampur Tehsil and Nankhari Sub-Tehsil of Rampur Civil sub division, District Shimla, H.P.

10.4 Joint Forest Management in H.P

In H.P. World Bank aided social Forestry projects known as umbrella project was launched by the year 1985. Under this project a new scheme “Van Lagao Roji Kamao” was launched in the year 1992 as participatory mode of management in which Van Sewaks were

selected from amongst poor families and a plot of 2 ha were allotted to them for afforestation on forest Govt. land. Besides these pressure cookers & chullah were distributed or subsidized rates to the local people as fuel saving devices. This scheme could not take off very well in apple belt area of HP, but in the lower areas this scheme has received good results.

The Sanjhi Van Yozna as a community based afforestation scheme was launched by the HP Govt. on 25th December, 1998. Under this scheme the communities as well as the NGOs are to be involved in the protection of the existing forest wealth and also to participate in holistic rural development. The main objects of this scheme are:-

- a) Involvement of grass-root level institutions e.g. Gram Panchayats, Mahila Mandals, Yuvak Mandals, VFDCs, NGOs etc. in eco-restoration.
- b) Regeneration of degraded forest areas through community involvement.
- c) Creation of social assets for the benefit of the communities.
- d) Increasing the productivity of the forest areas by improvement of nursery stock through adoption of modern nursery techniques.
- e) Re-orientation of forest staff for facilitating community participation.
- f) Generation of employment opportunities in rural areas.
- g) To bring more area under tree cones by encouraging rehabilitation/plantations of private waste lands on cost/benefit sharing basis.

In support of the participatory management the State Govt. has issued a notification vide No. Fts.II (B) 15-10/87 dated 23rd August, 2001, called the Himachal Pradesh Participatory Forest Management Regulations, 2001, which has been reproduced as *AppendixNo.-XXXVII*. These rules shall be applicable to such government land and forests, including common lands, where participatory management is envisaged.

10.5 Formation of Forest Development Agency (FDA)

The Ministry of Environment and Forests, Govt. of India has launched new scheme called Samanvit Gram Vanikaran Samridhi Yojna (SGVSY) under the overall supervision of the FDA (Forest Development Agency). Under this new scheme committee will form a federation and a proposal in the form of project for:-

- i. Integrated Afforestation and Eco-Development Project.
- ii. The Area Oriented Fuelwood and Fodder Project Scheme.
- iii. The scheme for Development on Non Timber Forest Produce including Medicinal plants.

- iv. Scheme for Associate of Scheduled Tribe and Rural Poor in regeneration of degraded forests.
- v. Eco-Development in and around National Parks and Sanctuaries.
- vi. Plantation programme through Ecological Task Forces will get discontinued.

10.5.1 Objectives of FDA

The main objectives of the scheme are:

- i) Arrest and reverse the trend of forest degradation due to the unsustainable removal of forest products by communities living in and around the forest by making the community responsible for management and monitoring of the forest;
- ii) Provide sustainable and assured employment opportunities to the tribal and other weaker sections of the rural populations in such areas all around the year; and
- iii) Create permanent community assets for each population, which would contribute to overall eco-development in the target areas.
- iv) To involve the village community for execution of the scheme and make them to exercise fully participatory management.
- v) Create an effective mechanism in order to ensure that the medium of the FDA is used to reach the beneficiaries by other government departments also.

10.5.2 Silent Features of FDA

- i) The scheme will aim at providing employment to the local village community through the afforestation programme thereby creating valuable forest assets for the village community and other permanent community assets for overall eco-development of the target communities/villages.
- ii) “Federation of Forest Committees (F.D.Sc.)” is proposed to be constituted at the Territorial Forest/wildlife Division level. Each of these Divisions will constitute the planning unit or the project area for the Forest Development Agency (FDA). On an average, about 25-30 village would be covered under the SGVSY within the jurisdiction of each FDA and all households needing income augmentation will be targeted. In selecting the village, the criteria will be:
 - a) Preponderance of SC/ST population.
 - b) Willingness of people to participate in forest conservation efforts.
 - c) Existence of FPCs/EDCs
 - d) Extent of degraded forestland.

- e) Degree of dependence on biomass resource, etc.
- iii) SGVSY will be a demand driven scheme with no fixed earmarking of funds for any particular State or FDA. The requirements of funds would emerge through the micro-planning and Participatory Rural Appraisal (PRA) exercise to be undertaken by each FDA for preparation of an integrated project. The project would seek to establish a link between the level of dependence of the village on forests, the absence of sustainable livelihood opportunities, the need for creation of community assets and requirement of ecological regeneration to be undertaken in and around the forest areas.
- iv) The creation of FDA and adoption of JFM Resolution will be a pre-requisite for the introduction of this scheme. Each FDA would be headed by the respective Territorial/Wildlife Conservator of Forests with the respective Territorial/Wildlife DFO as its Member-Secretary-Cum-Chief Executive Officer. The other members will include representatives of the village forest committees (VFDs/Eco-development committees (EDCs)). The FDA will be registered as Federation of Village Forest Committees/Eco-Development Committees under the Registration of Society Act, 1860. Each village within the jurisdiction of village forest committee (VFC/Eco-Development Committee (EDC)) will be constituted in each village following bodies. The local forest block officer/Forester will be ex-officio member Secretary of the VFC/EDC.

Executive body member of the FDA shall be ex-officio member of the General Body of FDA, which would be headed by the respective Conservator of Forests. The SGVSY will be implemented under the overall supervision of the FDA at Division Level and in the State Level for implementation, monitoring and evaluation State Forest Development Agency is constituted by the State Govt., the VFDs/EDCs will be responsible for actual implantation of various activities in the field. The FDA at Division level will co-ordinate the project and provides technical and administrative guidance throughout its implementation of programme.

Periodical evaluation studies on the implementation of SGVSY should be got done by the NAEB, Govt. of India through reputed institution, organization and NGOs and the issues which emergence from such evaluation and monitoring, should be used for taking remedial action for improving the implementation of the project.

10.6 Special Objective of JFM

The basic objects of Joint Forest Management are given below:-

- (i) To evolve consensus on the basic issues to conservation of soil, water and forest resources.
- (ii) To provide effective and immediate treatment for barren, wastelands, or degraded protected forests situated near villages through protection, afforestation, pasture development, soil conservation by active participation of local people.
- (iii) To maintain the environmental stability through preservation and wherever necessary, restoration of the ecological balance that has been adversely destroyed by depletion of the forests through involvement of local people in resource management.
- (iv) To augment fuel wood, fodder and small timber production for use by local people.
- (v) To convert a hostile population living in the fringes of forests areas into friends and ultimately into resource managers and resource users.
- (vi) To evolve policy and law, this will help in the continuity in the planning and implementation.
- (vii) To make environment conducive for the adoption and implementation of the JFM in the State and Area.

10.7 Implementation of JFM in Rampur Forest Division

The JFM approach has been implemented in this division under different projects viz social forestry umbrella project, Sanjhi Van Yojna, and FDA etc. The micro plans were prepared in accordance with the project philosophy and works executed through VFDC/VFDS, JFMC etc.

The activities like soil conservation, afforestation, village development activities, fire protection, grazing etc. have been under taken in the past but almost in all case the participation of local remained up to fund flow only. Most of the committees are totally inactive. There is a need to revive, activate and involve this rural community in forest management activities.

The Sanji Van Yojna and FDA Project were also implemented in this division. Under Sanji Van Yojna **14** numbers of VFDS and under FDA **56** number of JFMCs were constituted and registered as per instructions. The works were executed as per micro plan and MOU. Out of total **56** JFMC committees **38** JFMCs are totally inactive, at present only **18** JFMCs are active and they are provided funds upto 31st March 2013 to carry out the works as per approved micro plans. The details of existing **18** JFMCs are appended as *Appendix No.-XLVI*. There is a need to revive and activate of JFMCs which have become inactive for the past quite some time. Efforts may be made to identify the potential areas where more JFMCs can be constituted for adopting JFM approach for the protection and management of the forests after taking confidence of

Panchayat concerned. Total expenditure incurred w.e.f. 2003-04 to 2011-12 is tabulated in table No.-10.1

Table No.-10.1

Detail of expenditure incurred under FDA in Rampur Forest Division

10.7.1 Constraints to Participatory Management

Years	Added Natural Regeneration		Artificial Regeneration		Pasture/ Silvo-pasture Development		Regeneration of herbs & shrubs of medicinal value		Other expenditure	G. Total	
	Area in hac	Expenditure (Rs lac)	Area in hac	Expenditure (Rs lac)	Area in hac	Expenditure (Rs lac)	Area in hac	Expenditure (Rs lac)	Expenditure (Rs lac)	Area in hac	Expenditure (Rs lac)
2003-04	88	316190	123	618146	88	357803	37	162992	2518532	336	3973663
2004-05	92	581450	121	1552359	101	530620	33	445737	2804605	347	5914771
2005-06	154	972274.5	157	2555911	53	447495	102	1239906	2744057	466	7959644
2006-07	125	367067	310	1627006	37	186791	76	410454	812957	548	3404275
2007-08	200	264750	112	383405	69	128777	80	404155	137769	461	1318856
2008-09	185	755060	102	1532935	54	376665	70	608789	2268546	411	5541995
2009-10	102	1372114	90	1597791	53	429815	30	695650	375731	275	4471101
2010-11	112	817209	31	476494	13	132115	0	118250	842243	156	2386311
2011-12	10	415924	0	628876	0	253460	0	534875	140225	10	1973360

(Source:- Record of Rampur Forest Division, Rampur)

10.7.1 Constraints to Participatory Management

There is a general lack of enthusiasm in embracing the idea of shared management in the forestry sector by the people and though some inroads have been made with the communities, a lot more thrust needs to be given to popularize the concept among the masses. The causes for this lack of encouraging response among people are:-

- There is a general apathy of the youth to participatory programmes related to rural sector because with acquiring college education all youth strive for white collared jobs and anything that keeps them back in villages does not enthuse them.
- Lack of proper education of the government programmes and insufficient extension activities of the forest department.
- Long gestation period of forestry activities.
- Too much dependence of the public on government and subsidy, cost sharing in such activities is generally not accepted.
- Reluctance of government functionaries to hand over control of resources to people or even partially share their “power” with the people.

- f) Lack of proper legislation on participatory management and usufruct sharing.
- g) Need to promote income generating activities under JFM programmes.
- h) Frequent changes in schemes and discontinuation of old schemes which leads to mistrust of people in government,
- i) JFMCs members found difficulties in organizing and maintaining the paper works like opening accounts in banks, audit work, submission of progress report to FDA and similar other activities as the formats provided to them were very time taking and clumsy.
- j) Political rivalry at village level among communities created hurdles in smooth implementation of the projects.
- k) Flow of fund was not smooth. This resulted in late payment of wages to workers. This created unnecessary hassles and embarrassment to the project implementing authority. On the other hand it was difficult to hire village labourers on the prescribed wage rate of the government. Majority of labour community demanded increase in wage rate.
- L) Official bottleneck at both ends namely, State level as well as NAEB level created unwarranted delay in paper work and fund release.

10.8 Scope of JFM

10.8.1 There is tremendous scope for the JFM activities in the division. All the forests allotted to the Plantation, NTFP and Forest Protection Working Circles are suitable/potential sites for afforestation, soil conservation, grassland improvement, NTFP development besides other forestry operations.

10.8.2 Identification of JFM Areas: The degraded forest areas as well as community land located in the vicinity of the villages are potential sites for JFM implementation. The deficiencies and strengths of these with regard to soil condition, water availability, grazing pressure, fuel wood production and requirements need to be understood. The Divisional Forest Officer can include or exclude any areas while implementing the JFM approach with the consultation of Panchayat concerned. The following broad guidelines have been devised for selection of potential (pilot) area:

- i) Re-orientation of front line staff for facilitating community participation in forest protection & management
- ii) Interest of local people in involvement in joint forest planning, management and decision making.
- iii) Existence of ongoing 'successful' collective land management systems;

- iv) Resource poor areas where there are constraints on the forest and land farming system in term of access to grazing and forest products;
- v) Relatively homogenous local communities.

10.8.3 Potential Activities of JFM Committees

The JFM/PFM committees are the future agencies of the forest development, conservation and expansion. The potential activities to be executed through the JFMCs can be:

- a) Afforestation activity (both departmental, MGNREGA and Green India Mission).
- b) Soil and water conservation through treatment of macro and micro watershed in the catchments.
- c) Recharging of water bodies like Bawaries, Water pond and underground water.
- d) Minor construction works of inspection and bridle paths and buildings.
- e) Awareness programme for forest protection, fire protection, propagation of medicinal herbs on large scale.
- f) Livelihood options like Bee keeping, Mushroom cultivation, vermin-composting etc., through effective training.
- g) Collection, value addition and marketing of NTFP.

10.8.4 Preventive/Remedial Measures

- i) To ensure more participation of the local community, there are needs to give training on plantation techniques, protection; of the fenced areas for this purpose special funds need to be created at the JFMC level. To provide technical knowhow to the executive body of JFMC to carry out its responsibilities.
- ii) Field staffs of the forest department are also required to be trained regarding the working procedure of the FDA. Field level training of front line staff should be imparted to through participatory workshops which will encourage and experience based learning. A series of workshop should be organized at different level such as Circle level, Divisional level, Range level, and Beat level.
- iii) The local people are linked with the FDA programme just to earn the wages. It is suggested that more sensitization programme may be conducted at JFMC level. So that local community will come forward to protect the enclosed area from grazing and fire incidence.

- iv) The local people can be given training on forest based minor enterprises. And involvement of grass root level institutions e.g. Gram Panchayats, Mahila Mandals, Schools, VFDCs, NGOs etc. in Eco-restoration.
- v) Women participation in the FDA works must be given priority.
- vi) The field staff and JFMC member's needs to be given training on maintenance of record and account to avoid any litigation or audit point of view etc.
- vii) The exposure visit of the farmers needs to be conducted where Kandi Project, watershed, any other people participating project is successful in State or outside the State.
- viii) Medicinal plants needs to be given due importance.
- ix) Local people are imparted training in nursery growing of forestry and M&AP, so that they can sell the same to the Forest Department and generate income for their families.
- x) Proper documentation regarding all the different project activities along with photographs is properly maintained to compare the impact assessment.
- xi) Fire case shall be registered with the police under Section 435 of IPC to punish unscrupulous persons who set the fire to forests or plantation area willfully, and with ulterior motives.
- xii) Number of assets of immediate needs have to be created through EPA in all the villages.
- xiii) Legal back up to JFM Committee.
- xiv) Linking village Protection Committee with industries for the sale of produce or JFM product etc.
- xv) Detail projects to be prepared for assistance under FDA, MENREGA and Green India Mission for JFM Areas.
- xvi) Silviculture prescription given in the Working Plan shall be followed for the management of JFM forests through sustainable stake holders etc.

10.8.5 Strengthening of Joint Forest Management

- (i) JFM should focus in and around pockets of poverty i.e. remote forested areas (better forest) and where livelihood dependence on forests is high. This would entail several genuine joint management activities (other than plantation) like collective protection against illicit felling, fires, poaching etc. Issues of Rights, equality and benefit sharing are better addressed and conflicts resolved.
- (ii) In participatory approaches the process is more important than achieving targets. Choosing and regularly training the right persons for the job is therefore critical.

- (iii) Sharing of removals, including resin, intermediate and salvage fellings with VFDSs are necessary to establish long term stake of local communities in JFM.
- (iv) Continual policy and rules adjustment and calibration to promote better market returns for wood and non-wood base enterprises. Example, the recent decontrol of bamboo trade and transit and efficient markets for value added products.
- (v) Local leadership has to play a critical role in JFM. The successful examples of JFM or CFM show that local leadership roles have been crucial in making the change. It could be an enlightened, accepted local person, and elected representative, a dedicated NGO/CBO or even a committed forest officer. This is also important for sustainability of groups.

10.8.6 Role of Women in JFM

Women in general and those of rural areas in particulars play an important role in maintaining the family and thereby improving the village economy. It is often said that if a women is developed, the entire family is developed because it is only women who is most intimately connected or dependent on forest for their basic needs. Thus, the woman as a mother in the house-hold assumes the role of efficient manager and undertakes various functions for the welfare of the family.

The entire village abutting the forests actually depends on the forests for the tree based needs in the form of small timber, fuel, fodder, green leaf manure etc, unlike the women in urban area; the rural women are solely dependent on the forests for their fuel needs to a very large extent. It is the woman who collects fuel wood and dried sticks for cooking purposed from forests. Many women also bring fuel wood from forests for their sustenance through wage earning, as they do not have any other alternative sources of employment. The rural women take care of cattle grazing in the forests. In many parts of the country women collect potable water from perennial jungle streams passing through the forests.

The women's attitudes towards forests has been changing conservation strategies at the National and State level. In the Himalayan region, rural men are very much interested in raising pine trees so as to get quick money at the time of harvests. On the other hand the women are interested in raising broad leaved trees like, *Olea cuspidate*, *Acer* species, *Alnus nitida*, *Grewia*, *Oppositifolia*, *Pistacia integerrima*, *Albizia stipulaata* etc. which improves the diversity and result in perennial flow of water in mountain streams in the region and the woman have succeeded in this sphere of activity.

In short, women can play a dominant role in the implementation of J.F.M. because of their intimate association with forests. They depend on forests for various livelihood security services; they must get equal representation in the village Forest Councils and have a choice in the decision making viz. in the selection of species and other silvicultural measures for upgrading the degraded forests vegetative cover and bio-diversity.

10.9 Project Impact & Benefits

This project will maximize and sustain the impact by developing sustainable institutional Framework and capacity building at community level and addressing issue like excessive biotic pressure for fuel wood, fodder, grazing, timber, large population of unproductive cattle unstable terrain and decreased forest cover that have led to unsustainable and inequitable exploitation of forest resources.

This project will have a positive impact on the regeneration and sustainable exploitation of medicinal herbs by focusing on their in-situ as well as ex-situ propagation and scientific harvesting. This project will also have a positive impact on reversal of land degradation process by control of overgrazing, bio-diversity conservation and soil conservation.

By developing fuel wood and fodder plantations on the barren lands near the village, this project will reduce the pressure on existing forests for their products, thus revitalizing these forests to good health.

The plantation so raised under the project will increase the forest cover thus progressing towards the goal of bringing two-thirds of the area in the hill under forest cover as envisaged in the National Forest Policy 1988.

This project will directly benefit poor forest dependent communities in the project area by evolving them to improve their livelihoods through increasing sustainable yields from forest lands and through developing other livelihood options which will ultimately reduce their dependence on the forest resource.

By the end of the project community level institutions in the shape of JFMCs will be in place to manage natural resources through linkages with forests and other line department. This project is likely to have a positive impact on the environment if the improved or alternative livelihoods are based on sustainable utilizing and access to natural resources.

10.10 Monitoring & Evaluation

The progress of implementation of the FDA will be monitored continuously through reports and physical verification of forest works. At the Centre Govt. level the project will be

monitored on the bases of quarterly progress reports and through periodic field inspection by the officials of NAEB or its authorized evaluation agencies. In Rampur Forest Development agencies the JFMCs works have been evaluated in the past by Regional Centre NAFB, Ministry of Environment and Forests, Dr. Y.S. Parmar University of Horticulture, Forestry Nauni Solan H.P and by Agricultural Finance co-operation Ltd. Northern Regional office B-1/9 Janakpuri New Delhi-110058. Thus monitoring and evaluation could be taken in hand as per direction of the NAEB, Govt. of India from time to time.

CHAPTER –XI

THE WILDLIFE MANAGEMENT (OVERLAPPING) WORKING CIRCLE

11.1 General Constitution

This Working Circle is constituted for emphasizing the necessity of conservation of wildlife and collection of information for better management of wild life. The whole tract dealt under this Working Plan is ideally suited for a variety of wild animals and birds since the forests are distributed from low elevation to the high Alpine pastures and snow bound areas. Therefore, this Working Circle overlaps all other Working Circles. In present scenario, wild life includes Faunal as well as floral life on the Earth. It is a biodiversity as a whole, which makes wild life's worth. Wildlife conservation cannot be executed in isolation. Areas outside the protected area network are often vital ecological corridor links and must be protected with a view to ensuring the ecological and environment security of the State. Thus conservation efforts in Rampur Forest Division by virtue of its proximity to Daranghati and Rupri Bhaba wildlife sanctuary assume profuse significance. The forests of Rampur division are lying contiguous to Daranghati and Rupri Bhaba wild life sanctuaries which are rich in wildlife such as Bhagwat, Runpu, Dhara, Dhauna, Tharjhot, Rashi Thach, Jangdhar, Darkali, Keuncha, Kut, Rawancha, Nanti, Sagori, Phancha, Sarpara and Majbon etc. As these forests are not easily accessible and are far away from habitation, wildlife by and large finds a free and peaceful life in these forests. There is frequent seasonal migration of animals in large herds from the above sanctuaries to these areas and vice versa. The trees and lush vegetation present in these reserves along with the perennial water sources and grasslands create an ideal habitat for wildlife especially for Western Tragopan, Himalayan Tahr, Musk deer & Emu etc.

11.2 Importance of Wild Life

Due to the spread of education and awareness, there is a growing concern for protection and preservation of wild life and there is a steady opposition to their killing and to the destruction of their habitat. With the increased availability of information on biodiversity, a wide spread and intelligent recognition of the immense value of the myriad species of plants and animals to the humankind has been established. Forests provide an excellent opportunity to a man to study living beings in their natural environment. In addition to this there are material consideration as well, especially ecological. These animals and plants through the intricate food web maintain the delicate balance of nature and any breach in this chain can cause over-

population of any one species, which may prove detrimental to human interests. Wild life is a source of sport and enjoyment to people and fetches revenue to State as well. If the people are led to know the importance and worth of wild life they will appreciate it as an asset and put in efforts to conserve them.

Faunal and Floral life (Biodiversity) play a significant role in maintaining the balance of nature. The value and importance of it from scientific, aesthetic, economic and recreational points of view is immense and is recognized the world over and therefore, adequate protection, and the scientific management of it is absolute necessity. In wider perspective, it is Biodiversity conservation and development and also its further research, which makes it more important.

This region as a whole has come under the enormous pressure from biotic interferences' both from the ongoing practice of traditional livelihoods, such as seasonal grazing, hunting and collection of medicinal plants as well as more recent developments such as: farming of temperate cash crops, commercial forestry, tourism, and hydro electric power development.

11.3 Distribution of Wild Life

The distribution of wild life has been described in details in the beginning under Chapter II B "Fauna" Part I of the Plan.

11.4 Special Objects of Management

- i) To protect the diversity of wildlife in the division by appropriate habitat improvement operations.
- ii) Ecological security of the Tract by conserving wildlife outside the protected area.
- iii) Community support for wildlife conservation
- iv) To reduction in the dependence of local communities on the important habitat to avoid human-wildlife interface.
- v) To Orientation and sensitization of the Territorial front line staff towards the wild life conservation, protection, monitoring & management.
- vi) To educate staff and public in the management of wild life.
- (vii) To protect and improve upon existing population of endangered species of wild life both faunal and floral found in the tract.

11.5 Management Imperatives

11.5.1 Ecological Security: For long term ecological security of the tract, the development agenda must recognize the imperative of identifying and protecting natural ecosystems from

over-exploitation, contamination and degradation. Short-term economic gains must not be permitted to undermine ecological security.

11.5.2 Peoples' Support: Local communities traditionally depend on natural biomass and they must, therefore, have the first lien on such resources. Such benefits must be subject to assumption of a basic responsibility to protect and conserve these resources by suitably modifying unsustainable activities. Conservation programmes must attempt to reconcile livelihood security with wildlife protection.

11.5. 3 Human Wild Life Conflict

The Rampur Forest Division faces the problem of mainly three types of wild animal's depredation such as Black bear, Leopard and Monkey. Such incidents are consistently increasing and pose a great threat and challenges in wild life management.

i) **Asiatic Black bear (*Ursus thibetanus*)** - Human conflicts is not a local, small phenomenon; but an issue that spans a diverse array of geographic and human demographic contexts. The increase in number of black bear-human conflict cases is due to competition for resources at different levels. Bear populations usually require large areas of land to survive. They typically compete directly with people for resources such as space, food, security and cover. Almost all bear species kill or injure livestock, damage agricultural or horticulture crops, or otherwise directly compete with people.

