



Office of
EXECUTIVE ENGINEER, SUNDER NAGAR DIVISION
Himachal Pradesh Public Works Department Sunder Nagar
Ph. 01907-266245, Fax: 266845, E-mail ee-sun-hp@nic.in

No.PW-SNR-WA. R-27 (Dharli)/2025/-
To

10341-43

Dated: - 12-12-2025

The Deputy Conservator of Forests,
Suket Forest Division,
Sunder Nagar Distt. Mandi (H.P)

Subject: -

Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Construction of Dharli to Balag road (Kms. 0/00 to 18/900), within the jurisdiction of Suket Forest Division, Distt. Mandi HP. (Online Proposal No. FP/HP/Road/19449/2020).

Reference: -

The Sub-Office, Shimla (Regional Office, Chandigarh) Ministry of environment, Forest, and Climate Change CGO Complex, Shivalik Khand, Longwood Shimla Online EDS dated 25.02.2025.

Sir,

The Point wise reply of observation pertaining to PWD as raised by The Sub-Office, Shimla (Regional Office, Chandigarh) Online EDS dated 25.02.2025 which the observation regarding point wise has been raised. The point wise reply of attended observations is as under: -

Sr. No.	Observation	Reply
1	The proposal involves violation as reported in para 11 of part II but violation report not found uploaded. It is requested to kindly submit the detailed violation report and action taken report.	It is respectfully submitted that the narrow pedestrian path under reference was originally formed unintentionally by the local inhabitants prior to the year 1980. This pathway served as the only available pedestrian access route for the villagers and had been used continuously for their daily conveyance needs for several decades. Over time, especially during the rainy season, the condition of the path deteriorated significantly, causing considerable hardship to the local community. In order to ensure safe and uninterrupted movement, the villagers, out of necessity and without any commercial or developmental intent, undertook minor widening and defacement of the existing path during the period 2009-2010. These actions were carried out solely to facilitate ease of movement and to maintain access for essential daily activities.

		<p><i>The User Agency affirms that the modifications were community-driven and not part of any planned project activity. Furthermore, the User Agency assures full cooperation and compliance with all regulatory requirements. The User Agency remains fully committed to complying with all provisions of the Forest (Conservation) Act, 1980, and all other applicable guidelines.</i></p>
2	<p>It is requested to clarify that whether the proposal is in the list of 2183 violation cases or not.</p>	<p>It is further submitted that this road has not been reported as a violation under the Forest (Conservation) Act, 1980 before the Hon'ble High Court in the list of 2183 cases submitted.</p>
3	<p>State Government shall scrutinize the alternatives in more details and must give complete justification establishing its inescapability for locating the project in forest area. Further, explored alternatives showing details of tree enumeration, area etc. with reason of rejection/acceptance with KML may be provided.</p>	<p>The HPPWD has duly examined all possible alternatives for the proposed project. After a comprehensive analysis, it has been found that there is no feasible non-forest land available that can meet the technical, environmental, and operational requirements of the project. The selection of the proposed site within forest land is thus inescapable due to the following reasons:</p> <ul style="list-style-type: none"> • <i>Technical Suitability:</i> The forest land identified is the only location that meets the required technical specifications such as gradient, connectivity, alignment, etc. • <i>Public Utility / Alignment Constraints:</i> The project is linear/non-linear in nature (as applicable) and must align with existing infrastructure or settlement, which necessitates passage through forest land. • <i>Non-availability of Non-Forest Land:</i> No suitable non-forest land is available in the vicinity of the project area as verified by the revenue records and field visits. • <i>Minimum Forest Land Required:</i> The proposal has been designed in such a manner so as to minimize forest land requirement to the barest minimum. • <i>Alternatives Explored:</i> Alternative alignments/sites were explored and