Black bear is a forested animal found in areas with dense canopy cover with limited human disturbance. Black bear is typically nocturnal, although occasionally it is active during day time. In Eastern Himalayas, black bear tend to be active year-round; but in North-western Himalayas it undergoes hibernation during winter. It spends this period of hibernation in dens, such as hollow tree, caves and holes dug into the ground. Black bears in North-western Himalayas may remain in their dens for 3 to 5 months. They breed during the summer months, usually in late June or early July and cubs are born between late December and early February, while the female is still dinning. Black bears are omnivorous in the food habits, foraging largely on fruits and to some extent on leaf material, grasses, insects and other animal matter. The movement and ranging of the black bear is largely dependent on the quality, quantity and distribution of food which in turn is influenced by topography and climate. In the tract of this division especially dense canopy forest cover area, when there is shortage of fruits in certain periods of time they become bolder and travel more widely in search of food towards crop lands so human encounters with bears are more frequent during this period.

ii) Leopard

Leopard is the most widely distributed large cat in India but due to expansions of human influence and ever increasing pressure on natural resources has greatly intensified the issue of human leopard in a wide variety of situations. Human-leopard conflict is a complex issue influenced by political and social attitudes, the biology of the species, and management action. Effective management of conflict will have to strike a balance between minimizing serious conflict (attacks on people) and the long-term conservation of the leopard species. Although the leopard is commoner and more resilient than other large cat species that occur in India, it is poached in the largest numbers to meet the demand of the illegal wildlife trade. The leopard is very adaptable, and can live close to human habitations. The presence of a species like the leopard in a human dominated landscape will invariably lead to some predation on domestic animals. Carnivore density is known to be dependent on prey density and the leopard is no exception.

iii) Monkey

Monkey is the most widely distributed animal in the tract dealt with. The population has increased in human habitations than in the forests. The main cause of increased population near human habitation is availability of waste from kitchen and unsystematic disposal of kitchen waste to dust bins placed near habitations. In the beginning monkey is shy animal but with the passage of time it become aggressive. Similar incidence of monkey human conflict has gained the attention of conservationists at large. The population has increased manifold in the division and there are a lot of complaints of crop depredation by them. All along the National highway, State Highways and even in the link roads and paths, the monkeys can be seen in herds and pose a threat to tourists, passersby and local inhabitants. The monkey also destroys the young seedlings of Chil plants as they suck the roots of the seedlings and in this process they uproot the Chil seedlings. They have left the interiors of the forests and are seen near villages and town. Some tourists also feed them generously with bread, chanas, bananas, food etc. Now the problem of conflict has increased as the monkeys have become habitual of staying in habitations on rooftops and trees near the buildings. However, the efforts of Forest Department are in progress to reduce number by way of sterilizing male ones.

11.5.4 Long Term management of Human-Leopard Conflict

The best form of conflict management is to deal with it before the problem gets out of hand. There are many areas in Himachal Pradesh where leopards live in croplands outside Protected Areas. The leopard populations in croplands can be managed without serious conflict as long as the biology of the species is considered

11.5.5 Leopard/Black Bear –Human Conflicts in Rampur Forest Division

As like many other parts of India, the human population in the State of Himachal Pradesh has also increased over the last 20 years. As a result of growing human population, changing land use practices and resultant anthropogenic pressures, forest cover had either decreased or declined in quality due to habitat degradation. Rampur Forest Division being a valley has an interspersed of orchards, croplands with human habitations and forest. The movement of bears and leopards for food outside these forest areas in search of cultivated crops leads to close encounters of man and bear, and sometimes to conflict. The black bear/ leopard–human conflicts are in the form of crop damage, livestock predation, human attacks and sometimes even death of humans. All these have led to strong backlash from people resulting in confrontation with the Forest Department or the Government authorities, and sometimes retaliatory killing of strayed bears. The Rampur area and its surrounding forested and agricultural/horticultural landscape has black bear in relatively high densities resulting in increasing bear-human conflicts and also providing ample opportunities for ecological research on different aspects of ecology and bear-human conflicts.

11.6 Conflict types & Remedial Measures

a) Damage to Agricultural Crops and Orchards

The croplands and orchards are unintentionally providing high quality food for bears. Black bear has excellent memory that helps it to locate seasonally available cultivated crops around its habitats. Individuals that have once tasted good quality and high energy food come out regularly to raid the crops and orchards near their natural habitats. As bears become habitual to cultivated crops, growing such kinds of crops actually lead to human-bear conflicts in the immediate area and the broader community.

b) Livestock Killing

Killing of livestock (sheep, goat, and cow) by black bears is not uncommon and may become a serious problem. Black bear do occasionally kill livestock when there is no food available in wild for their animal protein requirements. There are instances when grazing

domestic animals are predated by bear in their habitats and some cases of livestock killing in night shelters. During late autumn and early winter when food availability in bear habitats is low and due to late snowfall some bears go in for late hibernation and during such period kill livestock.

c) Human attacks and killing by Black Bear

Increased human population in and around forested areas, encroachment on forest land and increased dependence on forests by humans have led to increased frequency of bear-human encounters. Black bear compete directly with people for resources such as space, food, security and cover.

Black bear-human encounters can be classified in to two categories: Predatory and defensive. Black bear generally do not attack people unless and until: - (i) it feels threatened, (ii) if it is a sudden encounter, or (iii) a female black bear with cubs or with food.

11.7 Management Initiatives required to Address Human-Wild Life Conflicts

11.7.1 Database Development and Maintenance

The basic step towards understanding and developing mitigation strategies for reducing black bear-human conflicts in this Division and elsewhere in the State would be, the development and maintenance of a database. The patterns of black bear-human conflicts in a large landscape both in spatial and temporal scales will be extremely important to understand underlying causes and preventing conflicts. It is extremely important for the Forest Department of Himachal Pradesh to develop and maintain a database on conflicts for its different regions using GIS. It would be necessary to distinguish causes and symptoms of bear-human conflicts. Changing land use patterns, development and use of black bear habitats by humans are the causes, while un-natural behavior, human habituation are the symptoms.

11.7.2 Creation of Conflict Management Team

A fully equipped, well trained and motivated ‘Conflict Management Team’ comprising of wildlife staff, veterinarians, staff of related line departments or institutions, and wildlife NGOs has to be formed at the Division/Circle Level to respond to conflict situations, including animal rescue, treatment (if required), translocation and monitoring. Efficient and effective response to complaints is more feasible when rapid communication is

possible from and to the conflict site and between the personnel of the Conflict Management Team and when duties are shared amongst the members of the Team.

11.7.3 Awareness Creation

Knowledge on black bear/ leopard behaviour is essential for the villagers who live near bear/leopard habitats and suffer crop losses and are also vulnerable to bear attacks. Awareness creation through elected bodies at the village or block levels, religious or educational establishments, and other government or non-governmental agencies needs to be explored. Simple precautionary measures such as avoiding moving singly during dawns and dusks in crop fields or orchards or forests during summer and autumn could greatly reduce bear attacks on humans. Another crucial factor that can reduce bear attacks is providing a safe passage or escape route for a stranded bear, particularly in the villages. These ‘dos’ and ‘don’ts’ should be widely circulated through posters in local language. T.V and print media should also used for awareness creation for villagers in conflict area.

11.7.4 Reducing livestock depredation by Black Bear/Leopard

As most of the livestock killings have taken place at the night shelters in the villages, it would be necessary to strengthen the doors, windows and other vulnerable portions of these night shelters to reduce loss by predation to black bear and common leopard. Supervised livestock grazing by at least 3-4 villagers will reduce livestock depredation by black bear and leopard. Villagers who were affected by livestock depredation by black bear and leopards should be advised to use iron doors and proper lighting at their cattle sheds or night shelters as both have been found to be very effective in reducing livestock loss

11.7.5 Guarding of Crop/Orchards from Black Bear Damage

A Village level cooperative effort for guarding of crop fields and orchards on rotational basis could be tried as an option using the effective means of scaring bears such as noise by drumming empty tin/metal containers. Using guard dogs while patrolling and keeping them in villages would be of added advantage. Proper lighting in the corners or boundaries of crop fields and orchards particularly the vulnerable points lying close to forest fringes may be another option that may help to reduce crop depredation as observed in a few cases during the survey.

11.7.6 Changing Agricultural and Animal Husbandry Practices

Change in local cropping patterns can significantly influence Animal- Human conflict intensity. Similarly, changing animal husbandry practices by keeping a few high-yielding breeds and stall feeding animals in proper shelters instead of large number of local breeds that are less productive in terms of meat and milk, could be an alternative that can reduce conflicts.

11.7.7 Monitoring of Conflict Areas

Use of passive and preventive actions is an important step in conflict management. There should be proper monitoring of black bear-human conflict areas where at least one of the employees is present at the problem site until the situation is resolved. While monitoring the bear, information such as number, age, location, bear behavior and the direction of the movement of the conflicting animal has to be recorded and reported. Movement of the people should be restricted to give safe passage to the problem bear.

11.7.8 Translocation and Marking of Problem Animals

The problem animals that are captured and translocated from the conflict areas should be marked by radio collar, florescent collar or, by ear tags prior to their release back into the wild so that the movement and the ranging patterns of these animals could be studied. This will be very helpful in better understanding of problem bears and ultimately help in mitigating the problem.

11.7.9 Aversive Conditioning of Problem Animals

Aversive conditioning of problem animals (habituated to people or raiding crops) is very much essential so that the problem animal learns to associate ‘undesirable activities’ such as entering a village, crop field or orchard with ‘negative events’. Such problem animal could be subjected to one or more of the following treatments prior to release back into the wild. The treatments include: being hit with pepper sprays or rubber bullets, loud noise by bursting of crackers, and barking and/or chased by specially trained dogs.

11.7.10 Strengthening of Local and Traditional Black Bear deterrent Methods

The traditional methods of burning red chillies mixed in cow dung can also be experimented for orchards in villages which were located in the periphery of forested areas in Apple/ Cherry/Maiz production season. This traditional method was found to be effective in preventing bears from entering fields and therefore recommended for the use by local villagers in Bear conflict areas in North and Central Kashmir.

11.8 Compensation for damages caused by Wild Animals

The loss of cattle and human beings due to attack by wild animals are compensated by the forest department to victims vide notification No. FTS-(F)-6-7/82 Shimla-2, LOOSE dated 9-4-1996 and Fts. (F) 6-7/82-II dated 28th August, 2001 (*See Appendix No-XXXVIII and XXXIX*). But still there is no provision for compensation to the loss of cultivated field crops due to damage by wild animals in the State of Himachal Pradesh which need attention of the State Government in this regard. Therefore DFO (T) necessary step may take up with Govt. in this regard. This will be very helpful in better understanding of problems of wild life and ultimately help in mitigating the problem of human-wild life conflict.

The details of compensation paid for losses to animals and human beings done by Wild Animals for the period 1993-94 to 2011-2012 is tabulated in table No.-11.1

Table No.-11.1

Details of compensation paid to victims against wild life depredation

Sr. No.	Name of Range	Year	No. of case sanctioned	Compensation		Total amount paid
				Domestic animal	Human beings	
1	2	3	4	5	6	7
1	Sarahan	1993-94	26	27250	1500	28750
2	Sarahan	1994-95	7	6100	2100	8200
3	Sarahan	1995-96	4	2750	1000	3750
4	Sarahan	1996-97	5	7000	0	7000
5	Sarahan	1997-98	2	1400	0	1400
	Rampur		14	13450	0	13450
	Nankhari		1	2000	0	2000
	Bahli		1	1000	0	1000
Total			18	17850	0	17850
6	Sarahan	1998-99	9	15200	0	15200
	Rampur		11	11250	0	11250
	Nankhari		4	5350	0	5350
	Bahli		2	1600	0	1600
Total			26	33400	0	33400
7	Sarahan	1999-2000	5	2850	3375	6225
	Rampur		33	34045	0	34045
	Nankhari		5	5000	2000	7000
	Bahli		13	14672	0	14672
Total			56	56567	5375	61942

1	2	3	4	5	6	7
8	Sarahan	2000-01	0	0	0	0
	Rampur		12	22813	0	22813
	Nankhari		5	10252	0	10252
	Bahli		1	3375	0	3375
Total			18	36440	0	36440
9	Sarahan	2001-02	9	6188	1875	8063
	Rampur		4	9260	1875	11135
	Nankhari		19	25010	0	25010
	Bahli		25	38378	1875	40253
Total			57	78836	5625	84461
10	Sarahan	2002-03	18	23575	67875	91450
	Rampur		16	18355	99000	117355
	Nankhari		3	3376	0	3376
	Bahli		2	3000	0	3000
Total			39	48306	166875	215181
11	Sarahan	2003-04	2	0	101800	101800
Total			2	0	101800	101800
12	Sarahan	2004-05	5	11300	0	11300
	Rampur		6	9875	0	9875
Total			11	21175	0	21175
13	Sarahan	2005-06	13	42263	33000	75263
	Rampur		2	625	1875	2500
	Bahli		2	2937	0	2937
Total			17	45825	34875	80700
14	Sarahan	2006-07	22	45800	33000	78800
	Rampur		17	19750	65500	85250
	Nankhari		3	8200	33000	41200
	Bahli		1	800	0	800
Total			43	74550	131500	206050
15	Sarahan	2007-08	5	5275	110000	115275
	Rampur		3	1500	133000	134500
	Nankhari		1	0	1875	1875
	Bahli		3	0	138000	138000
Total			12	6775	382875	389650
16	Sarahan	2008-09	33	26175	115000	141175
	Rampur		7	5750	20000	25750
	Nankhari		1	0	5000	5000
Total			41	31925	140000	171925
17	Sarahan	2009-10	60	78950	312000	390950
	Rampur		62	57350	313000	370350
	Nankhari		3	4000	5000	9000
	Bahli		12	16850	33000	49850
Total			137	157150	663000	820150

1	2	3	4	5	6	7
18	Sarahan	2010-11	11	11387	43000	54387
	Rampur		82	28400	305000	333400
	Nankhari		2	2500	5000	7500
	Bahli		15	35700	0	35700
Total			110	77987	353000	430987
19	Sarahan	2011-12	33	39763	152000	191763
	Rampur		37	85371	234000	319371
	Nankhari		14	21689	305000	326689
	Bahli		7	7625	105000	112625
Total			91	154448	796000	950448
G. Total			720	884334	2785525	3669859

(Source:- Record of Rampur Forest Division, Rampur)

11.9 Management Prescriptions

11.9.1 Habitat Management: Reversing the process of degradation of forests as prescribed by itself improve the habitat of wild life. Cost effective check dams and water bodies prescribed in will be constructed in locations with access to wildlife or in known wildlife habitats. The water bodies so constructed will be, to the extent possible, under vegetation cover. Rather, the vegetation cover over the natural water bodies in the wilderness will be left undisturbed, as the water holes without vegetation cover do not attract wild life. Dead and dying trees will be retained as snags for smaller species of mammals and birds. In known wildlife habitats the biotic interference in the form of collection of forest produce also will be discouraged. The availability of food, water and shelter for wildlife has to be improved. Fire protection is one of the best accelerating steps towards better habitat. Augmenting the fodder resources of herbivores through artificial regeneration of fodder species such as grass, herbs bamboos and trees help in multiplication of prey species, which in turn, support predators and scavengers. As per the policy of the State Govt. that out of the total plantations to be done in an area, at least 10% plants are to be of fruit bearing species, the species to be planted in a particular area is to as per the requirement of the wild life species specifically found in that areas. Protection of micro wild life habitats from forest fire especially during breeding season especially the Western Tragopan and other pheasants and effective patrolling against poaching are required during the month of October-November and April-May by development of daily wage anti poachers in sensitive forest areas adjoining to Protected Area network of this Division.

11.9.2 Veterinary care: Veterinary care in areas rich in wildlife may be ensured by-

- (i) Wildlife health monitoring through post-mortem examinations and direct and indirect observations
- (ii) Free vaccination and preventive measures like de-worming to grazing domestic livestock and special Veterinary care campaign for foot and mouth disease in nomadic livestock.
- (iii) Extension education to owners of domestic livestock.

11.9.3 Training: For carrying out multidimensional activities, ranging from routine protection to social services, a new breed of staff with entirely different perceptions has to be made available. The available talent can be sharpened only through training. On the job training will be given to staff for capacity building. Trainings in weaponry, unarmed combat, participatory exercises, first aid, veterinary care, intelligence gathering, investigation, public relations, wildlife sciences etc. will be provided in various reputed institutions. A part from that staff should be well versed in investigation, adducing evidence and material, dealing with wild life offences/offenders, compoundable and non compoundable cases under the Wild Life (Protection) Act, 1972. Staff should be imparted training in matters like trapping of wild animals, rescue operation, post-mortem of animals, collection of samples of vital organs for histo- pathological, viral and bacterial examination, their preservation and dispatch, sign and symptoms of common wild life diseases, external indicators of health etc.

11.9.4 Research and monitoring: Sudden outbreak of diseases, suitability of a given area for a particular species, carrying capacity of the forests, crop raids and methods to check the excessive breeding of a particular species are some of the problems that need research inputs. These problems can be addressed by appointing qualified persons for research and monitoring or by entrusting the same to specialized research organizations like HFRI, WII and local universities. It is essential to monitor the growth and development of wildlife in a given area to assess the impact of management practices, so as to make the needed corrections to suit the objective.

11.9.5 Awareness programme and peoples' participation: Educating the local population about the importance of wildlife in the ecosystem and creating awareness about their conservation will go a long way in protecting our forests as well as reducing man-animal conflicts. Such awareness can be brought through nature camps to different target groups such as students, fringe dwellers, and orchard owners etc coupled with seminars, workshops and guest lectures.

11.9.6 Mitigating Man Animal Conflicts

Some of the recommendations to mitigate the conflict at the man-animal interface are.

- i) Augment sources of browse species, particularly grass and bamboos.
- ii) Encouraging stall-feeding among fringe dwellers may reduce the number of livestock within forests
- iii) Timely action for compensating the loss due to crop raiding.
- iv) Ensure sufficient budgetary support to provide relief to victims. Wild life compensation has been made part of Public Guarantee Act in Himachal Pradesh.
- v) Explore and promote alternate income generating source for forest dependent population.
- vi) Explore LPG connection on subsidies rates for forest dependent population so that dependence on forest pressure for fuelwood could be reduced.

11.9.7 Census of Wild Life: The Monkey Census is half yearly features now. Proper documentation of the population trends i.e. pre-sterilization and post-sterilization of monkeys are needed for management. This will help in studying the impact of sterilization and making decision for further improvements in future. The Monkey census was carried out during February, 2012 in this division and the census of Monkey is given in table No.11.2

Table No. 11.2

Monkey Census			
Name of Ranges	Adults	Infant	Total
1	2	3	4
Nankhari	740	351	1091
1	2	3	4
Bahli	782	342	1124
Rampur	473	170	643
Sarahan	1008	461	1469
Total	3003	1324	4327

(Source:- Record of Rampur Forest Division, Rampur)

Similarly leopard census need to be made a regular feature and in the present day technologies the camera trap methodologies is to be adopted in place of traditional 'Pug mark Method'. This will help in mitigating man animal conflicts in future. Therefore DFO (T) necessary step may take up with the Govt. for camera trap and conduct a proper survey to identify such key location for trapping and plan the forestry operation in such a way so as to cause least disturbance to wild life and may minimize the man-wild life conflict.

11.10 Compensation for damages caused by Monkey

During last four years the following incidence of monkey damages outside of the protected area has been noticed and compensation paid accordingly. The year wise, Range wise number of monkey damage incidence in Rampur Forest Division is tabulated in the table No.11.3

Table No.11.3
Detail of compensation paid to victims against monkey depredation

Year	Name of range	No. of incidence	Compensation paid
2008-09	Nankhari	1	5000
	Bahli	0	0
	Rampur	17	85000
	Sarahan	2	10000
	Total	20	100000
2009-10	Nankhari	1	5000
	Bahli	1	5000
	Rampur	30	150000
	Sarahan	9	45000
	Total	41	205000
2010-11	Nankhari	1	5000
	Bahli	0	0
	Rampur	58	290000
	Sarahan	1	5000
	Total	60	300000
2011-12	Nankhari	2	10000
	Bahli	0	0
	Rampur	6	30000
	Sarahan	1	5000
	Total	9	45000

(Source:- Record of Rampur Forest Division, Rampur)

11.11 Monkey-Human Interface: The monkeys have becomes a problematic animal for last 10 to 15 years in Himachal. Whether it is the townships or the rural areas now monkey menace is quite common. Not many efforts were made to address this problem in the past as this problem was never considered a public problem. The efforts made for last 6-7 years at Forest Department level are too meager that it has no visible impact as such.

During the course of Monkey incidence estimation a two step strategy was adopted in this division which included:

- i) Preliminary observations for Monkey estimation to determine the hot spots.
- ii) Comprehensive monkey estimation in the hot spots.

During this process the following beats of this division has been identified for having high concentration of monkey population and is tabulated in the table No 11.4.

Table No.11.4

Name of Range	Name of Block	Name of Beat
Nankhari	Sholi	Delath
	Gahan	Taprog
	Nankhari	Bai Bahli
Bahli	Taklech	Darkali
	Bahli	Bahli
Rampur	Nogli	Nogli
	Deothi	Munish
Sarahan	Sarahan	Baghawat
	Phancha	Sarpara
	Gopalpur	Dofda

(Source:- Record of Rampur Forest Division, Rampur)

11.12 Strategy to Mitigate Monkey Menace

11.12.1 The Monkey Sterilization Programme: Before understanding the mitigation of the monkey problem we need to understand the root causes of the monkey population increase and the abrupt behaviour of the monkeys.

11.13 Causes of increase in Monkey Population

i) Change in land use pattern-

- a. Shift from traditional cropping pattern.
- b. Off season cropping and high nutritional value cropping.

ii) Shift from wild to co-mensal-

- a. Due to increase in the human population even wild monkeys are now used to human habitations.
- b. Monkeys are used to the human beings as well.
- c. No struggle for food increases the life span (Average lifespan in the wild is 4 years when they have to compete for food in the wild, where as when easy food is available in the form of garbage/manual feeding in the townships, they can live up to 10-15 years)
- d. Non availability of food base in the wild (WL Habitats degraded both qualitatively as well as quantitatively)

iii) No garbage management in townships-

- a. Easy food availability leads to multiplicity.
- b. Increases the life span.

iv) Bifurcation of the groups due to the Fragmentation of Habitat or other reasons.

- a. The bifurcated group tends to regain the minimum same size (Group behavior)
- b. Abnormal behavior when they get separated from the group.

v) Manual Feeding-

- a. Due to religious reasons.
- b. Increased tourism and increased number of the temples.
- c. Disposal of the waste food.

vi) No predators of the Monkeys in the wild

Monkeys are not the preferred food of leopard. Earlier large Eagles/Vultures used to pick up the infants of monkeys but now predator's population has gone down drastically.

11.14 Some of the Facts about Monkeys are-

- i) Mating is not confined to a specific season. Females are mature by three years of age, and males at four years of age.
- ii) Females cycle similar to humans with menstrual cycles of around 28 days.
- iii) The monkeys average gestation period is six months (from 135-194 days) and most of the females in the group give birth to one baby in a year.
- iv) Males are the dominant sex, but they do not remain with troops permanently, so female monkeys lead these communities.
- v) Because troops include multiple mature males and females, their members are sexually promiscuous.
- vi) Females usually produce one young each year, which will be Raised by its mother within the very social environment of the troop.
- vii) The life span in the semi urban and urban areas can vary between 10-15 years where as in the wild 3 to 7 years.
- viii) The typical lifespan of rhesus monkey in captivity is approximately 15-12 years for males and 20-25 year for females.
- ix) The monkeys also exhibit typical 'group living' behaviour like maintaining minimum population of the group (group size).
- x) In HP the population estimate of the monkeys is more than 3 lacs in which about 65 thousands are estimated in the townships and rest in the rural/forest areas.

- xi) In Rampur Forest Division itself a survey was conducted on the hotspots only and the estimation of monkey's population comes to be more than ____ excluding Rampur Township.

11.15 Mitigation Measures-

Some of the recommendations to mitigative measures are as under:-

- i) If less than 70% animals of a particular group are not sterilized within 6 months (period of gestation) the impact of the sterilization will minimal.
- ii) Right from capturing the monkeys, sterilization to release back at the same area the group identity has to be maintained and not to be mixed with the other group of the monkeys.
- iii) Though the females should be preferred for the sterilization but for the practical purpose both the sexes are to be sterilized to have maximum impact.
- iv) The post operative behavior of the monkeys needs to be studied especially after release.
- v) The success of the sterilization programme depends upon the percentage of the catches in a group in the first go.
- vi) The monkey confined to the township need a different treatment than the rural/forested areas.
- vii) The monkeys of the rural areas can be pushed back to the forest areas by making them scare and by increasing the natural food base in the wild.
- viii) The groups in rural areas which are habituated and feeds on the agricultural crop only may need to be scientifically culled. (the sterilization will not have considerable impact as it is very difficult to capture more than 70% of the group at a time in rural areas as the monkeys being semi co-mensal)
- ix) In the first go we should confine to the township for the sterilization and release back.
- x) Modern technologies like drop nets need to be used for capturing the monkeys and to increase the catches.
- xi) Need training of the front line staff for monkey capturing.
- xii) Focus should be the GROUP rather than number from different groups.
- xiii) Stop manual feeding (Donations be put in containers)
- xiv) The food accumulated in the containers be medicated with the contraceptive medicines and then monkeys be fed at some common place.
- xv) Creating a mass awareness about garbage disposal, no manual feeding, how to avoid monkeys attacks and post care etc.

xvi) Exploring the options for export and translocation to the North Eastern States.

11.16 Conservation options

- i) Create awareness among the students of schools and colleges in and around Rampur division about the importance of Wildlife conservation with particular emphasis on endemic species of wild fauna.
- ii) Select/make a group of students by forming nature clubs. These students will then be trained making use of resource person in the respective fields.
- iii) There is a scheme for payment of cash rewards for providing intelligence about persons indulging in poaching and illegal trade in wild life product in the state. It was framed in February, 1994. The information for which cash rewards would be made available should fall under either of the two categories:
 - a) Illegal held stocks of wild animals and wild life products.
 - b) Any activity related to poaching, illegal trade or transport, illegal export or import committed or to be committed.

CHAPTER –XI+1

GENERAL FINANCIAL FORECAST AND FINANCIAL PLAN OF OPERATION

XI+1.1 Future Revenue and Expenditure

Due to all round development of the region, rise in the living standards of the people and improvement in the means of communication, the prices of the forest commodities have registered a steep rise during the past years. This trend is likely to continue in the future also. Therefore, the usual fluctuations make it very difficult to prepare a financial forecast that is likely to be accurate for the whole period of the plan. Similarly, it is equally difficult to correctly assess the expenditure likely to be incurred in carrying out the prescription of this working plan. An attempt has therefore been made to estimate the future surplus based on the current price of forest produce and the present cost of carrying out various operations prescribed in the Working Plan. However, an estimate of revenue and expenditure, based on present market rates has been made in the working plan.

XI+1.2 Past Revenue and Expenditure: The details regarding past revenue and expenditure are given in the Paragraph 7.3 under Chapter VII of Part I of this plan.

XI+1.3 Future Yield: The total annual yield (in M³) expected from all the Working Circles are tabulated and given in the table No.- **XI+1.1**

Table No.- XI+1.1

Statement showing the annual prescribed yield

Name of WC	Chil	Deo	Kail	Rai	Fir	Total
C.W.C.	2620	0	0	0	0	2620
D/K W.C.	300	3350	8100	5100	275	17125
F/S W.C.	0	1100	618	9050	2950	13718
Total	2920	4450	8718	14150	3225	33463

The yield from salvage markings has not been taken into account.

XI+1.4 Expected Revenue

The expected annual revenue based upon the current royalty rates fixed for conifers in Rampur Circle for the year 2012-13 works out is tabulated in the table No. XI+1.2

Table XI+1.2
Future Revenue

a) Sale of Timber trees			
Species	Volume (in M³)	Rate per cubic meter (in Rs.)	Amount (in lacs)
Deodar	4450	5357	238.39
Kail	8718	3096	269.91
Chil	2920	739	21.58
Spruce	14150	1123	158.90
Fir	3225	1123	36.22
Total	33463	11438	725.00
b) Resin			
	Number	Rate per blaze	Amount (in lacs)
	18237	55	10.03
c) Miscellaneous Revenue			
			43.22
G. Total			778.25

To assess the revenue for subsequent years, 10% increase be given annually.

XI+1.5 Future Expenditure

The expected annual expenditure is tabulated in the table No. XI+1.3

Table XI+1.3
Future Expenditure

Sr. No.	Particulars	Estimated Expenditure (in Lacs)
1	2	3
1	Salary of staff	384.26
2	Traveling Expenses	4.4
3	Office Expenses	6.13
4	Medical Expenses	6.46
5	Wages of contingent staff	2.738
6	Rent & tax	1.04
7	Motor Vehicle	4.9
8	Other Charges	4.74
	Sub Total	414.668
B Conservancy and Development		
1	Regeneration of forests	10.5
2	Forest protection	3.96

1	2	3
3	Timber & other produce removed by Govt. Agency	6.5
4	Timber & other produce removed by consumer and purchasers	0.83
5	Consolidation & demarcation	12.65
6	Development of pasture and grazing land	1.36
7	Improvement of tree cover /raising of plantation and other programmes/ related activities	138.95
8	Maintenance of old plantation	14.8
9	Material and supply	27.79
10	Construction of new buildings	12
11	Maintenance of Roads, paths and bridges	15.775
12	Buildings maintenance	15.65
13	Machinery equipment and plant	0.6
Sub Total		261.365
Total Expenditure		676.033

XI+1.6 Cost of Working Plan:

Table XI+1.4

Sr. No.	Item	Amount (in lacs)
1.	Cost of enumeration works & field work	14.35
2.	Motor vehicle expenses	2.40
3.	Machinery	0.50
4.	Material and supply	0.50
5.	Office expenses	0.53
	Total	18.28
	Cost of WP for brought under management (RFs, DPFs & UPFs) per hac.	46.37

CHAPTER –XI+2

MISCELLANEOUS REGULATIONS

XI+2.1 Petty Fellings

Felling of petty nature, as detailed below may be treated as prescriptions of this Working Plan:

- i. Where illicit felling of trees has been done to meet the bonafide domestic requirements and the offence is petty in nature.
- ii. Right holders suffering from natural calamities/fire sufferers will be granted timber for construction of house/repair from free of cost as per the actual requirements recommended by the Sub Divisional Officer (Civil) and after personal verification by the ACF/DFO concerned subject to the grant not exceeding the maximum limit prescribed under rule-4 of Himachal Pradesh (Timber Distribution to the Right Holders) Rules, 2009.
- iii. No felling will, however, be done till the alignments of electric lines, or transmission lines, roads or water channels to be constructed have been finally approved by the Govt. of India under Section 2 of Forest (Conservation) Act, 1980.
- iv. Timber required for departmental purpose i.e. for new construction or repair of building i.e. field staff quarter, Inspection Hut or for construction of bridges or inspection path passing through forests etc. may be obtained from free of cost or departmental norms as fixed by the State Govt. from time to time.

The expression ‘petty offences’ in relation to illicit felling shall mean the offence where the amount involved is less than rupees two lakh for determining that the offence is for bonafide domestic use, it must be established during investigation that timber has actually been used for domestic purpose only.

All the trees and poles marked for such purpose shall be recorded in the respective compartment History Files and such felling will appear in Control Forms. Silvicultural principles shall be strictly adhered to while carrying out such marking.

XI+2.2 Deviations

Any large or unusual felling operation not prescribed in the Working Plan will constitute a deviation, and will require prior sanction of the Chief Conservator of Forests. The following type of fellings will constitute the deviation:-

- (i) Large scale damage by fire and wind storms.
- (ii) Special fellings to meet the sudden unexpected heavy demand of defense purposes.
- (iii) Fellings of trees in the alignment of major road, electric transmission line and Hydro Power Projects etc. approved by the Govt. of India under Section 2 of Forest (Conservation) Act, 1980.
- (iv) No Forest working is allowed in forest area if not covered by the approved Working Plan by the Govt. of India.

XI+2.3 Demarcations and Survey

The demarcated Protected Forests including new DPFs has been surveyed and mapped of 4"=1 mile scale but no proper boundary register has been prepared. The boundaries of each Demarcated Protected Forest have to be checked with the help of its map and detail boundary register should be prepared and magnetic bearing should be recorded for checking of boundaries and for avoiding encroachments etc.

Since the boundaries of UPFs has not been properly defined and delineated on the ground which are urgently required to be so attended. The boundary pillars are not properly serially numbered and maintained creating confusion at all stages. This is a specialized job. Special task force comprising of ACF, Rangers and Deputy Rangers be constituted which will carry out complete checking and all the boundary pillars of DPFs as well as along the boundary of included cultivations must be regularly repaired and maintained in good condition to check encroachments in the forests.

XI+2.4 Forest Settlements

The erstwhile State of Bushahr Forests was demarcated during 1884-1887. This demarcation was revised by H.M. Glover, during 1916-20 at the time of revision of Forest Settlement of Sutlej Valley Forests of Bushahr State. After that no revision of Forest Settlement has been carried out or done and boundaries are still not properly defined even in Demarcated Protected Forests.

All forests and waste land were declared in Himachal Pradesh as Protected Forests by the Government vide notification No. Ft. 29-241/49 dated Shimla-4 the 25th February, 1952. Subsequently, the Govt. through notification No. Ft. 774-1/63 (M) dated 24-2-1964 ordered that these forests be demarcated, and surveyed and rights be determined. At present boundaries of protected forests throughout have not been defined on the ground. Similarly record of rights admitted in these forests is to be prepared and notified under Section 29(3) of the Act and also to

be notified in the official gazette. Even the demarcation does not enjoy any legal status so far. The individual forests under this category have, however, got to be defined and notified under the provision of the Chapter-IV of Indian Forest Act, 1927. Thus, no Forest Settlement exists for UPFs which were declared as Protected Forest after the formation of Himachal Pradesh vide notification dated 25-2-1952. Therefore, it is suggested that a forest settlement for the entire tract, to revise and settle the rights of users, urgently needed and should be taken up immediately after the demarcation and survey of UPFs i.e. other than forest land-Charagah billa Darakhatan and Charagah Drakthan etc. to avoid any legal complication. The Hon'ble H.P High Court held that in absence of any proof with regard to the compliance of the mandatory provision of Section 29 to 32 of the Indian Forest Act, 1927, the conviction is bad under Section 33 of the Act. (*State of H.P V/s Om Prakash in Criminal Appeal No. 516/2000 dated 14-11-2007*, See Appendix No.-L). The State of legal position, forest settlement, entries in revenue record, creation of new DPFs and application of IFA, 1927 and Forest (Conservation) Act, 1980 have been discussed in detail in Chapter-I, Part-I.

XI+2.5 Creation of New Protected Forests

That the 60 nos. of existing listed UPFs should be converted into DPFs as in the absence of proper notification, demarcation on ground and due to absence of boundary pillars there is a lot of confusion regarding their limits, exact extent and application of the provision of the Chapter-IV of Indian Forest Act, 1927.

In addition, with the enactment of H.P. Village Common Lands (Vesting and Utilisation) Act, 1974 and H.P. Ceiling on Land Holding Act, 1972, the ownership of the land which was earlier with the villagers & big landed owners has vested in the H.P. State Government. There are a large number of plantations carried out on these lands over the period of time but these areas do not come under the purview of Indian Forest Act, 1927. Therefore, it is suggested that necessary step should be taken at the earliest and to notify these UPFs area as Protected Forests under the Act and included as addendum in Working Plan. The following listed UPFs are proposed for conversion into DPFs and are tabulated in the table No. XI+2.1

Table No. XI+2.1**Listed UPFs proposed for conversion into DPFs**

Range	Sr. No.	Name of forest	Listed UPFs Nos.	Area in Hac.
1	2	3	4	5
Nankhari	1	Chabair	1	52.65
	2	Ropari	2	52.65
	3	Narola	3	52.65
	4	Samnu	4	38.47
	5	Tutu	5	19.44
	6	Nagadhar	6	129.6
	7	Panel	7	16.2
	8	Banoga	8	12.15
	9	Banola	9	24.3
	10	Balani	10	40.5
	11	Dalahu	11	28.35
	12	Batanal	12	24.3
	13	Kandal	13	48.6
	14	Trena	14	52.65
	15	Lelhan	15	104.08
	16	Santhal	16	115.83
	17	Kaleli	17	20.65
	18	Paradhar	18	51.84
	19	Kungal	19	30.78
	20	Bai Bahli	20	12.96
	21	Tangri	21	36.04
	22	Sandh	22	19.84
	23	Jedharmila	23	14.17
	24	Chachi	24	40.5
	25	Bamnoli	25	12.15
	26	Dharja	26	9.72
	27	Gahan	27	21.87
	28	Jahu	28	12.96
	29	Peojna	29	16.2
	30	Gutru	30	10.12
	31	Chitralli	31	16.2
	32	Baroli	32	4.05
	33	Chebri	33	16.2
	34	jalthani	34	41.31
	35	Nangalni	35	16.2
	36	Totan	36	20.25

1	2	3	4	5
	37	Latehri	37	16.2
Total			37	1252.63
Bahli	1	Sridhar	38	47.79
	2	Khamadi	39	12.15
	3	Dansa	40	52.24
	4	Kandrer	41	35.64
1	2	3	4	5
	5	Surd	42	12.96
	6	Erli	43	10.93
	7	Nathal Dhar	44	81
	8	Beunthal	45	45.36
	9	Ghat	46	19.84
	10	Majheoti	47	81
	11	Paicha	48	56.7
	12	Pei	49	50.62
	13	Sangral	50	37.66
	14	Boltidhar	51	81
	15	Majholi	52	121.5
Total			15	746.39
Rampur	1	Sanathali	53	157.95
	2	Tauni	54	230.04
	3	Sangri Kopta	55	236.92
	4	Kamlahu	56	225.18
Total			4	850.09
Sarahan	1	Kalaindidhar	57 a	72.9
	2	Kalaindidhar	57 b	92.34
	3	Kandri	58	98.01
	4	Gamoghati	59	14.17
Total			4	277.42
G. Total			60	3126.53

XI+2.6 Entries in Revenue Record

The old DPFs do find mention in the revenue record. However, the same should be reconciled with the forest record and discrepancies got rectified. In case of newly created DPFs matter should be taken up with the Revenue Department for making entries in the revenue record under the provision of the H.P. Land Revenue Act, 1954 w.r.t. H.P. Govt. notification dated 4-5-1979 (*See Appendix No.-XLVII*). This task requires immediate attention and should be completed within three years.

XI+2.7 Revision of Forest Settlement Rights, 1921.

The Forests of Himachal Pradesh happen to be the first ones to have been taken up for colonial scientific management by the British Empire in Sutlej and Chanab Valley. The local populations were granted the rights and concessions of timber and other forest produce to meet their bonafide needs under the provision of Forest Settlement Report, Sutlej Valley, Bushahr State, 1921. It is very strange to know that the uses of forest resources are still continue to be governed by the Forest Settlement Report, 1921 without any changes except T.D (Timber Distribution) rights. All these rights and concession is meant for the satisfaction of personal bonafide requirements and subject to the condition that forests are to be maintained in perpetuity. Thus rights will not be exercised to an extent which will endanger the existence of the forests.

Therefore, it is suggested that Century old Settlements of rights should be revised and the rights etc. recorded precisely keeping in view the existing condition and needs of the society in order to meet the changes of such new situations to achieve sustainable management of forests.

XI+2.8 Forest Boundaries: The state of boundaries has been dealt with in detail in chapter-I, Part-I. The boundary pillars of Demarcated Protected Forests have been erected during the Forest Settlement of Sutlej Valley Forests of Bushahr State and after that no revision of Forest Settlement has been done. Resultantly boundaries are still not properly defined. No boundary register are still prepared and recorded except Nankhari Range after the fire incident of Kotgarh Forest Division as the record of Rampur & Kotgarh Forest Division was fire burnt during February, 1999. It is, therefore, suggested that DFO (T) may take necessary step for getting demarcation of forest land from Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954 for ascertaining the position of BPs and extent of encroached land on spot and after that BPs be erected on spot accordingly and BPs register be maintained along with GPS location etc. for record. In the absence of old DPF notification, BPs register and proper demarcation, there have been lot of encroachment on forest land. Detailed boundary registers are required to be maintained for the demarcated protected forests and newly demarcated protected forests. All DPF and listed UPFs shall be demarcated in first five years of the plan and the BPs shall be constructed in dry masonry stone instead of cement concrete as the same is not feasible in high lying forests. To avoid recurring cost of maintenance, it is suggested that all BPs especially near habitations and low lying forest area, be constructed with stone masonry in cement mortar.

XI+2.9 Periodic Checking of Boundaries

Little attention has been made for checking of boundaries of the forests. Therefore, it has been suggested that boundaries should be checked at regular intervals for proper maintenance and repair. The checking should be done as per norms fixed are tabulated in the table No. XI+2.2

Table No. XI+2.2

Forest Guard	100%
Dy. Ranger	50%
Range Officer	25%
ACF	10%
DFO	2%

The quinquennial programme for checking of boundaries is prescribed and is tabulated in the table No. XI+2.3

Table No. XI+2.3

Year of boundary checking	Forest/ No. of compartments prescribed			
	Nankhari	Bahli	Rampur	Sarahan
	Cmp. No.	Cmp. No.	Cmp. No.	Cmp. No.
2013-14, 2018-19, 2023-24	1,2,3,4,5,6,7,8,9, 10,11,12	58, 59,60, 61, 62,63, 64,65,66 67,68,69 70,71	90,91,92,93, 94, 95, 99, 100,101, 102, 109a, 109b	112a,112b,112c, 113,114,115,116, 117,118,119, 120a, 120b,120c,120d, 120e,
2014-15, 2019-20, 2024-25	13,14,15,16,17,1 8,19,20,21,22,23, 24	72,73,74 75,76,77 78,79,80 81,82,83 84,85	110a, 110b, 110c, 110d, 110e,110f, 110g,110h, 111a, 111b, NDPF 29	121a, 121b, 121c, 121d, 121e, 121f, 121g, 122, 123a, 123b, 124, 125, 126, 127, 128a, 128b, 128c
2015-16, 2020-21, 2025-26	25, 26,27,28,29a,29 b, 29c, 30, 31, 32, 33, 34	86,87,88 89,NDPF1, NDPF2, NDPF3, NDPF4, NDPF5, NDPF6, NDPF7, NDPF8, NDPF9, NDPF10	NDPF30, NDPF31, NDPF32, NDPF33, NDPF34, NDPF35, NDPF36, NDPF37, NDPF38, NDPF39, NDPF40	129, 130, 131, 132 133, 134a, 134b, 135, 136, 137, 138, 139a, 139b, 140a, 140b, 140c
2016-17, 2021-22, 2026-27	35,36, 37,38,39,40,41,4 2,43,44,45,46	NDPF11, NDPF12, NDPF13, NDPF14, NDPF15, NDPF16, NDPF17, NDPF18, NDPF19, NDPF20, NDPF21, NDPF22, NDPF23, NDPF24	NDPF41, NDPF42, NDPF43, NDPF44, NDPF45, NDPF46, NDPF47, NDPF48, NDPF49, NDPF50, NDPF51,	141,142a, 142b,142c, 143a, 143b, 144, 145a, 145b, 145c, 145d, NDPF 63, NDPF 64, NDPF 65, NDPF 66, NDPF 67,
2017-18, 2022-23, 2027-28	47,48,49,50,51,5 2,53,54,55,56a, 56 b, 57	NDPF25, NDPF26, NDPF27, NDPF28, 96,97,98,103,104,105, 106,107,108	NDPF52, NDPF53, NDPF54, NDPF55, NDPF56, NDPF57, NDPF58, NDPF59, NDPF60, NDPF61, NDPF62,	NDPF68,NDPF69, NDPF70, NDPF71, NDPF72, NDPF73, NDPF 74, NDPF 75, NDPF 76, NDPF 77, NDPF 78,NDPF 79, NDPF 80, NDPF 81, NDPF 82, NDPF 83,

Total 83 Numbers of listed UPFs have been converted and notified into New DPFs during the period of Working Plan under revision and the detail is given in *Appendix No.-II*. The new DPFs have been entered in the revenue record and the position of construction of boundary pillars of these newly notified DPFs is prescribed and is tabulated in the table No. XI+2.4

Table No. XI+2.4

Sr. No.	Name of Range	New DPF No.	Old DPF No.	BP Constructed	BP Not Constructed
1	2	3	4	5	6
1	Bahli	1	49		X
		2	57b		X
		3	58		X
		4	59		X
		5	60		X
		6	61		X
		7	62		X
		8	63		X
		9	64		X
		10	65	✓	
		11	66		X
		12	67		X
		13	68		X
		14	69		X
		15	76		X
		16	82	✓	
		17	83		X
		18	84	✓	
		19	85	✓	
		20	86		X
		21	88		X
		22	89		X
		23	90		X
		24	91		X
		25	92		X
		26	93		X
		27	94		X
		28	95		X
2	Rampur	29	1b	✓	
		30	3	✓	
		31	70		X

1	2	3	4	5	6
		32	71	✓	
		33	72		X
		34	75	✓	
		35	78		X
		36	79	✓	
		37	80	✓	
		38	81	✓	
		39	96		X
		40	97		X
		41	98		X
		42	99		X
		43	100		X
		44	101	✓	
		45	102	✓	
		46	103	✓	
		47	104		X
		48	105		X
		49	106	✓	
		50	107		X
		51	108		X
		52	109	✓	
		53	110		X
		54	111	✓	
		55	112	✓	
		56	113		X
		57	114	✓	
		58	115	✓	
		59	116	✓	
		60	117	✓	
		61	118	✓	
		62	UF Toni		X
3	Sarahan	63	4		X
		64	5		X
		65	6a		X
		66	6b		X
		67	6c		X
		68	7	✓	
		69	8		X
		70	9	✓	
		71	10	✓	

1	2	3	4	5	6
		72	11	✓	
		73	12	✓	
		74	14		X
		75	16a		X
		76	17		X
		77	18		X
		78	19		X
		79	20		X
		80	21		X
		81	22		X
		82	Kuimori dhar		X
		83	Jamuthach	✓	

In 29 forests, the boundary pillars have been constructed, out of total 83 nos of NDPFs, and in the remaining 54 nos. of forests the construction of boundary pillars are required. It is therefore suggested that the DFO Rampur should initiate the construction of boundary pillars in the balance 54 nos of NDPFs immediately i.e. preferably during 2012-13 or 2013-14 and further checking of these boundary pillars should be done as per quinquennial programme.

XI+2.10 Compartment and Sub-compartment Boundaries

These boundaries have been shown on the management and stock maps and are also described in the Compartment History files. The sign board indicating the compartment and sub-compartment though exist in some forests of this division at places but are required to be prepared and affixed on prominent sites/location indicating the new Compartment No. It is also suggested that such board should be fixed at all prominent points especially where the inspection paths, bridle paths cross the boundaries of the compartment and sub-compartments.

XI+2.11 Maps

Two sets of stock maps showing necessary details for each forest on 1:15000 scales have been prepared and appended in the respective compartment history files. The administrative map has also been prepared on 1:50000 scale and is lying with DFO (T) Rampur. The detail of survey sheets/maps available in the division is given in Chapter-I, Para 1.13

XI+2.12 Beat Map

Each forest guard should be provided with a map of his beat on 4"=1 mile scale showing the boundaries of all the forests, position of boundary pillars, included cultivations inspection

and bridle paths etc. The Range Officer/DFO should check these maps during field tours and should ensure that these are kept up to date.

XI+2.13 Water Supplies

Water supply is deficient at Circle/Divisional Head Quarter Rampur. This should be ensured by constructing a spacious over head tank which may supply water to office and forest colony at Padam Nagar apart from transit camp at Rampur. Similarly the water supply needs to be strengthened at Nogli Forest Rest House by lifting of water from Nogli khad. This should be provided at the earliest so that irregular water supply at Forest Colony and Nogli could be improved.

XI+2.14 Rain and Snow Gauges

No rain and snow gauges have been installed in this Division. It is recommended that Rain gauges should be installed at Nankhari, Bahli, Rampur and Sarahan Ranges and maintained properly.

XI+2.15 Timber for Right Holders

Right holders requirements of timber are increasing manifold day by day in view of the general rise in the standard of living. As far possible, local demands of timber will be met with from depot as per H.P. Govt. notification 2nd January, 2010 under Himachal Pradesh (Timber Distribution to the Right Holders) Rules, 2009, but casual grants will continue to be made from other forests also in exercise of recorded rights. The trees for agricultural implements, repairs of water channels, and other ceremonial purposes will be allowed as per settlement regulations in such a way that these species are not ruthlessly exterminated. The detail grant of timber have also been discussed in the Chapter-I, Part-I.

XI+2.16 Forest Rights and Duties

The bartans are subject to the condition that bartandars will be responsible for the protection of the forests in which the bartans are exercised i.e. they are responsible that no trees are felled without permission and the forests are protected against fire. In case of failure, the rights can be curtailed or suspended. Another condition attached with bartans is that, the forests whether demarcated or un-demarcated cannot be burnt to get fresh growth of grass. Grazing, grant of timber, lopping & collection of minor forest produces are some of the important Bartans admitted in the settlement report. This excellent rule has gone a long way in preserving forest wealth of this tract if sincerely to be followed by the field functionaries.

In **M.C. Mehta V. State AIR 1982 Orissa 225**, the court has pointed out “right and duty co-exist. There cannot be any right without any duty and there cannot be any duty without any right” Our Constitution lays down the fundamental duty of every citizen “to protect and improve the natural environment including forests, lakes, rivers and wild life and to have a compassion for living creatures”. A feeling should be generated in them that there should be decreased dependence on the forests and encourage them to avail acceptance of the alternatives. It is a social obligation and get let every citizen be reminded that it is his fundamental duty as enshrined in Art. 51 A(g) of the Constitution of India. The ***Hon’ble H.P. High Court relied on our Constitutional duty & M.C. Mehta case*** and pointed out that all citizens of this country have certain rights and certain duties. Article 51-A deals with fundamental duties of every citizen. One of the fundamental duties prescribed in Sub clause (g) is to protect and improve the natural environment including forest. Similarly clause (i) deals with another fundamental duty which to safeguard public property as held by the Hon’ble High Court in ***Sumitra Devi V. State of H.P CWP No. 1507/2011 dated 20-4-2011***.