		<p>compared based on parameters such as number of trees affected, area involved, accessibility, and impact on environment. The details of these alternatives including tree enumeration, area involved and reasons for rejection/acceptance have been uploaded in parivesh portal with the proposal along with the respective KML files for verification.</p>
4	<p>Since proposed diversion area is on steep slope and during excavation and rainy season, may cause landslide/soil erosion to the proposed area or the nearby landscape. Therefore, State Govt. may provide details of the mitigation measures to be adopted to arrest the accelerated soil erosion/land slide during/after execution of project. Additionally, the State Govt. may submit Soil and Moisture Conservation Plan as per para-1.22 (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980, if applicable.</p>	<p>The User Agency acknowledges the concerns related to slope stability and soil erosion in the proposed diversion area. Suitable mitigation measures are being incorporated to prevent accelerated soil erosion and landslide both during and after project execution. The proposed measures include:</p> <p>1. Structural Measures</p> <ul style="list-style-type: none"> • Construction of retaining walls/breast walls and toe walls at vulnerable stretches to stabilize the slope. • Adoption of bench cutting instead of vertical cutting to maintain a safe slope gradient. • Provision of gabion structures, check dams, and contour barriers where necessary. <p>2. Drainage and Runoff Management</p> <ul style="list-style-type: none"> • Formation of well-designed catch drains, side drains, and cross drains to channelize runoff safely. • Construction of cut-off drains above excavation zones to prevent surface water inflow. • Ensuring proper outfall points to avoid waterlogging and scouring. <p>3. Bio-engineering Measures</p> <ul style="list-style-type: none"> • Grass turfing, brush layering, hydro-seeding, and plantation of deep-rooted native shrubs and trees on exposed slopes.

		<ul style="list-style-type: none"> • Adoption of vegetative barriers along the slope to minimize sheet erosion. • Use of coir matting / jute netting for temporary surface stabilization during construction. <p>4. Construction-phase Safeguards</p> <ul style="list-style-type: none"> • Minimizing open excavation during monsoon periods. • Storage of excavated material only at designated safe locations with retaining measures. • Regular monitoring of slope behavior by field engineers. <p>5. Post-construction Restoration</p> <ul style="list-style-type: none"> • Immediate biological restoration of disturbed areas. • Long-term monitoring and maintenance of drainage structures and slope stabilization measures. <p>Further, as required, the Soil and Moisture Conservation Plan (SMC Plan) is being prepared in accordance with Para-1.22 (ii) of the Van (Sanrakshan Evam Samvardhan) Adhinyam, 1980, wherever applicable. The SMC Plan will include detailed site-specific measures, maps, cost estimates, and implementation timelines.</p> <p>The User Agency assures full compliance with all guidelines and will adopt all necessary measures to ensure environmental and slope stability throughout the project lifecycle. The Soil and Moisture Conservation Plan (SMC Plan) is attached herewith for ready reference.</p>
5	CA area is proposed in DFL. As per Rule 13 (4) (a), a certificate on non-availability of suitable non-forest land for raising compensatory afforestation needs to be furnished by the State Government in the format specified under Schedule-III.	<i>Point Pertains to Forest Department.</i>

6	In view of the observations of the 74th REC dated 31.01.2025, the CA scheme needs to be revised by including soil depth, aspect, area dimensions and description, detailed site-specific soil and moisture Conservation measures, individual species names, and photographi2/3025 evidence of DFO site Inspection.	<i>Point Pertains to Forest Department.</i>
7	Area mentioned in CA site suitability certificate is 10.2038 ha of CA instead of 21.2038 ha. May request to upload the site suitability of complete CA area. It is requested to kindly submit the site inspection report of concerned DFO along with photograph of proposed CA area as the area appears on steep slope.	<i>Point Pertains to Forest Department.</i>
8	NPV sheet and penal NPV sheet calculated as per old rates @ 6,57,000/-. It is requested to upload NPV sheet as per new rates.	<i>Point Pertains to Forest Department.</i>
9	0.809 ha area proposed for muck dumping. It is requested to explore non forest land for the purpose.	<p>It is respectfully submitted that the proposed dumping site cannot be shifted to non-forest land because no suitable non-forest land is available in the vicinity of the proposed road alignment. The terrain and land-use pattern of the surrounding area do not provide any feasible alternative dumping location outside the forest land.</p> <p>However, to ensure environmental safety and minimize adverse impacts, the User Agency commits that the dumping site will be properly developed, engineered, and stabilized, adopting the following measures:</p> <ul style="list-style-type: none"> • Construction of protection/retaining walls around the dumping area to prevent spillage, sliding, or run-off of debris. • Scientific leveling and compaction of dumped material to avoid erosion and slope failure.