The Hon’ble High Court further held that there is no right to claim compensation by means of filing writ petition. When a person performs his duties unfortunately suffers injury or dies. It is for the State to decide whether it should grant adequate compensation to its citizen or not. No doubt a sum of Rs. 1 Lac in the case of a death while on controlling the forest fire does appear to be on the lower side. However this court cannot direct the State Govt. to enhance the compensation. Therefore, the writ petition is rejected.

XI+2.17 Person bound to Assist Forest Officer

Section 79 (1) of the Indian Forest Act, 1927 makes obligatory on every person, who exercises any right in a reserved or protected forest or who is permitted to take any forest produce from forest or Govt. employee shall be bound to furnish without un-necessary delay to the nearest Forest Officer or Police Officer any information with respect to any commission of forest offence, and shall forthwith take steps, whether so required by Forest Officer or Police Officer or not _____

- (a) to extinguish any forest fire in such forest of which he has knowledge or information;
- (b) to prevent by any lawful means in his power any fire in the vicinity of such forest of which he has knowledge or information from spreading to such forest, and shall assist any Forest Officer or Police Officer demanding his aid.....
- (c) in preventing the commission in such forest of any forest offence; and

(d) when there is reason to believe that any such offence has been committed in such forest in discovering and arresting the offender.

And any violation of the provision of this Section is punishable under Section 79(2) with imprisonment for term which may extend to one month, or with fine which may extend to two hundred rupees or with both.

Therefore, field functionaries/staffs must take action accordingly so that the object of fundamental duty could be achieved as enjoined in Art. 51 A (g) of the Constitution of India.

XI+2.18 Timber as Free Grant

The right holders are entitled to grant of trees free of cost for the sake of marriage ceremonies, agricultural implements and religious ceremonies, after obtaining prior permission from the Forest Department. However, free grant of timber for cremation of the dead is permitted and permission of the department is not required and the information of trees so cut or remove is to given within 15 days to the Forest Guard concerned. Resultantly, these days right holders are misusing this practices and trees are felled after cremation of the dead body and use the same for building purpose.

The liberal rights and concessions are admitted in the Forest Settlement Report, 1921. These rights including timber for temple have not been touched upon by the State Govt. in its notification dated 2-1-2010 and would remain to be exercised as they were in the past. For the regulation of grant of wood and avoid of misuse of rights in present system vogue in the department, trees shall be divided into two classes; the first class species of trees must be declared as reserved under Section 30(a) of IFA, 1927 and the second class containing all other species. The trees of second class may be granted by the Range Officer so long as these are not used for building purposes of any kind, whatsoever, and where trees of second class are available, unsound or malformed or crooked trees of the 1st class with the exception of listed second class species can be granted. However for actual burning of dead, a sufficient quantity of wood from the listed second class species trees may be cut without being first marked provided that the notice is given to local forest official within ten days.

Therefore DFO (T) necessary step may take up with the Government for the same purpose and may notify the rules and notification under Section 30 (a) of Indian Forest Act, 1927. Similarly, the rules applicable to the un-classed forests i.e. other then DPF under Section 76 of the Indian Forest Act, 1927 may be notified in public interest so that the forest resources shall be used or removed in such a way that the resources are perpetuated and not endangered.

XI+2.19 Grazing

The problem of grazing is very important because it has far reaching effects on forest growth and land and water conservation. There is on one hand, the problem of local Zamindars and on the other, of outside professional graziers like Gujjars. In order to reduce the incidence of grazing all forms of grazing by the animals of the professional graziers should be restricted as per the provision of Settlement Report so that more grazing grounds are available for local Zamindars.

It is essential to close effectively, plantation, and regeneration areas in immediate vicinity of villages. But as the closures are resented and lead to incendiarism, it is advisable to restrict them to the minimum essential area and time necessary for establishment of plantation and regeneration. Not more than 30% of the area should be closed at a time to avoid causing resentment and hardship to local graziers. The closure should not be more than 10-15 years at a time. Cattle should be admitted as soon as the young plants are established. All closed regeneration areas near villages must be fenced effectively. The grazing requirement of livestock of villages located in and around forests should be addressed within the carrying capacity of forest areas.

XI+2.20 Closure Notifications

This has been discussed in detail in every Working Circle and suggested that the notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927. The area will have to be closed for grazing/lopping till the regeneration is established.

XI+2.21 Lopping

Lopping especially of coniferous species of trees has caused wide spread damage in the past. The forests close to the habitations have suffered on this account. Strict control has to be exercised to curtail this right within the permissible limit. Local communities need to be made aware of the impact of their consumption on forest resources. Persons requiring the fuelwood could obtain by lopping their requirements as per the norms of Forest Settlement Report, 1921. Heavy and indiscriminate lopping of Deodar during Rainy season makes Deodar susceptible to attack by *Fomes annosus* fungus. In blue pine heavy lopping results in attack by beetle *Pityohenus scitus*. Severe attack by this beetle make tree dry within 6-7 months. Heavily lopped Chir- pine trees of diameter 28-57 cms are susceptible to infestation by destructive bark borer *Polygraphus longifolia*. The sale of fuelwood head loads from forests by individual sellers must stop. Similarly lopping of forests beyond the prescribed limit as per the provision of Forest

Settlement Report must stop and violation of cases not to be compounded and be treated as forest offence under Section 33 of Indian Forest Act, 1927. Alternative source of fuelwood especially LPG connections need to be provided at free of cost and subsidized rates to forested region area depending upon their economic conditions of the local people. Similarly there should be policy of the State Govt. for providing free electricity in rural areas for domestic purpose and solar energy also needs to be given a much greater attention to reduce the biotic pressure from forest biodiversity.

XI+2.22 Fire Protections

Forest fires are very frequent in low lying area of this division. Most of these fires incendiary, started by villagers to get new flush of green grass. The worst to suffer are the Chil forests, where regeneration is damaged by such fire emeses. The detail of fire protection measures has been described in Chapter No. IX and taken care of accordingly. The budgets under fire lines and controlled burning should be demanded regularly so as to maintain fire lines, engage fire watchers in the fire prone areas. Publicity and Extension for education of local population regarding fire protection etc. should also be done. While on tour, the DFO and his staff should personally contract villagers and Panchayats members and try to convince them, inter-alia, about the harmful effects of forest fires and gravity of forest offence under the Indian Forest Act, 1927 and IPC. Other fire preventive measures have also been discussed in Chapter-IX, Part-II.

XI+2.23 Encroachments

Encroachments are common throughout the division. All categories of forests are affected with this menace but there have been large scale encroachments in almost all UPFs or other land in absence of proper demarcation and record of such areas. Boundary pillars have been displaced and the forests have been converted into orchard and agricultural fields. The encroachments detected during the stock mapping/enumeration of trees and inspection has been mentioned in compartment descriptions individually. Many of the boundary pillars in DPFs have been shifted, washed away or removed from their original position in adjoining to cultivated private land. This should be looked into priority. It is important to note that included cultivation as identified during the Glover's Forest Settlement, 1921, in the demarcated protected forests have not been properly delineated and proper record of such lands have not been maintained by the forest department. These cultivations have increase in area through encroachment over a period of time and trees adjoining have been removed through griddling

and consequent drying etc., there is an urgent need for proper demarcation of land from competent revenue authority and reconciliation with revenue record in terms of the H.P. High Court order dated 20-5-2011 and 29-3-2012. As per remarks given in compartment history files by the WPO/AWPO in respect of encroachments, the legal action should be initiated and forest lands should be liberated from unauthorized possession. Other encroachment preventive measures have also been discussed in detail in Chapter-IX, Part-II.

XI+2.24 Illicit felling, illegal mining and Poaching

The preventive and control mechanism under the various Act has been discussed in detail in Chapter-IX, Part-II so no detailed recapitulation is necessary. DFO should make it a point to get a certificate from field staff on monthly basis and plan the combat of forest offences under the Act. The various forests have been categorized as sensitive forest depending upon the frequency of illicit felling cases that occurred in the past is given in the table No. XI+2.5 .

Table No. XI+2.5

Range wise list of forests prone to illicit felling in Rampur Forest Division

1. Demarcated Protected Forests

Sr. No.	Name of Range	Name of sensitive forests	New Compartment No.	Old Compartment No.	Area in hac.
1	2	3	4	5	6
1	Nankhari	Demarcated Protected Forests			
		Banola	57	125	161.59
		Andela	56(a)	124 a	121.5
		Andela	56(b)	124 b	174.55
		Punan	48	116	82.21
		Garasu	49	117	92.74
		Punnan	47	115	307.8
		Kungal Mundar	51	119	150.66
		Kungal Mundar	52	120	141.75
		Punan	46	114	189.13
		Punan	45	113	103.27
		Punan	44	112	49.81
		Borja	32	100	27.94
		Nankhari	37	105	39.28
		Bhadral	29(a)	97 a	40.5
		Bhadral	29(b)	97 b	49.81
		Bhadral	29 (c)	97 c	76.14
		Bhadral	30	98	104.08

1	2	3	4	5	6
		Bhadral	31	99	108.94
		Baglati	28	96	38.88
		Khamotidhar	42	110	16.2
		Khamotidhar	39	107	39.28
		Thaili	34	102	115.02
		Tangri Dhar	23	91	144.58
		Baghat	22	90	141.34
		Baghat	21	89	184.27
		Peojna	13	81	58.32
		Peojna	14	82	119.07
		Peojna	15	83	20.25
		Peojna	16	84	102.46
		Gahan	10	78	24.7
		Gahan	8	76	60.75
		Gahan	9	77	123.12
		Keoli gad	7	75	91.12
		Sidhpur	1	69	131.22
		Maniknun	2	70	66.42
		Maniknun	3	71	78.16
		Maniknun	4	72	132.84
		Maniknun	5	73	52.65
		Total			3762.35
	Nankhari	Un-demarcated Protected Forests			
		UF Tangri	21	43	36.04
		UF Tutoo	5	27	19.44
		UF Sandh	22	157	19.84
		Total			75.32
		G. Total			3837.67
2	Bahli	Demarcated Protected Forests			
		Bhamrala	80	148	54.67
		Bahli	82	150	46.57
		Kandreri	59	127	166.45
		Kandreri	60	128	185.08
		Surad (N)	65	133	71.28
		Seri Majhali	88	156	4.05
		Majhali	NDPF1	49	122.6197
		Barshol	NDPF21	88	12.4866
		Total			663.2063

1	2	3	4	5	6
		G. Total			663.2063
3	Rampur	Demarcated Protected Forests			
		Munish (E)	91	161	110.56
		Munish (W)	92	162	200.47
		Sanathali(W)	109(a)	179 a	114.21
		Tauni	110(a)	180 a	68.44
		Banauli	110(c)	180 b1	36.45
		Daranghati	50 NDPF	107	57.3165
		Total			587.4465
		G.Total			587.4465
4	Sarahan	Demarcated Protected Forests			
		Shraikot	112(a)	182 a	70.47
		Bhagawat	118	188	4.86
		Maglad	116	186	32.4
		Bari	117	187	78.97
		Sarpara	142(a)	212 a	122.71
		Margot	142(b)	212 b	81
		Sukha choa	145(c)	215 c	123.52
		Gauni	64 NDPF	5	301.5065
		Ramagad	63 NDPF	4	395.7387
		Total			1211.175
		G. Total			1211.175

XI+2.25 Communication Network

Under present circumstances, the huge network of roads exist in the division and to crop up with nefarious smuggling of timber, the field staff should have improved communication system. In this respect it is proposed that all the Range Officers, Block Officers and Forest Guards be provided patrolling vehicle at range level and mobile phones or telephone so that the system can work more efficiently to combat the illicit felling, poaching and halted the encroachment on forest land etc.

XI+2.26 Geo-referencing in Forestry Operations

Geo-referencing is the process of scaling, rotating, translating and desk wing the image to match a particular size and position. The word geo-reference was originally used to describe the process of referencing a map image to a geographic location. Geo-referencing is thus imperative

to data modeling in the field of geographic information systems (GIS) and other cartographic methods.

Geo-referencing is crucial to making aerial and satellite imagery, usually raster images, useful for mapping as it explains how other data such as the GPS points relate to the imagery. Very essential information may be contained in data or images that were produced at a different point of time.

Keeping in view the importance and imperativeness of geo-referencing Govt. of India, MOEF vide D.O. No. 13.5/2010-FC dated 11-9-2012 has directed that all the forestry operations in the State should be geo-referenced henceforth and the department will comply with the directions.

XI+2.27 Research and Sample Plots

The sample plots were identified during the British period and after that no sample plots are identified and there are no such plots in this Forest Division. The necessity of laying out such plots needs no emphasis and the Divisional Forest Officer should select suitable areas and request the State Silviculturist to lay them properly.

XI+2.28 Preservation Plots

No preservation plots exist in the area at present. In view of the necessity for laying out preservation plots of important species, the Divisional Forest Officer should select suitable areas and request the State Silviculturist to lay them properly.

XI+2.29 Roads, Paths & Buildings

Efficient management of forests is not possible in the absence of good roads & paths. Regeneration forest protection and other forest improvement works cannot be effectively carried out or supervised or control against smuggling or poaching in case the forests are not connected with good inspection path and jeep-able road. The existing roads and paths are detailed in *Appendix No-LVII* these will be maintained. A large network of roads and paths has been constructed during the past in the area by HPPWD and forest department but there still needs more construction of motor-able road in the forest area. To avoid duplication the Public Works Department and Block Agency should be invariably consulted so that an integrated approach to the road construction work becomes possible under the prior permission of the Govt. of India under Section 2 of Forest (Conservation) Act, 1980. DFO (T) must ensure that no works released to non-forestry activities should be allowed to be taken up on forest land in terms of Contempt Petition No. 56/2009 dated 28-8-2009.

The present buildings i.e. residential accommodations and inspection huts/rest houses are available for subordinate and protection staff and also for inspecting officers at most of the places. Still some of the localities lack this facility and therefore, the following buildings are proposed to be constructed. DFO may modify this according to administrative needs during the currency of the Plan. The proposed new buildings are tabulated in the table No. XI+2.6

Table No. XI+2.6
Proposed New Buildings

Sr. No.	Name of Range	Name of Beat/Block	Name of Building	Location	Type of building
1.	Nankhari	Gahan Taprog Jahoo Peojna Addu Kungal Bai Bahli Mundar Gahan Bagalti	Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Mali Hut Mali Hut Mali Hut	Gahan Taprog Rai Bahli Gahan Addu Kungal Balti Bahli Mundar Gahan Jabalda	Type II Type II Type II Type II Type II Type II Type II Type I Type I Type I
2.	Bahli	Taklech Khamadi Beonthal Chowka Theda Jarashi Beunthal	B.O. quarter Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Mali Hut	Taklech Khamadi Beonthal Chowka Theda Jarashi Beunthal	Type II Type II Type II Type II Type II Type II Type I
3.	Rampur	Rampur Munish Jhakri Sanatali Darshal Duttnagar Deothi Rampur Rampur Rampur	B.O. Quater Forest Guard Hut Forest Guard Hut Forest Guard Hut Forest Guard Hut Mali Hut Mali Hut CCF Residence FRH Rampur Chowkidar Qtr.	Rampur Munish Jhakri Sanatali Darshal Talai Deothi Rampur Rampur Rampur	Type II Type II Type II Type II Type II Type I Type-I Type-V Type-II
4.	Sarahan	Gopalpur Gopalpur Dofda Rawancha Jagori Gopalpur	Forest Guard Hut B.O. Quarter Forest Guard Hut Forest Guard Hut B.O. Quarter Mali Hut Rattanpur	Gopalpur Gopalpur Dofda Rawancha Jagori Rattanpur	Type II Type II Type II Type II Type II Type I

XI+2.30 Ban on Green Fellings

The Govt. of HP had imposed a complete ban on green fellings for the year 1993-94 in high conifer forests. This resulted in complete stoppage of regeneration fellings and thinning. The ban has since been lifted by a cabinet decision during 1997, yet due to an order of the

Hon'ble Supreme Court of India in CWP No. 202 of 1995 titled as T.N. Godavarman v/s Union of India dated 12-12-1996 and 14-2-2000 and there remains a complete ban on green felling till date. The detail of felling in Govt. forests has been discussed in Chapter-I, Part-II and may continue to be followed till the disposal of affidavit filed by the H.P. Govt. before the Hon'ble Supreme Court of India.

XI+2.31 Land Bank

The land bank so identified shall be surveyed demarcated and declared as Protected Forest under the provision of Chapter-IV of Indian Forest Act, 1927. This has been discussed in detail in Chapter-VII, the plantation (Overlapping) Working Circle.

XI+2.32 Diversion of Forest Land

The Forest land cannot be diverted to any non forestry use without prior approval of Govt. of India under Forest (Conservation) Act, 1980. The Hon'ble H.P. High Court has also taken a serious note of violation of FCA, 1980 in the Contempt Petition No. 56/2009 titled as Kuldip Singh Chauhan V/S Balbir Thakur and others dated 28-8-2009 and has directed not to undertake the construction of any road in the forest area without the mandatory permission under the FCA, 1980. Therefore field must ensure that no work related to non forestry activities should be allowed to be taken up without prior approval of Govt. of India under FCA, 1980 and in terms of the Supreme Court's order dated 12-12-1996.

XI+2.33 Non-Timber Forest Produce

Right holders have recorded rights to collect fruits, edible seeds, medicinal roots leaves, and roots for the preparation of dyes and honey for their own use for domestic purpose and sale of forest product free of cost under the provision of Forest Settlement Report, 1921. The export of NTFP is regulated under the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 1978. No species are allowed to extract from the prescribed area which has not been approved in extraction cycle by the competent authority. The extraction of NTFP shall be done in a sustainable manner and has not to cause any ecological or environmental damages. Micro planning should be undertaken by the DFO (T) with consultation of HFRI Shimla to conserve, manage, scientifically harvest and sustainable utilize medicinal plants found in forest areas. There is a great scope for growing medicinal plants on private agriculture holdings, which would require the supply of plants, marketing assistance and technical inputs at least in the initial stages and this can be met from the Agriculture, Ayurveda departments as well as forest department.

The detail of NTFP extraction, collection, export and right holders requirements have been discussed in detail in Chapter-VIII, Part-II.

XI+2.34 Saw Mill and Depot

In Rampur Forest Division, out of 56 Saw Mills only 39 registered saw mills are functional and remaining 17 are non functional. The Hon'ble Supreme Court of India in T.N. Godavarman v/s Union of India dated 16-11-2002 held that no state or Union Territory shall permit any unlicensed Saw Mills, Veneer, ply wood industry to operate and they are directed to close all such unlicensed unit forthwith No state or Union Territory will permit the opening of any Saw Mills, Veneer, Plywood industry without prior permission of the Central Empowered Committee. The Chief Secretary of each state will ensure strict compliance of this direction. There shall also be no relaxation of rules with regard to the grant of License without previous concurrence of the Central Empowered Committee. In compliance of Hon'ble Supreme Court order no saw mills are being registered under the provision of H.P. River Rules, 1971.

Regarding shifting and change of ownership of the existing License Saw Mills the CEC s (Constituted by the Hon'ble Supreme Court of India in writ petition No. 202/95 & 171/96) on the representation filed by Shri Roop Singh Thakur regarding shifting of Saw Mill has passed the following directions vide their letter No. 2-23/CEC/SC/2007 –Pt. III dated 22nd June, 2011:-

“The CEC hereby authorizes the Principal Chief Conservator of Forests, Himachal Pradesh Forest to take a decision regarding shifting and / or change of ownership of the existing licensed wood-based industries, including Saw mills. He may issue/decide appropriate guidelines for this purpose.”

In view of the above, following guidelines/instructions are issued for shifting and/or change of ownership of the existing licensed saw mills:-

- i) Where change of location of the existing license saw mill is not involved, change of ownership in case of inheritance or purchase of the saw mill shall be allowed by the DFO concerned.
- ii) The cases of shifting of existing licensed sawmills including change of ownership (whether inheritance or through purchase) within the same Forest Division shall within the same circle by Conservator of Forests concerned, from one division to another from the jurisdiction on one circle to another shall be allowed with the prior approval of the Principal CCF HP.

- iii) Cases regarding change of ownership and /or shifting of other wood based industries will be decided by the Principal CCF HP.

Provided that:-

- i) The shifting of sawmills shall not be allowed in a routine manner but only after examining the merit of each case.
- ii) The parameter/conditions applicable for registration of new sawmills shall be fulfilled in case of shifting also.
- iii) In no case, the capacity of the unit shall be allowed to be enhanced.
- iv) The cases in which the process for shifting and / or change of ownership of sawmill was started as per the prevalent instructions prior to clarification conveyed by the Law Department vide Principal Secretary (Forests) to the GoHP letter No. FFE-B-E (3) 10/2005 dated 27th August, 2005 shall be decided by the competent authority on merit of each case as indicated above in para 2.
- v) The above instructions regarding shifting of saw mills shall not be applicable on the unlicensed sawmills allowed to be registered by the CEC vide its proceedings dated 31.03.2008 as the same were allowed to be registered on specific conditions.
- vi) As per proceeding dated 31.03.2008 of the Central Empowered Committee no new license for any saw mill or wood based industry shall be issued till specifically allowed by the CEC.

Depot is being registered under the provision of H.P. (Sale of Timber) Act, 1968 as conveyed by Conservator of Forests Rampur vide office memo No. 2890 dated 3-8-2007. The definition of depot is given in para 2 (ii) of H.P. (Sale of Timber) Rule, 1969 under which “depot” means any building or place where timber is brought or stored for sale, as it is or processed through sawing or any other method/process. Furniture manufacturing involves storing and processing of wood for manufacture of furniture hence any units/shops involving in storing and processing of wood of manufacture of furniture would also come under the meaning of “depot” and required to be registered under the HP (Sale of Timber) Act, 1968 and governed under the rules made there under. However, shops procuring and selling readymade furniture only, and not modifying/ processing timber for manufacture of furniture would be exempted from the provisions of the above Act.

Regarding Registration of Timber Fuel wood Depots Pr. CCF vide Letter No. Ft-20-17/77 (s) 16-10-98 has given the following guidelines for future management of the depots.

- (i) No new private sale depot shall normally be registered in future and in case of demand, HPSFC may be requested to open the depot. However, in Notified Area Committees and Municipal Committee areas, the request for opening of timber, fuelwood and charcoal depot may be considered by C.F. on merit after ascertaining quarterly demand based on facts and going through supply from existing depot, if any.
- (ii) The depots which have carried-out any transaction in past two years may not be renewed.
- (iii) A clause should be added in the registration deed that depot can be cancelled by registering authority to the relevant rules / guidelines etc.
- (iv) If at a particular place depots of HPSFC exists, then in future private sale depot may not be allowed within a radius of 15 Km. In case any depot holder is found violating the provisions of H.P. (Sale of Timber) Act, 1968, Indian Forest Act, 1927 and other Acts and Rules, the action should be initiated as per as per Rules, / Instructions on the subject.

Regarding registration of Imported Timber Sale Depot, HP Government vide letter No. FFE-B-F (15)-1/2008-Vol-1 dated 24-7-2012 has accorded permission that Imported Timber Sale Depots will be opened in urban/semi urban/rural areas taking into account the demand of people. As a result of this decision, there will be no restriction of opening of Imported Timber Sale Depot. Only Imported Timber will be purchased or sold by the registered depot under the H.P. (Sale of Timber) Act, 1968.

XI+2.35 Felling in Private Areas

In Rampur Forest Division the private areas also bear good tree growth both in compact patches and in the cultivated fields along the boundaries of forest. The main economic species are deodar, Kail, Spruce, Fir, Chil etc. In pursuance of H.P. Govt. Order No. FFE-B-A (3) 4/99 dated Shimla-2, the 10th September, 2002 in District Shimla owner can fell trees upto three trees of coniferous (except Chil trees) and in case of Chil and other trees 5 trees each year without permission for their bonafide domestic and agricultural use, up to 10 trees with written permission of the Range Officer concerned and more than 10 trees with written permission of the Divisional Forest Officer concerned. There will be no restriction on the number of trees to be felled for purposes of bonafide domestic uses of fodder and fuel. There shall also be no prohibition or restriction on felling of species of trees of Poplar, Eucalyptus, Albizzia, Bahunia, Willow and Mulberry.

Provided further that the trees for sale shall be felled in accordance with the 10 years felling programme approved by the State Govt. and in compliance of the Supreme Court's order dated 12-12-1996 and 8-5-2009.

The felling of trees in private forests in State of Himachal Pradesh, the Apex Court order dated 8-5-2009 held that felling of trees from the forest area approved for non forestry use under Section 2 of the Forest (Conservation) Act, 1980 may continue to be permissible.

Compact wooded blocks of above 5 hac. which are otherwise not notified/recorded as forest, should be treated as "forests" for the purpose of the Forest (Conservation) Act. Felling of trees and non forest use of such areas should be permissible only after obtaining approval under the Forest (Conservation) Act, 1980. Thus where the land in question recorded as Van/Bani/Vani or Jungle in revenue record felling should be permissible under Forest (Conservation) Act, 1980 only.

Felling of trees in non forest areas should be strictly regulated as per the provisions of the H.P. Land (Preservation) Act, 1978.

Now, therefore, in compliance of the above order of the Hon'ble Supreme court and Central Empowered Committee vide its recommendation dated 7th September 2010, the definition of "forest", "compact wooded block" is notified vide H.P. Govt. notification No. FFE-B-E (3)-31/2011 dated 19-2-2011 (*See Appendix XLVIII*). Accordingly felling of trees in private forest areas is being carried out strictly in compliance of the Apex Courts order dated 8-5-2009 and vide H.P. Govt. notification dated 19-2-2011.

XI+2.35.1 H.P. Land Preservation Act, 1978

It is notified for the information of all concerned and interested that the Ten years Felling Programme for the felling of trees except bamboos for sale from private lands within the jurisdiction of Rampur Forest Division framed under provisions of Section 4 of H.P. Land Preservation Act, 1978 and approved by H.P. Govt. vide letter No. Fts (F) 13-30/89 D/sala) dated 13/7/89 from Deputy Secretary (Forests) to the Govt. of Himachal Pradesh Shimla-2 addressed to Pr.CCF H.P. Shimla-1.

Ten year felling Programme in respect of Rampur forest Division w.e.f. 2009-10 to 2027-28 is tabulated in the table No. XI+2.7

Table No. XI+2.7

Sr. No.	Year	Name of Range	Name Of Block	Name of Beat
1	2	3	4	5
1	2009-10	Rampur	Rampur	Khaneri, Pashada, Sanathali, Rampur
			Nogli	Dansa, Darshal
2	2010-11	Rampur	Nogli	Nogli, Duttanagar
			Deothi	Deothi, Munish, Kashapat
3	2011-12	Bahli	Taklech	Darkali, Taklech, Theda
			Bahli	Bahli, Jarashi, Chauka
4	2012-13	Bahli	Surad	Beunthal, Surad, Khamadi
		Nankhari	Sholi	Sholi, Thaili-Chakti, Delath
5	2013-14	Nankhari	Sholi	Nagadhar
			Nankhari	Bai-Bahli, Kungal- Munder, Nankhari, Baglati.
6	2014-15	Nankhari	Gahan	Gahan, Addu, Taprog, Jahu, Peojana
7	2015-16	-	-	-
8	2016-17	-	-	-
9	2017-18	Sarahan	Phancha	Kawbil, Sarpara, Phancha
			Jaghoori	Koot, Ruancha, Jaghoori
10	2018-19	Sarahan	Sarahan	Badhal, Sarahan, Bhagawat
			Gopalpur	Mashanoo, Dofda, Gopalpur
11	2019-2020	Rampur	Rampur	Khaneri, Pashada, Sanathali, Rampur
			Nogli	Dansa, Darshal
12	2020-21	Rampur	Nogli	Nogli, Duttanagar
			Deothi	Deothi, Munish, Kashapat
13	2021-22	Bahli	Taklech	Darkali, Taklech, Theda
			Bahli	Bahli, Jarashi, Chauka
14	2022-23	Bahli	Surad	Beunthal, Surad, Khamadi
		Nankhari	Sholi	Sholi, Thaili-Chakti, Delath
15	2023-24	Nankhari	Sholi	Nagadhar
			Nankhari	Bai-Bahli, Kungal- Munder, Nankhari, Baglati.
16	2024-25	Nankhari	Gahan	Gahan, Addu, Taprog, Jahu, Peojana
17	2025-26	-	-	-
18	2026-27	-	-	-
19	2027-28	Sarahan	Phancha	Kawbil, Sarpara, Phancha
			Jaghoori	Koot, Ruancha, Jaghoori

XI+2.35.2 Punishment for Offences

Section 16 provides that any person who, within the limits of any area notified under Section 3 commits any breach of regulation made, restrictions or prohibitions imposed, order passed or requisition made under section 4,5,6 or 9 or obstructs/resists in any way whatever the execution of the acts or things done under section 10 shall be punished with imprisonment for a term which may extend to 6 months or with a fine which may extend to rupees 500/- or with both. Section 7 provides that every order made under Section 4, 5 or 6 shall be published in the official Gazette and shall set forth the State Government is satisfied, after due inquiry, that regulations restrictions, prohibitions or directions contained in the order are necessary for the

purpose of giving effect to the provision of the Act. The Forest Officers also have powers to take cognizance of offences in such areas as per the provisions of Section 52, 54 to 62, 64, 66 and 73 of Indian forest Act, 1927 under Section 17 and to compound such offences under Section 19 of the Act.

XI+2.35.3 Forest Produce (Regulation of Trade) Act, 1982

The provision of H.P. Forest Produce (Regulation of Trade) Act, 1982, regarding regulation of the trade of forest produce, no owner of forest produce shall sale of any forest produce to a person other than the State Govt. or the agent appointed under Section 3 of the Act and no person other than the State Govt. through its authorized officer or agent i.e. H.P. State Forest Corporation appointed under Section 3 shall purchase forest produce specified in the schedule annexed to this Act from any owner under Section 4 of the Act. Forest produce purchased by the State Govt. through its authorized officer or agent shall be sold or otherwise disposed of in such manner as the State Govt. may direct. “Forest Produce” means trees of any of the species standing, felled or otherwise fashioned, specified in the scheduled annexed to this Act and any other produce declared as such by the Govt. from time to time by a notification published in official Gazette. Contravention of any of the provision of this Act shall be punishable with imprisonment which may extend to one year or with fine which extend to five thousand rupees or with both and the forest produce in respect of such contravention has been made shall be forfeited to the Govt. under Section 12 of the Act or to compound such offences under Section 15 (4) of the Act provided that no case shall be compounded by any authority competent to compound without providing for the forfeiture of the forest produce involved in the said case to the government in lieu of prosecution for the offence.

XI+2.35.4 Forest Produce Transit (Land Routes) Rules, 1978

The provisions of H.P. Forest Produce Transit (Land Routes) Rules, 1978, regarding transport/export of forest produce, shall apply to the forest produce obtained from such areas also. The Rules regarding registration of property mark(s), issue of export/transport pass, issue of challans etc. should be strictly enforced. Contravention of these rules is punishable to imprisonment for a term which may extend to 6 months or with a fine which may extend to rupees 500/- or with both. The penalties will be doubled in cases where the offence has been committed after sun set or before sun rise, or after resistance to the lawful authority or where the offenders have been previously convicted for an offence.

In the year 1991 all restrictions were removed on felling of following six species vide notification No. fts. (a)3-1/84 Part dated 8/2/1991.

- i. Popular
- ii. Eucalyptus
- iii. Albizzia
- iv. Bauhinia
- v. Willow
- vi. Mulbury

Accordingly felling of these species does not attract the provisions of H.P. land Preservation Act, 1978 and the forest department has little control over the felling and transport/export of the produce obtained there from.

Since the management of the private area is not the concern of forest department neither there can be any prescription for these areas nor can be yield from these areas be regulated /controlled in the plan. However the following two broad objectives should be kept in mind while implementing the legal provisions in respect of fellings from private areas.

- i. The overall impact of the felling should not lead to the environmental degradation of the area.
- ii. There should no damage to the govt. forests of adjoining area because of the negligence of the staff of forest department as well as revenue department.

In order to safeguard above two objectives following guidelines may be followed:-

- i. Marking rules for the marking of various species should be strictly adhered to.
- ii. The provision of planting three plants in lieu of every tree felled should be strictly adhered to. The registration of the person who does not comply with this provision should be cancelled.
- iii. All legal provisions on the subject should be strictly implemented at the time of marking/demarcation, felling and transport/export of the forest produce.
- iv. The felling of six species as notified by the Govt. notification dated 8-2-1991 on which there are no restrictions under Section 41/42 of the Act, however the transport/export permit should be made compulsory. This will help in ensuring that there is no illicit felling of these species from the Govt. forests.

XI+2.36 Resin Tapping in Private Areas

With the enactment of Himachal Pradesh Resin & Resin products (Regulation of Trade) Act, 1981, extraction of resin in private areas is being regulated under the provision of the Act. Section 4 of the Act provides that no person other than the State Govt. or an authorized officer can sell or purchase resin from any tapper/owner of resin. It also further restricts tapping of resin or manufacture and export of resin products by any person unless he is registered in accordance with Section 10 of the said Act. Section 4 (d) of the Act provides that no person other than State Govt. or an authorized officer shall transport resin except in the following cases.

- i. Where he being a tapper of resin transports it to the resin depot specified for the area where the resin is tapped or
- ii. Where he transports it on behalf of the State Govt. or an authorized officer.

Thus H.P. State Forest Corporation purchases the entire resin from the private tapper/owner of the resin. Extraction of resin in private forest area should be strictly regulated as per the provisions of The Himachal Pradesh Resin and Resin Products (Regulation of Trade) rules, 1981.

XI+2.36.1 Procedure for Private Resin Tapping

The owners of private land having Chil Trees, who intend to extract resin from their Chil trees, are required to get registered as private tappers with the Forest Department as per the requirement of Section-10 of the Himachal Pradesh Resin and Resin Products (Regulation of Trade) Act, 1981.

While granting permission for tapping in private areas following conditions are generally laid down by the concerned Divisional Forest Officer:-

- i) The work will be carried out strictly as per instructions of resin tapping by rill method/ Cup & lip method.
- ii) Resin tapping will only be done on Chil trees having diameter 30 cm. d.b.h. and above. Only one blaze per tree will be fixed. No Chil tree below 30 cm. d.b.h. shall be tapped failing which the private contractor/tapper shall be liable to pay penalty up to Rs. 15/- per blaze.
- iii) The bark shaving for fixing the resin blaze should not be more than the specified size of blaze. Bark shaving is only done to facilitate freshening of the blaze. In no case it should be removed to the extent that the cambium becomes visible.

- iv) The blaze size should be 38 cm in length, 20 cm in width 10 cm on each side of the central groove (when tapping is done by rill method)
- v) Only one rill on each side of the central groove be made per week meaning thereby that there will be only 32 rills on either side of the central groove during the entire resin-tapping season of eight months. The average width of the rill should not be exceeding 6 to 8 mm and depth 2mm. At least 5 mm space be kept between the consecutive rills.
- vi) The ground on all sides at the base of the tree under tapping shall be clear of dry needles, chips and other inflammable material to a distance of 1 meter all round.
- vii) The contractor/proprietors shall be required to submit fortnightly progress report of resin extraction through the lower subordinates forest staff regularly failing which the private contractor(s) shall be liable to pay penalty up to Rs. 100/- in each case at the discretion of DFO.
- viii) The resin so extracted from the Chil trees from the private area will be removed by the contractor/proprietor or his/ their agent through vehicle or through any means from the approved depots without prior export permit/ rawana from the respective Block Officer.
- ix) The private tapper would intimate in writing at the time of seeking permission for resin tapping the resin depots where the extracted resin will be carried by them for delivery to the HPSFDC.
- x) Every private tapper shall furnish by the 15th January of the following year (for which certificate of registration was granted) the account in writing of total quantity of resin tapped and collected in quintals and number of tins and delivered to the depot of HPSFDC by him during the year of registration.
- xi) All the resin thus extracted shall be sold by the tapper to the HPSFDC at the rates and terms and conditions approved by the Govt. from time to time.
- xii) In case the contractor(s) is/are found to have indulged in pilferage of Pvt resin the permission shall be cancelled and all resin extracted collected shall be confiscated to Govt. and disposed of by handing it over to HPSFDC.
- xiii) The contractor(s) shall be maintaining a record of resin collected at collection depot properly. In addition, the number of mazdoors engaged on resin extraction operation together with name of depots will be got approved from DFO. This record will be made available to the inspecting office of Forest Department/HPSFDC as and when required.
- xiv) The permit holder has to deposit a registration fee @ 10 paise per blaze.

XI+2.36.2 Punishment for Offences

Section 14 provides that if any persons contravenes any of the provisions of this Act or the Rules made there under, he shall be deemed to have committed a forest offence and the resin or resin products, if any, in respect of which such offence is committed shall in, relation to the commission of such offence be deemed to be forest produce and the provisions of chapter-IX of the Indian Forest Act, 1927. Section 16 further provides that no court shall take cognizance of any offence punishable under this Act except on a report in writing of the facts constituting such offence made by a forest officer not below the rank of Forest Ranger or any officer authorized by the State Govt.

XI+2.37 Watershed Management

Water is one of the most important factors in increasing productivity and forests play an important role in maintaining sustained supply of water in the rivers, nalla and streams for irrigation drinking, Hydro Electric Projects and various other uses. Water conservation in forests, therefore, deserves special attention and special emphasis should be given on water conservation and water harvesting etc. The detail of watershed management has been discussed in detail in Chapter-V, Part-II----- the Protection Working Circle.

XI+2.38 Eco-Tourism

Tourism in State of Himachal Pradesh is a growing industry after hydro electric power project. Therefore, the question arises whether tourism will lead to disturbances in environmental equilibrium. In an article on Eco-tourism, Down to Earth, 31st July, 2002, a Mexican eco-tourism consultant is given with the credit for introducing the term “eco-tourism”. He has defined it is “traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations found in these areas”. The International Eco-tourism Society (IETS) considers eco-tourism to be responsible travel to natural areas which conserves the environment and improves the well being of local people. It demands ‘responsible’ travel so that the impact on ecology is minimized and the benefits of travel trade are shared, not just with tour operators, but with local communities an environment friendly smokeless industry for the many beautiful but destitute regions of the world.

Responsible eco-tourism includes programmes that minimize the negative aspect of conventional tourism on the environment and enhance the cultural integrity of local people.

The Govt. of Himachal Pradesh, Forest Department has notified the “H.P. Forest Department Revised Policy on Development of Eco-Tourism in Himachal Pradesh, 2005. Eco-tourism policy of Himachal Pradesh aims to bring the wilderness of Himalayas closer to the tourist visiting the state and at the same time attempts to put in place adequate safeguards and system leading to the preservation of these natural resources. The vision of the eco-tourism is to preserve and protect the forest, natural heritage, flora and fauna and attract discerning tourist and visitors to the state and to make Himachal Pradesh a leading eco-tourism destination in the country. The details objectives and strategies of the policy could be accessed from the website:- www.himachal ecotourism.nic.in/trekking.html.

Eco-tourism interacts with environment in a two way process. The environmental resources provide a critical input for the production of tourism product and virtually the tourism development of an area is dependent on the availability of attractive natural or manmade resources. On the other hand, tourism produces a variety of unwanted by products that are disposed to the environment causing negative effects on the environment of the host area. Among the negative effects of tourism on environment are:-

- i) Disruption of breeding habits, killing of wild animals and change in extent and nature of vegetation cover through clearance to accommodate infrastructure.
- ii) Water pollution through discharge of sewage, air pollution and noise pollution due to vehicle and population.
- iii) Change in character of built area, changes to urban fabric and over load of infrastructure.
- iv) Increased interest in cultural resources, changes in cultural landscape and festivals, prostitution and crime rate increased.
- v) Problem of pollution and garbage disposal.

Eco-tourism can be one of the objects for any biological park and forest conservation and restoration of forest eco-system. The question as to the extent to which tourist traffic may be permitted into the parks was examined in *Forest Friendly Camps Pvt. Ltd. V. State of Rajasthan, AIR 2002, Rajasthan, 214*, the Govt. of Rajasthan has established a tiger project in the vicinity of Ranthambore National Park with a view to attracting tourists. Both the State Govt. and Central Govt. encouraged tourism, and helped setting up of various hotels and resorts around the park area. The appellants challenged the Govt. decision and the Hon’ble Court held that the policy should be developed to ensure that the tourism activities, which need the nature and biological diversity conservation, include mobilizing funds from tourism. The tourism should be

based on environmentally friendly concept. Tourism activities which directly or indirectly contribute to the conservation of nature, forest and bio-logical diversity and which benefit local communities should be permitted. It shall be ensured that the tourism activities should be environmentally, economically, socially and culturally sustainable.

In ***M.C. Mehta V. Kamalnath, (1997) 1 SCC 388***, the Hon'ble Supreme Court held that the State is the trustee of all natural resources, which are by nature meant for public use and enjoyment. Public at large is the beneficiary of the sea-shore, running water, air, forests and ecologically fragile lands. The state as a trustee is under a legal duty to protect the natural resources. These resources meant for public use cannot be converted into private ownership.

On the facts of the case, the court found that bank of the river, which was part of the Protected Forests, had been leased out for commercial purpose. It held that the state of H.P. committed a patent breach of public trust by leasing out the ecologically fragile land for a hotel.

Disagreeing with the argument that the lease for snack bar and restaurant was necessary for visiting tourist in the Reserved Forests, the ***Supreme Court in Union of India V. Kamath Holiday Resorts Pvt. Ltd., (1996) 1 SCC 774***, the Apex Court held that even if the Central Govt. agency grant the lease, prior approval is imperative under Forest (Conservation) Act, 1980. The Supreme Court directed the collector, to send a proposal with remarks of the Conservator of Forests to the Central Govt., who would get the views from the advisory committee and decide the issue keeping in mind the need for a balance between forest preservation and eco-tourism promotion.

In ***T.N. Godavarman V. Union of India WP(c) No. 202/95 dated 2-9-2002***, the Supreme Court held that while the advertisements by rock painting have to be removed the mode or method of removal cannot be left to the sweet will of the wrong doer. It will have to be ensured that the removal of tree advertisement does not cause violation or adversely affect the ecology of the area.

On the facts of the case, the court directed the NEERI to inspect the stretch of road between Manali & Rohtang from the point of view of examining the damage to the ecology caused by the advertisement of coca-cola and Pepsi and other similar activities carried out in the area and to suggest what remedial measures can be undertaken.

In ***Om Prakash Bhatt V. State of U.P. AIR 1997 All 259 (Popularly known as Bugiyal case)***, Bugiyal in Garhwal basically means meadows a pasture land which exists above a certain altitude in the mountains no different than the alpine meadows of Switzerland and Austria.

Closer to home the meadows at Khilanmarg above Gulmarg in Kashmir are called “marg”. The complaint to the court was that these areas are pasture lands to the sheep and the shepherd. The submission was that the bugiyal is basically an eco-system in itself and this delicate balance between ecology and environment has to be understood and respected.

The complaint is that the Garhwal Mandal Vikas Nigam (hereinafter, in short, the Nigam) had put up pre-fabricated lodging houses as a hotel for tourists on the slopes of a bugiyal which is below the peak of the temple of Tungnath (Chopta).

The next issue presented was that indiscriminate import of plastic and non-biodegradable material is playing havoc with the environment of the hills as each season which causes ecological dis-balance. This deposit of plastic materials also kills the green life on the slopes of the mountains.

The third aspect is about the tourist and trekking pilgrimage routes, where the tourist, the pilgrim and the trekker devoid of all civil sense with no respect of the environment through non-biodegradable material on the slopes of the hills and the mountains. Court’s attention was drawn on the garbage strewn on the slopes of the hills right up to the glacier of Gomukh and of manmade deposits of synthetic and non biodegradable materials at the source of the river Ganga at above 14,000 feet. Merely because money has been spent is no ground to degrade ecology and environment. That money has been spent by the Nigam on putting prefabricated structures and tents on the bugiyal was a misplaced expenditure. The bugiyal belongs to the people. It is an eco-system in itself. Nature has tailored it. It is not for man to erode the sanctity of this area. It must be returned to nature to provide for whom it was meant; the sheep, the shepherd, the wild flowers, the micro-organs and the plant and insect life below the turf and in the shrubs at that altitude. Clearly, putting a tourist lodging house on a bugiyal was a mistake.

The court gave direction to Nigam to withdraw occupation of its camp site on the slope of the bugiyal below the temple and above chopta. There are several open patches made available by nature where barren terrain exists to take in tourist lodges provided they are spread over widely. Further, no allotment should be made in respect of occupation of the pasture lands and the meadows that are the bugiyals. This eco-system is to be preserved. The Chief Conservator of Forests for Kumaun and Garhwal can indicate the specific sites in consultation with the village Panchayats.

The polluter pays “principle has been held to be a sound principle by the **Apex Court in *Indian Council for Environ-legal Action V. Union of India, AIR 1996 SC 1446***. The “Polluter

Pays” principle as interpreted by this court means that the absolute liability for harm to the environment extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Remediation of the damaged environment is part of the process of “Sustainable Development” and as such polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology. Principles on environment protection have been adopted by the Hon’ble Supreme Court, one, the main is the principle of “Sustainable Development”. The other two follow from the first; the “Precautionary Principle measures” and “the Polluter pays.” The Supreme Court observed that the precautionary principle and the polluter pays principles are essential features of “Sustainable Development”. (*Vellore Citizens Welfare Forum V. Union of India, AIR 1996 SC 2715*).

Mr. Rama Shanker Shukla, Chief Conservator of Forest (Hills), Kumaun and Garhwal have addressed the court. He explained certain difficulties which were in the way of forest department in meeting with the totality of the programme for protecting the forest, environment and ecology of this region. One aspect which he brought out glaringly was the fact that in the Environment (Protection) Act, 1986, in fact, for all practical purposes, there is no representation of any agency to co-ordinate with Forest Department on the subject which has engaged the attention of the court. He mentioned that he has not come across any officer taking the obligation under this Act and exclusively for this purpose. The picture he gave to the court was that if the authorities were to be identified whose business and obligation it is to protect environment, the checker board is puzzling. He appraised the court with the reality, but fairly accepted that there is no dedicated programme by one agency to show concern and execute efforts, the like of which engaged the attention of the High court. The situation is no different in the State of Himachal Pradesh. The guidelines to preserve it will come from nature itself. The law is only the logic of it. The constitution of India makes it a fundamental duty to bend to nature (Article 48 A and 51A(g) of the Constitution of India). In this regard, neither any citizen nor the State should disregard the edict of the Constitution.

On the aspect of a depleting forest cover in the State of Madhya Pradesh, the **Supreme Court in the case of Pradeep Kishen V. Union of India AIR 1996 SC 2040** held that “if one of the reasons for this Shrinkage is the entry of villagers and tribals living in and around the Sanctuaries and the National Parks, there can be no doubt that urgent steps must be taken to prevent any destruction or damage to the environment, the flora and fauna and wild life in these areas.” *In Indian council for Environ-Legal Action V. Union of India (1996) 4 JT (SC) 263,*

the Supreme Court spelled out an obligation on these matters of environment and ecology on the High court's also. It observed;

“The High Courts would be in a better position to ascertain in facts and to ensure and examine the implementation of the anti-pollution laws where the allegations relate to the spreading of pollution or non-compliance of the other legal provisions leading to the infringement of the anti-pollution laws. For a more effective control and monitoring of such laws, the High Courts have to shoulder greater responsibilities in tackling such issues which arise or pertain to the geographical areas within their respective states. Even in cases which have ramifications all over India where general directions are issued by this court, more effective implementation of the same can, in a number of cases, be effected, if the concerned High Courts assume the responsibility of seeing to the enforcement of the laws and exercise the complaints, mostly made by the local inhabitants about the infringement of the laws and spreading of pollution or degradation of ecology.”

In the light of the Hon'ble High Court and Supreme Courts orders, DFO(T) must take preventive measures under the provision of Indian Forest Act, 1927 and Environment Protection Act, 1986 and for the same purpose shall have to notify the rules under Section 32 of Indian Forest Act, 1927.

XI+2.38.1 Shrikhand Mahadev Yatra

The hills and mountains have special significance and Mountains have traditionally been regarded as abodes of gods. Mountains area also held sacred due to their association with deities, mythology and legends. Sri Khand Mahadev is one such revered mountain peak in Himachal about which not much has been written.

Kailash Parvat (Mountain) is considered to be the most sacred and important as per Hinduism, Jains and Buddhism. In Sanskrit Kailash means crystal. According to Rudra Samhita of Shiv Maha Puran once Lord Shiva vanished from the sight of Lord Brahma and Lord Vishnu transformed into the appearance of a swan and Vishnu transformed his appearance that of a boar with the purpose of commencing the process of creation. Brahma created the water. Afterwards an egg manifested which consisted of all the twenty four elements. This egg was enormous in size which made Brahma confused. He did penance for several years. Vishnu appeared and Brahma requested him to bring the egg to consciousness. Vishnu entered the egg. As a result Kailash Mountain and all the seven worlds came into existence. Once Kubera the lord of wealth was doing tremendous penance. Lord Rudra became happy with his penance and appeared in

front of him. When Kubera saw Lord Rudra before himself, he offered his seat. Rudra was so pleased with Kubera that he decided to stay near him. He called Vishwakarma and ordered him to construct his abode at Kailash Mountain, so that he could live in the vicinity of his great devotee-Kubera. Vishwakarma constructed a beautiful city as per his instruction. An auspicious moment was chosen and went to live at Kailash Mountain. He was coronated by the deities.

It is believed there are total seven Kailash mountains. The well known Mansarovar Kailash in Tibet, Adi Kailash in Pithoragarh district of Uttarakhand, Amarnath Kailash in J&K, Raldang Kailash popularly known as Kinner Kailash in Kinnaur district of Himachal Pradesh, Mani Mahesh Kailash in Chamba district of Himachal Pradesh, Sri Khand Kailash in Shimla/Kullu districts of Himachal Pradesh. Seventh one is believed to be Boorha Kailash and is yet to be located.

Shri Khand Kailash is situated at 18,500 feet above sea level. It is usually undertaken to coincide with the Ashada Poornima or, full moon day of June to July as per the Vikrami calendar. It can be accessed from Jeori, Ghanvi & Phancha in Shimla District or Bathad, Gushani and Jaon in Kullu District.

XI+2.38.2 Remedial Measures

- i) To avoid too much habitation and consequential effects of it will have a warming effect and occasion a temperature rise in alpine meadows. This will have direct effect on the glacier and flora etc. Let man made activity not disturb this natural Himalayan phenomenon especially at Srikhand Mahadev and Bashal Kanda Sarahan etc.
- ii) Between Phancha Kanda to Majhboan public inconvenience as toilet facilities will be spread at periodic intervals of three four kilometers.
- iii) Between Phancha Kanda to Majhboan temporary tea shops will be managed, monitored and controlled by the Eco-tourism society registered by the Forest Department. Adequate arrangement shall be made to receive the packaging material which is non-biodegradable and prevent the littering of it on the mountains side or the streams.
- iv) Every kilometer of the Phancha Kanda to Majhboan route shall have containers bins or receptacles to receive these throw away wastes of packages. Each of the receptacles or bins shall be marked in Hindi and English to Signify bio-gradable & non-bio-gradable etc.
- v) The ultimate lodging facility on this route shall be provided by the Eco-tourism society under the administrative control of the Forest Department. The priority in this region and

the perspective in reference to the environment of the area requires preventing the cutting of forest wood for fire and other purposes. Energy saving devices must be endowed ecologically.

- vi) No permanent structure will be developed as hotels or resorts on the meadows and pasture lands except Phancha village or Phancha Kanda on private land only. This area should not be encroached upon and to take preventive measures for not damaging the forest, environment and ecology.
- vii) The use of plastic packages or bottles or non degradable materials should be banned from entering the hills or discouraging is much better than collecting the garbage under the provision of the Indian Forest Act, 1927 and Environment Protection Act, 1986 or to discourage the entry of plastics and non bio-degradable materials into the hills under the H.P. Non-Biodegradable Garbage (Control) Act, 1995.
- viii) No worships materials will be thrown away at the sweet wills of the pilgrims and it should be kept in proper place i.e. dust bin be kept in proper place dust bin managed by local administration or the Eco-tourism society so that these materials may not be thrown all over the hill side or wet land or Glacier or stream etc. DFO(T) may take step for survey on record to identifying the source and areas of plastic dumps and worships materials disposals especially at Srikhand Mahadev Shivling and Mata Parvati Kund with the help of district administration.
- ix) Tourist and trekking pilgrimage routes i.e. Phancha FRH to Srikhand Mahadev should be maintained properly and also proper camping sites must be identified & maintained or developed with prior approval of the Central Govt. under Section 2 of the Forest (Conservation) Act, 1980.
- x) No commercial activities will be allowed in forest areas especially in meadows and alpine pasture and hoardings/rock painting etc.
- xi) In the light of remedial measures, DFO(T) may take initiative step for formation of eco-tourism society at village level (i.e. Phancha & Sarpara) and declaration of safe eco-trail from road side to ultimate destination i.e. Shri Khand Kailash.
- xii) Mountains and fresh water, water streams are to be kept free of garbage, filth and open defecation. Tea shops, lungar and worships place managed by local people are to be regulated to avoid any stampede and environmental hazard by local administration with the help of Eco-tourism society. The State administration cannot run away from its

obligation set in the Constitution of India, Part-IVA, under Article 51A (g) for strict monitoring and protecting the environment. Thus the State as a trustee is under a legal duty to protect the natural resources. These resources meant for public use cannot be converted unto private ownership.

XI+2.39 Gaushala or Gausadan: Gaushala are meant for the care of stray, abandoned cows, bulls, retired oxen, and orphaned Calves. Cattle's are provided with hey, flour, fresh grass, clean water, medical attention and a place where they can recuperate from injuries and stay peacefully.

Gaushala protect the cows and improve their feeding and living standers and keep them in clean atmosphere. At the same time Gaushala aim to setup a urine therapy research center and practicing center for critical ailments. It also aims to spread the awareness about the importance of cow and rich properties of cow. It also underscores the importance of spiritualism in human life and to create a complex where people can do research, meditate, enjoy a multimedia experience and learn about the facts of happy and prosperous life in a pristine historic and environment. This tract is facing problem of stay cattle all along national high way, link road and other public places attracting the attention of conservationists for some time past.

The solution of this problem could only be overcome by creation of Gaushalas at different locations which are having sufficient grass lands, Gausadan and water resources. Such sites which are identified for creation of Gaushalas are Rajpura near Nogli, Sainj, Jeori, Pandhadar and Delath etc. which will be taken care by Animal Husbandry Department or Gram Panchayat. This will be very helpful in better understanding of problem of stray animals and ultimately help in mitigating the problem of grazing in plantation area i.e. along the national high ways, link road and other nearby forest areas. Therefore, need the Govt. Policy for addressing the problem of stray animals and livelihood issue of the poor people. Not only to this poor people can be engaged for collection of grasses from forest/plantation areas under MGNREGA Scheme for encouragement of stall feeding. This will help to reduce the biotic pressure from forest/plantation and fire during fire season.

Therefore, Divisional Forest Officer (T) must ensure that Gaushala or Goa-Sadan shall be setup or established with prior permission of the Central Govt. under Section 2 of Forest (Conservation) Act, 1980.

XI+2.40 Regeneration Assessment Survey

Regeneration assessment in the forests gives a clear/actual picture of forest stocking, which plays a vital role in the management of forests. It is suggested that regeneration

assessment survey of PB-I forests should be regularly carried out every year. This can be great help and should be kept in view while preparing the APO for next year. The regeneration should keep pace with the fellings/removals. And in case of variations corrective measures should be taken by resorting to artificial regeneration/closure, so that the area is restocked in prescribed time.

CHAPTER –XI+3

ESTABLISHMENT AND LABOUR

XI+3.1 Establishment

The list of existing Ranges, Blocks and Beats is given in Chapter VI paragraph No. 6.2. The position of sanctioned staff and existing staff has been given in Chapter-VI of Part-I. In view of the increased workload on account of developmental activities, more special duty staff shall be required for smooth working in the division. Even the protection work has also become more difficult due to the construction of roads, increasing population and tremendous increase in the prices of timber. Even the remotest forests have become prone to the illicit fellings and encroachments.

The Beats, Blocks and Ranges are small and administratively convenient. So no further reorganization of beats, Blocks and Ranges is suggested. The quantum of office work at range level has increased considerably. Therefore, the Range Officers have to devote more time in the office at the cost of field works. Therefore, all Range Officers should be provided with Range Clerks. Similarly, additional ministerial staff is required to cope up the increasing work load in the division office. Services of all the permanent Forest Workers should be utilized in nurseries and for miscellaneous forest protection and regeneration operations.

XI+3.2 Labour

The position of labour supply has been discussed in Chapter-VI of Part-I. All the exploitation and harvesting works are being done by HPSFDC and labour supply mates of Forest Corporation, for carrying out exploitation of Forests have to import labour from Mandi, Kangra and Chamba Districts. The present rate of unskilled daily wage labour is Rs.150 per day which is likely to be revised from time to time.

Many developmental schemes are in operation in the tract under various departments, thus there is some shortage of labour. Harvesting and sowing seasons of the agricultural/horticultural crops coincide with the forestry works and adequate local labour is some time not available. Similarly the local labours are mostly working under MNEREGA. Gorkha labours from Nepal are also employed as unskilled daily waged labour in various departmental works. The apple season starts from August onwards. For ensuring the success of forestry work, alternative arrangements may have to be thought of. Permanent labour gangs should be maintained in case of nurseries which require expertise.

CHAPTER –XI+4

CONTROL AND RECORDS

XI+4.1 System of Control

The system of control and records adopted in the forest department will be followed. It has been unfortunate that some of the prescription of Working Plan under revision were not given a serious trial while others were completely ignored. Obviously, the objects of management as set out could not be fully realized. Some of the forest journals do not contain complete information about various operations carried out in the past while some entries are not accurately recorded. Control should be considered as an integral part of plan and record of all operations must be maintained. The following records will be maintained in the division:

XI+4.2 Control Forms

To exercise proper check and control on the prescription and suggestion made in this Working Plan, control forms as prescribed in the Punjab Forest Leaflet No. 11 will be properly maintained/ prepared every year by DFO. The Divisional Forest Officer will submit the control forms 2(a), 2(b), 4 and “C” annually in duplicate, before 30th April to the Conservator of Forests for scrutiny and counter signature of the Chief Conservator of Forests every year. The control forms must be completed in all respect along with the deviation statement as laid down in chapter X of National Working Plan code, 2004.

XI+4.3 Compartment History Files

Compartment history files have been prepared in duplicate for all DPFs and UPFs on standard pattern laid down in chapter-IX of National Working Plan code, 2004 and as per Manual for collection of field data given in *Appendix No.-LIX*. The old compartment history files of the all demarcated protected forests have also been filed along with the new ones for reference. It is prescribed that the compartment history files will be maintained properly and kept posted up to date in April every year. The notes on important silvicultural operations, markings, progress of regeneration and other cultural and subsidiary operations will be recorded in these files by the Inspecting officers. During field tours and annual office inspection, the Divisional Forest Officer will ensure that the compartment history files are properly maintained and are kept up-to-date. The Inspecting officers will invariably write inspection notes on the standard proformas prescribed in this chapter copies of which will be placed in the concerned compartment history files.

It is prescribed that one set of history files shall remain in the office of DFO and second set in the office of concerned RO. It will be responsibility of DFO and RO to maintain and post each and every compartment history file in his own office.

XI+4.4 Divisional Note Book

This is mainly a record for use by DFO which shows auction results, handing over of lots to HPSFDC, estimation of outturn of lots, result of experiments carried out if any, records of annual seeding of important species, injuries to crop, divisional statistics notes on the trial of exotics and their performance and any other important information regarding divisional works. No such record is being maintained at present and this should be started now. This note book will contain a summary of all the statistics concerning the district and divisional working. This record will be very useful and handy at the time of Working Plan revision.

XI+4.5 Fire Records

A complete record of fires will be maintained both in the Range office and Divisional office. It should also find mention in the concerned compartment history files. Maps of forests burnt showing extent of area burnt will be filled in the compartment history files concerned along with relevant date such as place from which fire originated, nature of fire, damage caused by fire, duration of fire and how it was fought and brought under control.

XI+4.6 Forest Guard book/ beat Manual

Guard book and forest guard book Manual is an important and handy record of beat statistics and activities like details of forests, forest boundaries included cultivation encroachments, record of rights and concession, sowing/plantation, nurseries, seed collection and other silvicultural operations. The forest guard/ beat manual/ book should also contain the information pertaining to boundaries of forest, beat maps showing forests, roads and paths and record of rights and concessions. The un-demarcated protected forest which has been constituted as new DPFs and brought under the systematic management under this plan should also be entered in the forest guard beat manual and all the above information should be maintained in respect of these areas also. Every Forest Guard should maintain it for his beat and DFO will check these manuals during field tours and ensure that these are properly maintained.

XI+4.7 Register of books and Maps

Register of books and maps will be maintained at Range and Divisional level and kept up to date. All roads, bridle paths, inspection paths and buildings constructed during the year should be shown in maps in April every year.

XI+4.8 Register of DPFs and Listed UPFs

Register of Demarcated Protected Forests and Listed Un-demarcated protected Forest will be properly maintained and all changes in the area or boundaries recorded every year giving reference of Government orders and notifications.

XI+4.9 Register of Roads and Buildings

Register of roads and buildings will be maintained at Range and Divisional level and kept up to date. All roads and buildings constructed during the year should be entered in April every year along with cost of construction.

XI+4.10 Nursery Journals

A nursery journal for each nursery shall be maintained on the standard format where in the details of all the nursery operations like sowing, germination, weeding, pricking etc. shall be incorporated along with cost.

XI+4.11 Plantation Journals

Plantation journals will be maintained on the standard format for all the plantation areas according to the standing instructions from time to time. The journals must also contain the following information's:-

- (i) Location, legal status, boundaries, configurations, aspect, slope, rock, geology and soil, drainage and depth of soil.
- (ii) Soil suitability and treatment map.
- (iii) Map showing prominent natural features.
- (iv) A statement showing area planted and cost of planting item wise for each year.
- (v) A critical note on success or failure of plantation and corrective steps if any required to be taken for the success of plantation.

XI+4.12 Research Journals

The research journals should be maintained in the division and relevant research activities conducted/undertaken should be entered.

XI+4.13 Divisional FCA cases Register

This will contain data regarding diversion of forest land allowed and compensatory afforestation details and trees permitted by GOI to be felled in the area concerned and CAT Plan details, if there is any.

CHAPTER –XI+5

SUMMARY OF PRESCRIPTIONS

XI+5.1 Important Prescriptions: The important prescriptions and suggestions of the working plan are as under:

Sr. No	Headings	Prescriptions	Paragraph of the plan																				
1	2	3	4																				
BASIS OF PROPOSALS																							
1	Supreme Court on Green Felling and Regeneration	Felling of trees from forest area shall be allowed only as per approved working plan by the Government of India.	1.2																				
The Chil Working Circle																							
1	Felling Series	There will be only one felling series for the whole Working Circle i.e. <i>Satluj felling series</i>	2.6																				
2	Silvicultural System	The Punjab shelter Wood System	2.8																				
3	Regeneration Period	30 years	2.10																				
4	Rotation & Exploitable diameter	120 years rotation and exploitable diameter of 60 cm d.b.h.	2.11 & 2.12																				
5	Felling Cycle	15 years	2.13																				
6	Division into Periodic Blocks	Four Periodic Blocks have been formed	2.14																				
7	Calculation of Yield	The yield has been calculated by volume for PB-I and PB-IV	2.15																				
8	Prescribed annual Yield	The prescribed annual yield in M ³ is as under: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Species</th><th>PBI</th><th>PBIV</th><th>Total</th></tr> <tr> <td>Chil</td><td>1550 m³</td><td>1070 m³</td><td>2620 m³</td></tr> <tr> <td>Kail</td><td>0 m³</td><td>0 m³</td><td>0 m³</td></tr> <tr> <td>Deodar</td><td>0 m³</td><td>0 m³</td><td>0 m³</td></tr> <tr> <td>Total</td><td>1550 m³</td><td>1070 m³</td><td>2620 m³</td></tr> </table>	Species	PBI	PBIV	Total	Chil	1550 m ³	1070 m ³	2620 m ³	Kail	0 m ³	0 m ³	0 m ³	Deodar	0 m ³	0 m ³	0 m ³	Total	1550 m³	1070 m³	2620 m³	2.17
Species	PBI	PBIV	Total																				
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Deodar	0 m ³	0 m ³	0 m ³																				
Total	1550 m³	1070 m³	2620 m³																				
9	Control of Yield	The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield.	2.18																				
10	Method of executing felling in PB-I areas	The general principles laid down	2.20.1																				
11	Treatment of PB-II areas	No commercial felling prescribed	2.20.2																				
12	Treatment of PB-III areas	No commercial felling prescribed	2.20.2																				
13	Method of executing felling in PB-IV areas	The general principles laid down	2.20.3																				
14	Sequence of fellings in PB-I & PB-IV	The felling programme has been laid down	2.21																				
15	Subsidiary Silviculture operations in PB-I	Works to be carried out and general principle discussed	2.22																				

1	2	3	4																												
16	Artificial regeneration in PB-I area	To be carried out to supplement natural regeneration discussed and prescribed.	2.22.1																												
17	Resin tapping	The instructions of resin tapping's are contained in Punjab Forest leaflet No. 13, Resin tapping Manual, 2002, HP Forest Manual Vol.-IV and will be followed and the minimum tappable dia is 35 cms. The latest techniques are rill method adopted by the HPSFC Ltd.	2.22.5																												
18	Fire protection	The areas will be protected from fire discussed and prescribed.	2.23.1																												
19	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and rest of the demand of right holders will be met as per the provision of Forest Settlement Report, 1921.	2.23.2																												
20	Closures	Effective closure of all the PB-I areas prescribed	2.23.3																												
21	Grazing and grass cutting	The grass cutting will be prohibited in all the PB-I areas, till the young crop is beyond the damage i.e. 75 cms and above.	2.23.4																												
22	Demarcation of Forests	Pucca Masonary boundary pillars/construction of boundary pillars shall be put and numbers will be engraved on the pillars when cement plastering is fresh discussed and prescribed.	2.23.5																												
23	Regeneration survey	Discussed and prescribed.	2.23.6																												
The Deodar-Kail Working Circle																															
1	Felling Series	There will be only one felling series for the whole WC i.e. Satluj felling series	3.6																												
2	Silvicultural System	The Punjab shelter Wood System	3.8																												
3	Regeneration Period	30 years	3.10																												
4	Rotation & Exploitable diameter	120 years rotation and exploitable diameter of 60 cm d.b.h.	3.11 & 3.12																												
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1	2	3	4
9	Control of Yield	The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield.	3.17
10	Method of executing felling in PB-I areas	The general principles laid down	3.19.1
11	Treatment of PB-II areas	No commercial felling prescribed	3.19.2
12	Treatment of PB-III areas	No commercial felling prescribed	3.19.3
13	Thinning	The thinning will be carried out in accordance with the principles of thinning laid down in Punjab Forest Leaflet No. 1, 1A are prescribed.	3.19.4
14	Method of executing felling in PB-IV areas	The general principles laid down	3.19.5
15	Sequence of fellings in PB-I & PB-IV	The felling programme has been laid down	3.20
16	Subsidiary Silviculture operations in PB-I	Works to be carried out and general principle discussed	3.21
17	Artificial regeneration in PB-I area	This is to be carried out to supplement the natural regeneration discussed and prescribed	3.21.2
18	Planting Programme	Detailed planting programme given in the plantation (overlapping) Working Circle in Table No.7.3.	3.21.3
19	Tending operations	Detailed prescribed.	3.21.4
20	Weeding	Procedure prescribed	3.21.5
21	Cleaning	Detailed prescribed.	3.21.6
22	Fire protection	The areas will be protected from fire discussed and prescribed	3.22.1
23	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and rest of the demand of right holders will be met as per the provision of Forest Settlement Report, 1921.	3.22.3
24	Closures	Effective closure of all the PB-I areas prescribed	3.22.4
25	Regeneration survey	Discussed and prescribed.	3.22.6
THE FIR/SPRUCE WORKING CIRCLE			
1	Felling Series	There will be only one felling series for the whole WC i.e. Satluj felling series	4.6
2	Silvicultural System	The Punjab shelter Wood System	4.8
3	Regeneration Period	30 years	4.10
4	Rotation & Exploitable diameter	120 years rotation and exploitable diameter of 60 cm d.b.h.	4.11 & 4.12
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1	2	3	4																												
7	Calculation of Yield	The yield has been calculated by volume for PB-I and PB-IV	4.15																												
8	Prescribed Annual Yield	The prescribed annual yield in M³ is as under: <table> <tr> <th>Species</th><th>PBI</th><th>PBIV</th><th>Total</th></tr> <tr> <td>Deodar</td><td>1100 m³</td><td>0 m³</td><td>1100 m³</td></tr> <tr> <td>Kail</td><td>550 m³</td><td>68 m³</td><td>618 m³</td></tr> <tr> <td>Chil</td><td>0 m³</td><td>0 m³</td><td>0 m³</td></tr> <tr> <td>Spruce</td><td>6000 m³</td><td>3050 m³</td><td>9050 m³</td></tr> <tr> <td>Fir</td><td>2100 m³</td><td>850 m³</td><td>2950 m³</td></tr> <tr> <td>Total</td><td>9750 m³</td><td>3968 m³</td><td>13718 m³</td></tr> </table>	Species	PBI	PBIV	Total	Deodar	1100 m ³	0 m ³	1100 m ³	Kail	550 m ³	68 m ³	618 m ³	Chil	0 m ³	0 m ³	0 m ³	Spruce	6000 m ³	3050 m ³	9050 m ³	Fir	2100 m ³	850 m ³	2950 m ³	Total	9750 m³	3968 m³	13718 m³	4.16
Species	PBI	PBIV	Total																												
Deodar	1100 m ³	0 m ³	1100 m ³																												
Kail	550 m ³	68 m ³	618 m ³																												
Chil	0 m ³	0 m ³	0 m ³																												
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Fir	2100 m ³	850 m ³	2950 m ³																												
Total	9750 m³	3968 m³	13718 m³																												
9	Control of Yield	The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield.	4.17																												
10	Method of executing felling in PB-I areas	The general principles laid down	4.19.1																												
11	Treatment of PB-II areas	No commercial felling prescribed	4.19.2																												
12	Treatment of PB-III areas	No commercial felling prescribed	4.19.3																												
13	Thinning	Thinning prescribed in accordance with the principles of thinning laid down in Punjab Forest Leaflets No. I and IA.	4.19.4																												
14	Method of executing felling in PB-IV areas	The general principles laid down	4.19.5																												
15	Sequence of fellings in PB-I & PB-IV	The felling programme has been laid down	4.20																												
16	Subsidiary Silviculture operations in PB-I	Works to be carried out and general principle discussed	4.21																												
17	Artificial regeneration in PB-I area	This is to be carried out to supplement the natural regeneration	4.21.1																												
18	Planting programme	Detailed planting programme given in the plantation (overlapping) Working Circle in Table No.7.3.	4.21.2																												
19	Fire protection	The areas will be protected from fire discussed	4.22.1																												
20	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and rest of the demand of right holders will be met as per the provision of Forest Settlement Report, 1921.	4.22.3																												
21	Closures	Effective closure of all the PB-I areas prescribed	4.22.4																												
22	Regeneration survey	Discussed and prescribed.	4.22.5																												
THE PROTECTION WORKING CIRCLE																															
1	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed.	5.7																												
2	Rotation	Only physical rotation prescribed.	5.9																												
3	Calculation of Yield	No yield prescribed as no commercial fellings are proposed	5.10																												

1	2	3	4
4	Sequence of Felling	No sequence of fellings proposed	5.11
5	Plantation Programme	Plantation Programme laid down and is given in the plantation (overlapping) Working Circle in Table No.7.3.	5.13
6	Watershed Management	The general Objectives of Watershed Management with specific reference of Rampur Forest Division discussed	5.14
7	Areas identified for Treatment	Number of micro watershed along with detail identified for treatment discussed and prescribed	5.14.4
8.	Causes of Watershed Degradation	The causes of watershed degradation are defined and detail prescribed.	5.14.5
9.	Criteria for Treatment	Treatment criteria prescribed.	5.14.6
10	Bio-Engineering Measures	Bio engineering interventions and techniques discussed and prescribed	5.15
11	Farm Ponds	Discussed and prescribed	5.16
12	Dams	Discussed and prescribed	5.17
	Construction of drainage line treatment with vegetative measures	Discussed and prescribed	5.17.1
	Construction of Van Sarovar in Forests	Discussed and prescribed	5.18
13	Fire Protection	The areas will be protected from fire discussed	5.18.1
14	Closures	The areas to be taken up for plantation and reclamation will be closed to grazing.	5.18.2
15	Right holder's Demand	The requirements of right holder will be met as per the provision of Forest Settlement Report, 1921.	5.18.6
THE OAK WORKING CIRCLE			
1	Felling Series	There will be only one felling series for the whole WC i.e. <i>Satluj felling series</i>	6.6
2	Silvicultural System	The system of selection cum improvement fellings combined with thinning is prescribed.	6.8
3	Rotation & Exploitable diameter	No rotation prescribed, however, the exploitable diameter for Ban-Oak is prescribed as 20 cm to 35 cm.	6.10 & 6.11
4	Felling Cycle	15 years	6.12
5	Calculation of yield	No yield prescribed due to complete ban on fellings	6.13
6	Method of executing felling	The general principles laid down for academic interest only.	6.14
7	Sequence of fellings	Discussed.	6.15
8	Subsidiary Silviculture operations	Suggestions have been made to improve the regeneration in Ban Oak areas.	6.16
9	Artificial regeneration	This is to be carried out to supplement the natural regeneration discussed	6.17

1	2	3	4
10	Plantation Programme	The planting program laid down and is given in the plantation (overlapping) Working Circle in Table No.7.3.	6.18
11	Fire protection	The areas will be protected from fire discussed	6.21.1
12	Closures	Effective closure of all the areas prescribed	6.21.2
13	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 2nd January, 2010 and rest of the demand of right holders will be met as per the provision of Forest Settlement Report, 1921.	6.21.5
THE PLANTATION (OVERLAPPING) WORKING CIRCLE			
1	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed and only plantation will be raised by planting and sowing.	7.8
2	Rotation & Exploitable diameter	No rotation and exploitable diameter is prescribed.	7.10 & 7.11
3	Calculation of Yield	No yield prescribed as no commercial fellings are proposed	7.12
4	Table of Planting	The Working circle wise and Range wise planting program laid down.	7.13
5	Subsidiary Silviculture operations	Works to be carried out and general principle prescribed	7.15
6	Nurseries	The importance and technique of nursery prescribed.	7.16
7	New Plantations	Plantation techniques prescribed	7.17
8	Tall Planting	Planting of tall plant discussed and prescribed.	7.18
9	Land Bank	The detail of Land Bank area identified and discussed.	7.19
10	Closures	Effective closure of all the areas prescribed	7.20.1
11	Fire protection	The areas will be protected from fire described.	7.20.4
12	Plantation Records	Detailed instructions prescribed.	7.20.6
13	Monitoring and evaluation	Monitoring and evaluation of plantation activities prescribed.	7.20.7
THE NON TIMBER FOREST PRODUCE (OVERLAPING) WORKING CIRCLE			
1	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed	8.7
2	Calculation of yield	No yield prescribed as the most NTFPs are extracted through right holders.	8.8
3	Method of treatment	Only rotational extraction is prescribed	8.9 & 8.9.1
4	Artificial propagation and conservation	Measures are suggested for the conservation, protection and propagation of medicinal plants.	8.10
5	Propagation Techniques	The technique of propagation and harvesting of some important plants species prescribed.	8.12

1	2	3	4
6	Other Non Timber Forest Produce	Brief description of other NTFP like Morchela deliciosa, Dioscorea deltoides etc. discussed.	8.13
7	Campaign for conservation and preservation of endangered species	Discussed and prescribed.	8.14
8	Other Regulations	Legal Measures for extraction/collection and export of NTFP's prescribed under the provision Indian Forest Act, 1927.	8.15
9	Fire Protection	The areas will be protected from fire described.	8.15.2
10	Right Holders Requirements	The requirements of the Right holders will be met as per settlement provision.	8.15.3
THE FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE			
1	General constitution	General constitution of working circle described	9.1
2	General character of vegetation	General character of vegetation described	9.2
3	Special Objects of management	Special Objects of management of the working circle described.	9.3
4	Illicit felling	The illicit felling of trees, causes and modus operandi of illicit felling discussed and described	9.4
5	Forests area prone to illicit Fellings	The detail of forests area are prone to illegal felling/cutting and effectives protection and measures discussed	9.4.5
6	Preventive/Remedial measures	Preventive/Remedial measures discussed and prescribed.	9.4.6
7	Prosecution of forest offences	Procedure discussed and prescribed with case Law.	9.4.7
8	Compounding of Forest Offences	Procedure discussed and prescribed with case Law.	9.4.8
	Disposal of Forest Offences	Procedure discussed and prescribed with case Law.	9.4.9
9	Indian Forest (HP 2 nd Amendment) Act, 1991	The provisions of IFA 2 nd amendment Act, 1991 is discussed and prescribed.	9.4.10
10	Fire protection	Causes of forest fire, factor contributing to Fire Damage, fire season, Special Fire Risk Zones etc. discussed and described.	9.5 – 9.5.6
11	Fire Lines	The detail of existing and proposed fire lines given.	9.5.7
12	Control Burning	Triennial cycle for control burning is proposed and prescribed.	9.5.9
13	Preparation of Annual Plan	Preparation of annual plan and administrative measures are suggested.	9.5.11
	Legal Measures	Procedure discussed and described with case law.	9.5.13
	Assessment of Loss caused by fire	The mythology for assessment of fire loss discussed and prescribed.	9.5.14

1	2	3	4
14	Fire Record	Maintenance of fire record suggested.	9.5.15
15	Encroachment	Causes of encroachment, preventive measures, and steps taken for eviction of encroachment along with annual programme for detection of encroachment is discussed and prescribed.	9.6 to 9.6.3
16	Mining	The Supreme Court on mining, state mining policy and list of stone crushers in Rampur Forest Division, condition for running of stone crusher and mining lease, delegation of powers etc. discussed and described with case law and rules.	9.7
17	Illegal Mining	Legal provision for detection, search, penalty, preventive measures and monitoring and review of the mining areas discussed and prescribed under Mines & Minerals Rules and Act.	9.7.8 to 9.7.15
18	Poaching	Detection of poaching, preventive measures etc. discussed and described under the Wild Life (Protection) Act, 1972.	9.8.1 to 9.8.3
19	Penalties, Bail and Cognizance of Offences	Legal provisions discussed and described under the provision of Wild Life (Protection) Act, 1972.	9.8.4
THE JFM (OVERLAPPING) WORKING CIRCLE			
1	Emergence of Joint Forest Management	The evolution of joint forest management is discussed and prescribed.	10.2
2	Concept of participatory forest management	Concept of participatory forest management is discussed and prescribed.	10.3
3	Joint Forest Management In H.P.	Discussed and prescribed	10.4
4	Formation of Forest Development Agency (FDA)	Procedure prescribed.	10.5
5	Special Objective of JFM	Discussed and prescribed.	10.6
6	Implementation of JFM in Rampur Division	The JFM approach implemented in Rampur Forest Division through different projects discussed.	10.7
7	Scope of JFM	Discussed and prescribed.	10.8 to 10.8.2
8	Potential activities of JFM committees	Potential activities of JFM committees suggested.	10.8.3
9	Preventive/Remedial Measures	Preventive/Remedial Measures prescribed.	10.8.4
10	Strengthening of Joint Forest Management	Procedure for Strengthening of Joint Forest Management is prescribed.	10.8.5

1	2	3	4
11	Role of Women in JFM	Role of Women in JFM is discussed and prescribed.	10.8.6
12	Project Impact & Benefits	The project Impact & Benefits prescribed.	10.9
13	Monitoring & Evaluation	Process of monitoring & evaluation discussed.	10.10
THE WILDLIFE MANAGEMENT (OVERLAPPING) WORKING CIRCLE			
1	Importance of wild life	The importance of protection and preservation of wild life is discussed and prescribed.	11.2
2	Management Imperatives	Discussed and prescribed.	11.5 to 11.5.2
3	Human Wild Life Conflict	Discussed and prescribed.	11.5. 3 to 11.5.5
4	Conflict types & Remedial Measures	Discussed and prescribed.	11.6
5	Management Initiatives required to Address Human-Wild Life Conflicts	Discussed and prescribed.	11.7 to 11.7.10
6	Compensation for damages caused by wild animals	The rates for grant of relief for damages prescribed.	11.8
7	Management Prescriptions	Management Prescriptions Described and prescribed.	11.9
8	Mitigating Man Animal Conflicts	Discussed and prescribed.	11.9.6
9	Census of Wild Life	Latest census of monkey given.	11.9.7
10	Compensation for damages caused by Monkey	The detail of compensation paid for the damages caused by the monkey.	11.9.8
11	Monkey-Human Interface	Discussed and prescribed.	11.9.9
12	Strategy to Mitigate Monkey Menace	Strategy to Mitigate Monkey Menace and Monkey Sterilization Programme described and described.	11.9.10 to 11.9.14
GENERAL FINANCIAL FORECAST AND FINANCIAL PLAN OF OPERATION			
1	Future revenue and Expenditure	The future revenue and Expenditure anticipated is described.	XI+1.1
2	Future Yield	Annual expected yield in different WC	XI+1.3
3	Expected Revenue	The expected future revenue anticipated to be Rs. 778.25 per annum (in lacs)	XI+1.4
4	Future Expenditure	The expected future expenditure anticipated to be Rs. 676.03 per annum (in lacs)	XI+1.5

1	2	3	4
5	Cost of Working Plan	The total cost for preparation of Working Plan is Rs. 18.28 lacs.	XI+1.6
MISCELLANEOUS REGULATIONS			
1	Petty felling	Petty fellings have been defined	XI+2.1
2	Deviations	Deviations defined and regulations made regarding the same	XI+2.2
3	Demarcation of forest	Checking of boundaries of the demarcated forests with the help of their maps and preparations of boundary register has been prescribed. Survey and demarcation of un-demarcated protected forest has been suggested.	XI+2.3
4	Forest Settlements	Discussed and prescribed.	XI+2.4
5	Creation of New Protected Forests	Discussed and prescribed.	XI+2.5
6	Entries in Revenue Record	Needs to be reconciled and entries made in the Revenue record.	XI+2.6
7	Revisions of Forest Settlement Rights, 1921.	Discussed and prescribed.	XI+2.7
8	Forest boundaries	Discussed and described. Necessary step for getting demarcation of forest land from Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954 for ascertaining the position of BPs .	XI+2.8
9	Periodic checking of boundaries	The periodic checking of boundaries is prescribed and norms fixed. A quinquennial programme for checking of forest boundaries has also been prescribed.	XI+2.9
10	Compartment and sub compartment boundaries	The sign board indicating the compartment and sub-compartment are prescribed to be affixed on prominent sites/location.	XI+2.10
11	Maps	Procurement of new maps/survey sheets suggested.	XI+2.11
12	Beat Map	Beat map on 4"=1 mile scale is suggested to be provided to each forest guard.	XI+2.12
13	Water supply	Discussed and prescribed.	XI+2.13
14	Rain and snow gauges	No rain gauges are available and new gauges to be installed are suggested.	XI+2.14
15	Timber for right holders	Discussed and prescribed.	XI+2.15
16	Forest Rights and Duty	Discussed and prescribed.	XI+2.16
17	Person bound to Assist Forest Officer	Legal provision to assist forest officer is discussed and prescribed under the provision of Indian Forest Act, 1927.	XI+2.17
18	Timber as Free Grant	Discussed and prescribed.	XI+2.18
19	Grazing	Discussed and prescribed.	XI+2.19
20	Closure notification	Closure should be got issued under Section 30 (b) of Indian Forest Act, 1927.	XI+2.20

1	2	3	4
21	Lopping	Discussed and prescribed.	XI+2.21
22	Fire Protections	Detail of fire protection measures prescribed.	XI+2.22
23	Encroachments	Encroachments discussed and suggestions to prevent encroachments prescribed.	XI+2.23
24	Illicit felling, illegal mining and Poaching	The preventive and control mechanism under the various Act with regard to Illicit felling, illegal mining and Poaching discussed and prescribed.	XI+2.24
25	Communication Network	Improvement of communication system is suggested.	XI+2.25
26	Geo-referencing in Forestry Operations	Geo-referencing of forestry operations suggested.	XI+2.26
27	Research and sample plots	Detail of old sample plots described.	XI+2.27
28	Preservation Plots	Selection of suitable preservation plots suggested.	XI+2.28
29	Roads, paths & buildings	Discussed.	XI+2.29
27	Ban on green fellings	Ban on green fellings discussed and described.	XI+2.30
28	Land Bank	Discussed and prescribed.	XI+2.31
29	Diversion of Forest Land	Discussed and prescribed.	XI+2.32
30	Non-Timber Forest Produce	Discussed and prescribed.	XI+2.33
31	Saw Mill and Depot	Discussed and prescribed.	XI+2.34
32	Felling in Private Areas	Discussed and prescribed.	XI+2.35
33	H.P. Land Preservation Act, 1978	Ten year felling Programme is discussed and prescribed.	XI+2.35.1
34	Punishment for offences	Discussed and prescribed.	XI+2.35.2
35	Forest Produce (Regulation of Trade) Act, 1982	Discussed and prescribed.	XI+2.35.3
36	Forest produce transit (Land Routes) Rules, 1978	Discussed and prescribed.	XI+2.35.4
37	Resin Tapping in Private Areas	Procedure regarding Resin Tapping in private areas discussed and prescribed.	XI+2.36 to XI+2.36.1
38	Punishment for Offences	Punishment for contravention of any provisions of Act or the Rules made there under, is discussed and prescribed.	XI+2.36.2
39	Watershed Management	Discussed and described in detail in Chapter-V, Part-II of The Protection Working Circle.	XI+2.37
40	Eco-Tourism	Scope of Eco-Tourism along with various relevant provisions discussed and prescribed.	XI+2.38

1	2	3	4
41	Shrikhand Mahadev Yatra	Religious sanctity of Shri Khand Mahadev along with route to visit the deity and remedial measures are discussed and prescribed.	XI+2.38.1 to XI+2.38.2
42	Gaushala or Gausadan	Discussed and prescribed.	XI+2.39
43	Regeneration Assessment Survey	Regeneration assessment survey of PB-I forests discussed and prescribed.	XI+2.40
ESTABLISHMENT AND LABOUR			
1	Establishment	Necessity to increase of the staff is suggested.	XI+3.1
2	Labour	Maintenance of permanent labour gangs suggested.	XI+3.2
CONTROL AND RECORDS			
1	System of control	Records of all the operations be maintained.	XI+4.1
2	Control Forms	Maintenance of control forms for fellings, subsidiary operations and regeneration are prescribed.	XI+4.2
3	Compartment History files	Proper maintenance and up to date posting in April each year prescribed.	XI+4.3
4	Divisional note book	Suggested and to be maintained	XI+4.4
5	Fire records	To be maintained in the Ranges as well as in the Division Office.	XI+4.5
6	Guard book/ beat Manual	Proper maintenance and up to date posting of Forest Guard manual prescribed.	XI+4.6
7	Register of books and maps	Maintenance of registers of books and maps in Ranges and Division Office prescribed.	XI+4.7
8	Register of DPFs and UPFs	To be maintained in the Ranges as well as in the Division Office.	XI+4.8
9	Register of roads and Buildings	To be maintained in the Ranges as well as in the Division Office.	XI+4.9
10	Nursery Journals	To be maintained in all the Ranges.	XI+4.10
11	Plantation Journals	To be maintained in all the Ranges.	XI+4.11
12	Research Journals	To be maintained in Ranges and in the Division.	XI+4.12
13	Divisional FCA cases Register	To be maintained in Ranges and in the Division.	XI+4.13

GLOSSARY OF THE VERNACULAR TERMS	
Local Term	English equivalent
Balli	Round un-sawn timber used in houses as rafter or post.
Chak	Included cultivation within forest boundary. In Bushahr revenue settlement, the term 'CHAK' is for Mohal or a revenue estate also.
Chaukidar	Watchmen.
Chhanda	The river is land beyond the boom, where timber gets stranded.
Dandasa	The trade name of the bark of walnut roots, used for cleaning teeth by ladies.
Dehat	Village.
Deota	The local God.
Dhar	A spur or a ridge.
Doghri	A small farm house on the land, usually away from the main village.
Gad	A small stream with perennial water.
Gaddies	The professional shepherds belonging to district Chamba or Kangra.
Gattu	A small odd size of scantling usually less than 4 feet in length.
Gharat	A water flour mill.
Ghal	Timber floating in the stream or river.
Ghasni	The village grass land.
Ghati	The pass in main ridge.
Ghee	Clarified butter.
Gujjar	The nomadic buffalo grazier, generally mohammadan.
Hakries	Small triangular split up pieces of wood, usually less than 5 feet in length.
Hath	Hand, equivalent to one and a half feet.
Illaq	Area.
Jogthi	Torchwood.
Karries	Scantlings.
Kanda	Alpine Pasture
Kanungo	A revenue official immediately above Patwari.
Khad	A small stream with perennial water.
Kharif	Rainy season crop.
Kinnauras	Residents of illlqa Kinnaur, Bushahr.
Kuhal/Kuhl	A water channel.
Lambardar	The village headman.
Mali	Man employed for maintenance of nurseries.
Mohal	A revenue estate.
Mazdoor	A labourer
Muharir	Man employed on check work.
Nala/Nallah	A ravine or depression with or without water.
Nautor	Land granted for fresh cultivation.
Panchayat	Village council.
Panwi	A grass land, burnt annually during winter.
Pargana	A unit comprising of several villages.
Patwari	Revenue official incharge of the smallest revenue unit.
Rabi	Winter crop.
Rakha	A watchman for protection of forest.

Tehsildar	A revenue officer, incharge of a tehsil.
Tibba	Peak.
Thach	Small grassy blanks in alpine forests used as halting places by graziers.
Wajib-ul-arz	Regulation regarding land, rights etc.

**Glossary of common Trees, Shrubs, Herbs and Grasses found in Rampur Forest
Division**

A:- Trees		
Sr. No.	Botanical name	Local name
1	2	3
1.	Abies pindrow	Tosh
2.	Acacia catechu	Khair
3.	Acer oblongum	Parang
4.	Acer pictum	Rikhandlu
5.	Acer caudatum	Rikhandlu
6.	Aesculus indica	Khanoor
7.	Albizzia lebbek	Siris
8.	Bauhinia variegata	Kachnar
9.	Bombax ceiba	Semal
10.	Butea monosperma	Dhak
11.	Cassia fistula	Amaltas
12.	Toona ciliata	Toon
13.	Cedrus deodara	Deodar
14.	Celtis australis	Khirak
15.	Cupressus torulosa	Saru
16.	Corylus colurna	Banshahri
17.	Cryptomeria japonica	Japani saru
18.	Dalbergia sissoo	Shisham
19.	Dandrocalamus strictus	Bans
20.	Ficus religiosa	Pippal
21.	Grewia oppositifolia	Biul
22.	Ilex dipyrena	Kandru
23.	Kydia calycina	Pula
24.	Juglans regia	Akhrot
25.	Lannea coromandelica	Jhingan
26.	Litsaea umbrosa	Chirindi
27.	Mallotus philippinensis	Kamela
28.	Mangifera indica	Aam
29.	Morus alba	Toot
30.	Melia azadiarachta	Drek
31.	Olea cuspidata	Kahu
32.	Ougeinia oojeinensis	Sandan
33.	Picea smithiana	Spruce
34.	Pinus wallichiana	Kail
35.	Pinus roxburghii	Chil

36.	<i>Populus ciliata</i>	Poplar
37.	<i>Prunus armeniaca</i>	Chulli
38.	<i>Prunus cerasus</i>	Jaman
39.	<i>Prunus cornuta</i>	Jaman/Jamu/Krun
40.	<i>Prunus persica</i>	Aaroo
41.	<i>Pyrus pashia</i>	Kainth
42.	<i>Quercus himalayana</i>	Mohru

1	2	3
43.	Quercus incana	Ban
44.	Quercus semicarpifolia	Kharshu
45.	Rhododendron arborium	Brass
46.	Rhus cotinus	Tung
47.	Robinia pseudoacacia	Pahari kikar
48.	Salix babylonica	Majnu
49.	Salix daphnoides	Biuns
50.	Salix elegans	Bhashal
51.	Sapindus mukurossi	Ritha
52.	Taxus baccata	Thuna
53.	Ulmus wallichiana	Marn
B-SHRUBS AND HERBS		
	Botanical name	Local name
1.	Adhatoda vasica	Basuti
2.	Agave americana	Ram ban
3.	Artemisia vulgaris	Charmer (Khadar)
4.	Bambusa arundinarea	Bans
5.	Berberis aristata	Kasmal
6.	Berberis lycium	Kasmal
7.	Carrisa spinarum	Karonada
8.	Coriaria neplensis	Gangara
9.	Crotalaria albida	Chhunchhunu
10.	Cotoneaster bacillaris	Reuns
11.	Cotoneaster microphylla	Chamrol
12.	Cyathula tomentosa	Kathla
13.	Daphne papyracea	Kaula
14.	Desmodium tilieaeifolium	Murt
15.	Deutzia corymbosa	Philru
16.	Euphorbia royleana	Shuru
17.	Indigofera gerardiana	Kathi
18.	Indigofera trifoliata	Kathi
19.	Jasminum officinale	Chameli
20.	Juniperus communis	Guggal
21.	Lonicera orientalis	Tiknoi
22.	Loranthus vestitus	Pand
23.	Plectranthus coetsa	Chhichhri
24.	Polygonum chinensis	Jangli palak
25.	Prinsepia utilis	Bhekhal
26.	Rosa macrophylla	Gulab

27.	<i>Rosa sericea</i>	Gulab
28.	<i>Roylea calycina</i>	Karanoi
29.	<i>Rubus ellipticus</i>	Hinsar
30.	<i>Sarcococca saligana</i>	Tiliari
31.	<i>Saussurea lappa</i>	Kuth
32.	<i>Spiraea lindleyana</i>	Kongtri
33.	<i>Strobilanthus wallichii</i>	Machin
34.	<i>Viburnum cotinifolium</i>	Loe

1	2	3
35.	Vitex negundo	Bana
36.	Woodfordia fruticosa/ floribunda	Dhau
37.	Zizyphus oxphylla	Beri
C- CLIMBERS		
1.	Bauhinia vahlii	Taur
2.	Clematis montana	Garol
3.	Cuscuta reflexa	Saragbali
4.	Dioscorea deltoides	Kural
5.	Hedera helix	Mithiari
6.	Rosa moschata	Balgulab
7.	Smilex niveus	Ushwa
	Vitis parvifolia	Panibel
D-GRASSES		
1.	Bothriocloa pertusa	-
2.	Brorus spp.	-
3.	Chrysopogon mantanus	Dhalu
4.	Cynodon dactylon	Dub
5.	Dicanthium annulatum	-
6.	Festuca pratensa	-
7.	Heteropogon contortusa	Lamb
8.	Phalcaris tuberosa	-
9.	Brachiaria villosa	-

**ANIMALS, BIRDS, REPTILES AND FISH ETC. FOUND IN RAMPUR FOREST
DIVISION**

(A) ANIMALS	
English name	Scientific name

Leopard	Panthera pardus
Large-tiger-cat	Felis viverrina
Common jungle-cat	Felis chaus
Haena	Hyeona straita
Wolf	Lupus pallips
Himalayan Black Bear	Selenarctos thibetanus
Indian fox	Vulpes bengalensis
Indian porcupine	Hystrix indica
HERBIVORA GOATS (ANTILOPES)	
Himalayan goat	Nemorhaedus Gral
Forest goat	Nemorhaedus bubaline
BEER	
Musk deer	Moschus moschiferus
Barking deer	Muntiacus muntak
Sambar	Cervus unicolor
Spotted deer	Asix medius
Hog deer	Cerbvuor oryzeus
PIG	
Wild pig	Sus scrofa
OTHERS	
Common Indian hare	Lepus indicus
Common striped squirrel	Sciurus palmarum
Brown flying squirrel	Puromys petaurista
(B) NON GAME ANIMALS	
Monkey	Macaca mulatta
Common languor	Presbytis entellus
Jackal	Canis aureus
Himalayan warmot	Farmota roback
Common mangoose	Herpestes edwardsil
Barbos telio bat	Barbastella, barbasetellus
Brown flying squirrel	Pteromys petaurista
Indian mole rat	Nesekia indica
Hill mouse	Mos homourus
(C) GAME BIRDS	
PHEASANT AND FOWLS	
Kestrel	Salco tinnunclus
Chir pheasant	Catreus wallichii
White crested	Lophura leucomelana
Kaleej	Lophura leucomelana

Red jungle fowl	Gallus ferrugiens
Western Tragopan	Tragopan melanocephalus
Impeyan pheasant	Lophophorus impeyanus
Pea-fowl	Pavo cristatus
Koklas pheasant	Pucrasia macrdopha
PAETREDGES AND QUAILS	
Black partridge	Francolinus francolinus
Hill partridge	Arborophila torqueola
Chakor partridge	Alectoris graeca
Snow partridge	Lerwa lerwa
Little bus fard	Trunix sylvatica
Quail	Sussumier
PIGEON AND DOVE	
Hill pigeon	Columba rupestris turkestanica
Weete tailed green pigeon	Treron sphennra
Spotted dove	Streptopeliachi neusia
Blue rock pigeon	Columba livia
Barheaded goose	Aneer indicus
Snow pigeon	Columba leuconta
Estern sock pigeon	Columba lversmanni
Pintail	Anas acuta
Common tail	Anas creca
(D) NON GAME BIRDS	
Black bulbul	Hypsiyetes madagasciensis
Jungle crow	Corvus macrorhynchos
House crow	Corvus splendens
Cuckoo	Cuculus canorus aureusa
Pied crested cuckoo	Clamator jacobinus
Slaty headed Parakeet	Psittacula himalayana
Blossom headed parakeet	Psittacula roseata
Scally bellied woodpecker	Picus squamatus
Himalayan griffon	Gyps himalayensis
Golden eagle	Aquila chrysactus
Creasted serpent eagle	Spilornis cheela
Black kite	Milvus migrans
Nut cracker	Nucifraga caryocatactes
Sparrow bawk	Accipter risus
Egyptiarur scavenger vulture	Neophhron perconopters
Collared pygmy owl	Glaucichium prodiei
Spotted scops own	Otus spilocephalus

Great hill barbet	<i>Megalaima virens</i>
Scooted porktail	<i>Enicurus maculatus</i>
Sooty fly catches	<i>Muscicapa ceylonensis</i>

Dull green warbles	Thylloscopus trochiloides
Green backed tit	Parus monticolus
Brown crested tit	Parus D. Chorus kanfrae
Himalayan tree creeper	Crethia himalayana
Black spooted tit	Parus xanthogenys
Common myena	Acridotheres tristis
Brown dipper	Cinclus pallaii tenuirostris
Yellow throated sparrow	Petronia xasshocallis
House sparrow	Passer domesticus indicus
Masked wagtail	Metacilla alba persouated
Grap wagtail	Motacilla caspica
Tree pipit	Aathus tribialis haringtoni
Purple sun bird	Nectarinia asiatica
Beautiful rose finch	Caropdanlus erythrinus roseatus
(E) REPTILES	
SNAKES	
Himalayan pit viper	Ancistrodon himalayanus
Common Indian Krait	Bungarus cacruleus
Indian cobra	Naja naja
Rat Snake	Ptyas mucosus
LIZARDS	
Common Indian Monitor	Varanus monitor
Common House gecko	Hemidactylus brooki
Rock Lizard	Agama tuberculata
Blood sucker	Techydrmous Spp.

ABBREVIATION

ACF	Assistant Conservator of Forests
APO	Annual Plan of Operations
AIR	All India Reporter
AWPO	Assistant Working Plan Officer
Addl. Pr. CCF	Additional Principle Chief Conservator of Forests
BPs	Boundary Pillars
CCF	Chief Conservator of Forests
CF	Conservator of Forests
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CAT Plan	Catchment Area Treatment Plan
CWP	Civil Writ Petition
CAI	Current Annual Increment
CWC	Chil Working Circle
DCF	Deputy Conservator of Forests
DPF	Demarcated Protected Forest
DKWC	Deodar Kail Working Circle
DM	Divisional Manager
EPA	Environment Protection Act
FCA	Forest (Conservation) Act
FDA	Forest Development Agency
Fgd	Forest Guard
FSWC	Fir Spruce Working Circle
FRI	Forest Research Institute
GPS	Global Positioning System
GoHP	Government of Himachal Pradesh
GoI	Government of India
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GSDP	Gross State Domestic Product

HPSFDC Ltd	Himachal Pradesh State Forest Development Corporation Limited
ICFRE	Indian Council of Forestry Research & Education

IFA	Indian Forest Act
IWDP	Integrated Watershed Development Project
JFPM	Joint Forest Participatory Management
JFM	Joint Forest Management
MAI	Mean Annual Increment
MFP	Minor Forest Produce
MIS	Management Information System
NTFP	Non-timber Forest Produce
NGO	Non-Governmental Organization
NWFPS	Non- Wood Forest Products
OWC	Oak Working Circle
Pr. CCF	Principle Chief Conservator of Forests
PB	Periodic Block
PES	Payment for Environment Services
PWC	Protection Working Circle
Pl.WC	Plantation Working Circle
RO	Range Officer
RSD	Road Side Depot
SFR	State of Forest Report
SLUB	State Land Use & Waste Land Development Board
SPCB	State Pollution Control Board
SCC	Supreme Court Cases
SLP	Special Leave Petition
TD	Timber Distribution
UPFS	Un-demarcated Protected Forests
VFDCS	Village Forest Development Committees
WC	Working Circle
WLPA	Wild Life (Protection) Act
WP	Working Plan
WPO	Working Plan Officers

RAMPUR FOREST DIVISION

Statistics at a Glance

1.	Total Geographical area of the tract	= 1, 00,318.1962 hac.
2.	Forest area (DPF & Listed UPF)	= 39420.92.05 hac.
3.	Percentage of forest area to total Geographical area	= 39.30%
4.	Legal status of Forest area —	

i) **Indian Forest Act, 1927**

a)	Reserved forests	= Nil
b)	Protected Forests (i.e. Demarcated Protected Forests)	= 36294.39.05 hac.
c)	Village Forests	= Nil

ii) **Forest Conservation Act, 1980**

a)	Reserved forests	= Nil
b)	Protected Forests (i.e. Demarcated Protected Forests)	= 36294.39.05 hac.
c)	Village Forests	= Nil
d)	Un-demarcated Protected Forests	= 3126.53 hac.
e)	Other Land as defined by the Supreme Court	= 44516.1340 hac.

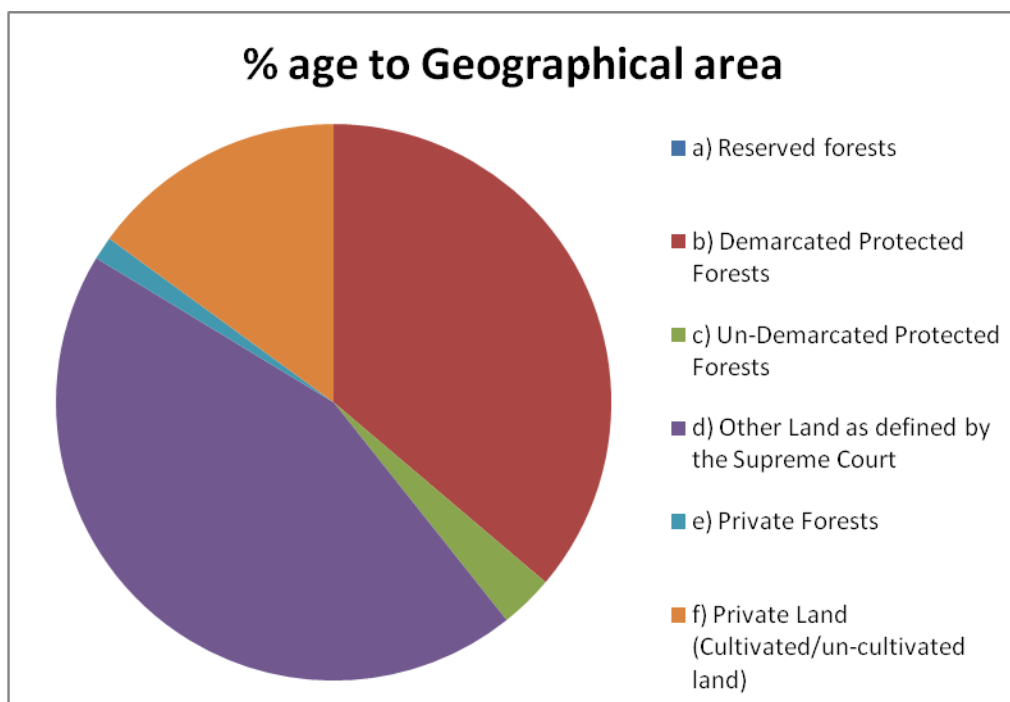
f) Private Forests

= 1355.1908 hac.

5. Percentage of forest area under Reserved, Demarcated Protected Forests and Un-demarcated protected forests.

Category of forests	% age to forest area	% age to Geographical area
a) Reserved forests	Nil	Nil
b) Demarcated Protected Forests	92.07	36.18
c) Un-Demarcated Protected Forests	7.93	3.12
d) Other Land as defined by the Supreme Court	-	44.37
e) Private Forests	-	1.35
f) Private Land (Cultivated/un-cultivated land)	-	14.98

Graphical Representation of category of forests



6. Area by Working Circle

Sr. No.	Working Circle	Total area (ha.)	% age to total Divisional forest area
1	Deo/Kail W.C.	10589.2502	26.86
2	Fir/Spruce W.C.	13998.4743	35.51
3	Chil W.C.	3923.7465	9.95
4	Oak W.C.	911.3073	2.31
5	Protection W.C	9442.4822	23.95
6	Plantation W.C.	555.66	1.41
	Total =	39420.9205	100.00

7. Species wise and Working circle wise Growing Stock (volume in M³)

Sr. No.	Species	Chil Working Circle	Deodar/Kail Working Circle	Fir/Spruce Working Circle	Oak Working Circle	Total
1	Deodar	1863.47	1143829.24	245086.96	8.22	1390787.9
2	Kail	3455.09	1873726.3	274649.29	7392.45	2159223.1
3	Chil	334702	34326.12	-	19559.88	388587.99
4	Spruce	162.88	620181.51	1978923.8	1985.25	2601253.4

5	Fir	-	31329.73	1288846.4	-	1320176.2
6	Ban	27954.6	428940.48	17811.16	83651.06	558357.3
7	Mohru	3.52	21616.73	58347.97	-	79968.22
8	Kharsu	-	-	5533.84		5533.84
9	Walnut	-	4900.24	12664.49	-	17564.73
10	Maple	-	24.56	22755.5	181.43	22961.49
11	Taxus	-	4631.39	9669.03	-	14300.42
12	Brass	1695.95	517.86	-	-	2213.81
13	Kunish	-	294.94	-	-	294.94
14	Tooni	-	7.43	-	-	7.43
15	Kainth	-	2.16	-	-	2.16
16	Poplar	2388.08	413.1	-	-	2801.18
17	Khanor	-	6781.69	-	-	6781.69
18	Jamun	-	879.73	-	-	879.73
19	Birdcherry	-	45.74	-	-	45.74
20	Shisham	35.64	-	-	-	35.64
21	Other Species	13319.7	143020.4	260478.03	23309.13	440127.23
Total		385580.9	4315469.35	4174766.49	136087.4	9011904.15

8. Working Circle wise total number of trees

Sr. No.	Species	Chil	Deodar/ Kail	Fir/ Spruce	Oak	Total
1	Deodar	6745	1026470	133480	17	1166712
2	Kail	7634	1060737	147337	6091	1221799
3	Chil	290774	17756	-	15600	324130
4	Spruce	37	362126	982430	592	1345185
5	Fir	-	8604	676110	-	684714
6	Ban	24801	194932	12818	50421	282972
7	Mohru	26	22100	48582	-	70709
8	Kharsu	-	-	14909	-	14909
9	Walnut	-	1900	8575	-	10475
10	Maple	-	28	31685	525	32237
11	Taxus	-	8075	24936	-	33011
12	Brass	3696	1629	-	-	5326
13	Kunish	-	601	-	-	601
14	Tooni	-	6	-		6
15	Kainth	-	11	-	-	11
16	Poplar	1093	617	-	-	1710

17	Khanor	-	1629	-	-	1629
18	Jamun	-	1363	-	-	1363
19	Birdcherry	-	20	-	-	20
20	Shisham	123	-	-	-	123
21	Other B.L Species	21920	137408	365115	66732	591176
Total		356851	2846012	2445976	139979	5788818

9. Working circle wise Growing stock per ha. (in M3)

Sr. No.	Species	Chil Working Circle	Deodar/Kail Working Circle	Fir/Spruce Working Circle	Oak Working Circle	Total
1	2	3	4	5	6	7
1	Deodar	0.47	108.02	17.51	0.01	126.01
2	Kail	0.88	176.95	19.62	8.11	205.56
3	Chil	85.30	3.24	0.00	21.46	110.01
4	Spruce	0.04	58.57	141.37	2.18	202.15
5	Fir	0.00	2.96	92.07	0.00	95.03
6	Ban	7.12	40.51	1.27	91.79	140.70
7	Mohru	0.00	2.04	4.17	0.00	6.21
8	Kharsu	0.00	0.00	0.40	0.00	0.40
9	Walnut	0.00	0.46	0.90	0.00	1.37
10	Maple	0.00	0.00	1.63	0.20	1.83
11	Taxus	0.00	0.44	0.69	0.00	1.13
12	Brass	0.43	0.05	0.00	0.00	0.48
1	2	3	4	5	6	7
13	Kunish	0.00	0.03	0.00	0.00	0.03
14	Tooni	0.00	0.00	0.00	0.00	0.00
15	Kainth	0.00	0.00	0.00	0.00	0.00
16	Poplar	0.61	0.04	0.00	0.00	0.65
17	Khanor	0.00	0.64	0.00	0.00	0.64
18	Jamun	0.00	0.08	0.00	0.00	0.08
19	Birdcherry	0.00	0.00	0.00	0.00	0.00
20	Shisham	0.01	0.00	0.00	0.00	0.01
21	Other B.L Species	3.39	13.51	18.61	25.58	61.09
Total		98.27	407.53	298.23	149.33	953.36

10. Working Circle wise total number of trees per hac. (in numbers)

Sr. No.	Species	Chil	Deodar/Kail	Fir/Spruce	Oak	Total
1	Deodar	2	97	10	0	108
2	Kail	2	100	11	7	119
3	Chil	74	2	48	17	141
4	Spruce	0	34	70	1	105
5	Fir	0	1	1	0	2
6	Ban	6	18	26	55	106
7	Mohru	0	2	1	0	3
8	Kharsu	0	0		0	0
9	Walnut	0	0	3	0	4
10	Maple	0	0	2	1	3
11	Taxus	0	1	2	0	3
12	Brass	1	0	0	0	1
13	Kunish	0	0	0	0	0
14	Tooni	0	0	0	0	0
15	Kainth	0	0	0	0	0
16	Poplar	0	0	0	0	0
17	Khanor	0	0	0	0	0
18	Jamun	0	0	0	0	0
19	Birdcherry	0	0	0	0	0
20	Shisham	0	0	0	0	0
21	Other B.L Species	6	13	1	73	93
Total		91	269	175	154	688

11. Working Circle wise prescribed annual yield (in M3)

Working Circle												
Species	Deodar/Kail			Fir/Spruce			Chil			Oak	Protection	G. Total of yield (in m³)
	PB-I	PB-IV	Total	PB-I	PB-IV	Total	PB-I	PB-IV	Total			
Deodar	1750	1600	3350	1100	0	1100	0	0	0	Yield not prescribed		4450
Kail	5500	2600	8100	550	68	618	0	0	0			8718
Chil	0	300	300	0	0	0	1550	1070	2620			2920
Spruce	4100	1000	5100	6000	3050	9050	0	0	0			14150
Fir	275	0	275	2100	850	2950	0	0	0			3225

Total	11625	5500	17125	9750	3968	13718	1550	1070	2620		33463

EXECUTIVE SUMMERY

The Rampur Forest Division came into existence during the year 1984 while re-organization of the Forest Department. This division was carved out from the erstwhile Kotgarh Forest Division consisting of five Ranges viz Arsoo, Sarahan, Rampur, Bahli and Nankhari. Again during the year 1999, with the creation of new Forest Division at Anni Forest Division with head quarter at Luhri, the Arsoo Range was transferred from the Rampur Forest Division and merged in newly created Ani Forest Division. Now there are only Four Ranges viz Sarahan, Rampur, Bahli and Nankhari in this Division. The territorial jurisdiction of the Rampur Forest Division falls in Rampur Tehsil and Nankhari Sub Tehsil of Rampur Sub-Division, Shimla District, H.P.

The total geographical area of this division is 1003.18 Km². The forests of Rampur Forest Division were being managed under Kapoor's Working Plan for Kotgarh/Rampur Forest Division before the plan under revision. The salient features of the revised plan are that 83 Nos of listed UPFs have been notified as New DPF and brought into the plan for Management of forest which were out of the scope of the previous working plan. There are 182 Nos old DPFs, 83 new DPF and 60 No.s of listed UPFs. All the total forests (325 Nos) has been listed up on the basis of the composition of the crop and allotted Range wise into respective working circle. And Govt. waste land i.e. other land as defined by the Supreme Court which includes Charagah Drakhatan, Charagah Bila Drakhatan, pasture land except Gair Mumkin land etc. are included in the plan in compliance of the Hon'ble Supreme Court order dated 12-12-1996 for application of Forest (Conservation) Act, 1980 as these Govt. waste lands were declared in general as 'Protected Forests' by the Govt. notification dated 25th February 1952 which were out of the scope of the previous working plan. Similarly, in the plan under revision the area of private forests which falls within the definition of forest land as defined by the Supreme Court have been taken on record for application of Forest (Conservation) Act, 1980. The Range wise statement of the forest area is given as under:

Range wise Distribution of the Forest Area (in hac.)

Sr. No.	Name of Range	Reserve Forest (RF)	Protected Forests			Private Land		Others land as defined by the Supreme Court	G. Total
			Old DPF's	New DPFs	Listed UPFs	Private Forests	Cultivated/ uncultivated land		
1	Nankhari	N/A	5444.270	0	1252.63	737.462	3837.0535	2988.0447	14259.4602

2	Bahli	N/A	7162.360	2418.3401	746.39	12.9212	2554.0767	3474.8948	16368.9828
3	Rampur	N/A	2106.360	8400.4573	850.09	15.1796	4215.5445	10626.3678	26213.9992
4	Sarahan	N/A	5234.900	5527.7031	277.42	589.6280	4419.2762	27426.8267	43475.7540
G. Total		N/A	19947.890	16346.5005	3126.53	1355.1908	15025.9509	44516.1340	100318.1962

There are no records available which could throw the light on the early history of these forests. Since the plan includes forest areas which were managed by different administration of various states, each state had, therefore, its own past history and system of management. However, little is known about the history of the forests covered by the Working Plan before the advent of the British Rules. Consequently the general history and past management of each constituting unit/area are described in different erstwhile States as Bushahr State Forests, Sangri State forests, Delath State Forest. The forests of this division are covered mostly under Bushahr State and Delath State. Little is known of the history of Bushahr Forest prior to 1850. In 1864, the management of the Bushahr State Forest was taken over by the British Government and a lease was concluded with the Raja of Bushahr State in consideration of certain payments. In the same year, Brandis made of inspection of forests in the Sutlej Valley. After inspection he drew up a felling scheme based on enumeration on rough linear surveys. Thus felling was confined mainly to the easier forests on the left bank of the Sutlej.

In 1872, Brandis again visited Bushahr and found that the rate of felling had averaged only 1400 trees annually. He recommended an early preparation of a proper working plan which was soon taken up in hand by Ribbentrop with Batchelor and Stenhouse. This plan for the period 1875-1890 was of particular interest because then it was first realized the necessity for differentiating between the treatment of compact blocks of regular high forest and that of irregular forest on steep ground. The former type received two successive regeneration felling and in the latter, felling were to be made by selection of individual trees. The forests were worked by the departmental agency.

Bushahr forests were leased to the Punjab Government, and the first regular lease was drawn up during 1877 which was renewed from time to time during 1928 and 1942. The control of Bushahr forests was transferred to Himachal Pradesh Government w.e.f. April 1, 1949.

The first detailed working plan was prepared by Mr. Lace in 1892 for a period of twelve year 1892 to 1904. The forests of this Division were covered in the following working plans as under:-

- i) Lace's working plan 1892-1904.
- ii) Hart and Gibson's working plan 1904-1928.

- iii) Kitchingman's working plan 1928-1958.
- iv) Madan's Working Plan from 1947 to 1958-59.
- v) Mehr Chand's working plan from 1932-33 to 1961-62.
- vi) Convetry's Working Plan (1901-21)
- vii) Glover's working plan from 1927-28 to 1946-47.
- viii) Mohan Singh's working plan from 1947-48 to 1967-68.
- ix) I.D. Sharma's working plan from 1961-62 to 1975-1976.
- x) Tandon's working plan from 1961-62 to 1975-76.
- xi) C.L. Sudhera's working plan from 1978-79 to 1992-93.
- xii) R.K. Kapoor working plan from 1993-94 to 2007-08.

The detail of each working plans are described in Chapter VII-Past System of Management, Part-I of the working plan.

The present working plan is the revision of R.K. Kapoor's Working Plan from 1993-94 to 2007-08. This working plan has been prepared strictly on the basis of National Working Plan Code, 2004. In order to achieve the objects of management outlined in Chapter-I, Part-II, the Deodar Kail Working Circle, the Fir-Spruce Working Circle, the Chil Working Circle, the Protection Working Circle and the Oak Working Circles have been constituted as per composition of the crop. A separate mandatory working circle i.e. Plantation, NTFP, Forest Protection (Fire, illicit felling, encroachment, illegal mining, poaching etc.) and Joint Forest Management & Wild Life Management overlapping working circles have also been constituted for the first time and discussed in length with prescription of legal control mechanism which would be very useful as reference. The chapter on NTFP gives an exhaustive list of the useful medicinal plants along with their uses, which would be very useful as reference. Similarly the new chapter on Five Year Plans & Activities of Forest Development Corporation in harvesting and marketing of forest produce, result of socio-economic survey too are in detailed form and described in Part-I Chapter-V and Chapter-IV respectively. The circle wise statement of forest area is given as under:

Circle Wise Statement of the Forest Area (in Hac.)

Sr. No.	Name of Working	Protected Forests		Total
		DPF	Listed	

	Circle		UPF's	
1	Chil	3054.6365	869.11	3923.7465
2	Deodar/Kail	9621.7402	967.51	10589.2502
3	Fir/Spruce	13891.9643	106.51	13998.4743
4	Oak	273.8473	637.46	911.3073
5	Protection	9442.4822	0	9442.4822
6	Plantation	9.72	545.94	555.66
Total		36294.3905	3126.53	39420.9205

As per instructions given in the Working Plan meeting held on 2-12-2011 under the chairmanship of Pr. CCF complete enumerations has been carried out in all the selected sampled forests after selecting the samples i.e. 10% random sampling in P.B.I and P.B.IV areas and 5% in other PBs (P.B.II and P.B.III). The enumerations were carried out accordingly in all the PBs down to 10 cms dbh in all the working circles. All the coniferous and important broad leaved species have been included in the enumeration list. The results have been analyzed statistically and growing stock has been assessed accordingly. The present working plan has been revised thoroughly notwithstanding the present moratorium on green felling, the revised working plan includes all regular working circles, prescribing yield and felling cycle/felling series depending on the condition of forests in each working circles. This green felling in any forest or in public forest will be allowed/carried out strictly in accordance with the approved prescription of working plan subject to the decision of the Hon'ble Supreme Court against the H.P. Govt. affidavit filed in the Apex Court on 21-2-1997 and an affidavit filed in pursuant to the order dated 14-2-2000 which is pending adjudication before the Hon'ble Supreme Court.

The forests allotted to different working circles viz Chil, Deodar/Kail, Fir/Spruce are prescribed to be managed under the Punjab Shelter Wood System. The rotation period is fixed at 120 years with exploitable diameter of 60 cms dbh which is most suited to better yield out turn. Therefore, the exploitable diameter of 60 cms dbh has been fixed and prescribed in the present working plan. Beside this the felling cycle of 15 years corresponding to the period of plan has been adopted. The regeneration period of 30 years has been adopted and area of the whole working circle has been divided into four periodic blocks i.e. PB-I to PB-IV.

The yield has been calculated by volume and separately for PB-I and IV on the basis of enumeration result in the Chil, Deodar/Kail and Fir/Spruce. The total Annual prescribed yield

from the forests of the different working circles has been worked out by Hufnagels formula and is given in the table below:

Annual yield in M³ prescribed in different Working Circle

WORKING CIRCLE												
Spp.	Deodar/Kail			Fir/Spruce			Chil			Oak	Protection	G. Total of yield (in m ³)
	PBI	PBIV	Total	PBI	PBIV	Total	PBI	PBIV	Total			
Deodar	1750	1600	3350	1100	0	1100	0	0	0	Yield not prescribed		4450
Kail	5500	2600	8100	550	68	618	0	0	0			8718
Chil	0	300	300	0	0	0	1550	1070	2620			2920
Spruce	4100	1000	5100	6000	3050	9050	0	0	0			14150
Fir	275	0	275	2100	850	2950	0	0	0			3225
Total	11625	5500	17125	9750	3968	13718	1550	1070	2620			33463

The methods of executing fellings/thinning have also been described along with the detailed felling and planting programme. An exhaustive artificial regeneration and miscellaneous regulations are also prescribed under respective working circles. However, all the working circles are described in detail from Chapter II to Chapter XI of Part-II of the working plan. Similarly miscellaneous regulations in Chapter-XI+2 are also described in detail which would be useful as reference.

The working circle wise detailed plantation programme has been laid down in Plantation (Overlapping) Working Circle, Chapter-VII, Part-II. It is also pertinent to mention that out of total 44516.134 hac. of other forest land as defined by the Supreme Court, only 7100 hac. of Culturable land i.e. Charagah Drakhtan, Charagah Bila Drakhtan excluding refractory area is proposed for planting during the plan period provided that the plantation shall be carried out only after issuance of closure notification under Section 30 (b) of IFA, 1927. Similarly, the land bank area comprising 1137.16 hac. has been identified and is tabulated in table No. 7.8 of the Chapter-VII, Plantation (Overlapping) Working Circle. The identified land bank area for compensatory afforestation in lieu of the forest land diverted for non-forestry purpose shall be transferred to the ownership of the forest department and declared as 'Protected Forests' under Section 29 of the Indian Forest Act, 1927 and will be added to the total recorded forest area of the State. It has been observed that large chunk of forest land consisting of listed UPFs or other forest land i.e. Charagah Drakhtan, Charagah Bila Drakhtan were covered in the working plan for raising plantation but these areas does not come under the preview of IFA, 1927 in absence of notification under Section 29 to 32 of IFA, 1927.

All the relevant Govt. notification, rules and important judgments are also annexed as Appendices for the ready reference to a

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