		<ul style="list-style-type: none"> • Provision of drainage channels to safely divert surface runoff and prevent waterlogging. • Plantation of site-specific tall native plant species on and around the dumping site to enhance slope stability and aid in long-term ecological restoration. • Regular monitoring of the dumping site during and after construction. <p><i>The User Agency assures that all dumping activities will be carried out strictly in accordance with environmental and engineering norms, ensuring minimal disturbance to the surrounding forest landscape.</i></p>
10	It is requested to mark the dumping sites in KML file and also submit the list of trees in dumping area.	It is respectfully submitted that the dumping sites have already been marked in the KML file, and the same has been uploaded/submitted as required.
11	Muck dumping plan needs to be authenticated by DFO.	The muck dumping plan has been authenticated by the Divisional Forest Officer (DFO). The authenticated plan has been uploaded/submitted for the kind consideration of the Authority.
12	In complete cost benefit analysis found uploaded in part I with old NPV rates. It is requested to upload completely filled CB analysis as per new NPV rates.	The complete Cost-Benefit Analysis has been uploaded in Part-I as per the new NPV rates. The Cost-Benefit Analysis is also attached herewith for ready reference.
13	No. of trees to be affected are 658 in the proposal. It is requested to submit the list of trees that area actually required to be felled.	The number of trees affected in the proposed road alignment has been minimized by reducing the Right-of-Way in forest stretches and recommending retaining structures at necessary locations. These measures ensure that tree felling is restricted strictly to what is essential for the execution of the project.
14	A large numbers of ecologically important tree species such as <i>Quercus leucotrichophora</i> and <i>Rhododendron arboreum</i> are also likely to be affected. State Govt. if required to explore the possibility of saving these trees in the proposed project.	<i>Point Pertains to Forest Department.</i>
15	Administrative plan, undertaking to pay addl. NPV and layout plan not found	The Administrative Plan, the Undertaking to pay the additional NPV, and the Layout Plan

	uploaded. It is requested to uploaded the same.	have been duly submitted/uploaded as required.
16	Aerial distance certificate of proposed area from nearest protected area not found uploaded. It is requested to submit the same.	The Aerial Distance Certificate has already been uploaded under Additional Information Details at S. No. 2, page 72.
17	No is mentioned in para 8 (iii) of part II. However, as per DSS analysis of proposed area, Wildlife Sanctuary Bandli is approx. 0.19 km away from the proposed site. It is requested to submit the comment of DFO	<i>Point Pertains to Forest Department.</i>
18	As per DSS analysis of proposed area, little shift observed in the provided latitude-longitude. Further, dumping site latitude-longitude are missing from the DGPS map pdf uploaded at the s. no. C(iv). It is requested to rectify the same.	The DGPS map has been rectified. Further, the latitude-longitude of the dumping site has now been indicated in the DGPS map PDF uploaded at S. No. C(iv). The DGPS map is also attached herewith for ready reference.

This is for your kind consideration and further submission to the higher authority for the approval of the same.

DA:- As above.

**Executive Engineer,
Sunder Nagar Division,
HP.PWD Sunder Nagar.**

Copy of the following for information:

1. The Assistant Engineer Dehar Sub- Division H.P.P.W.D. Dehar.
2. The FCA Consultants, Naresh Kumar R/O Nerchowok Dist. Mandi HP-175008.

**Executive Engineer,
Sunder Nagar Division,
HP.PWD Sunder Nagar.**



**NAME OF WORK/ PROPOSAL:- CONSTRUCTION OF DHARLI TO
BALAG ROAD KM. 0/00 TO 18/900.**

File No. :- FP/HP/ROAD/49449/2020

Date of Proposal :- 05 Sep 2020

JUSTIFICATION FOR THE LOCATING THE PROJECT IN FOREST AREA

The User Agency has scrutinized all feasible alternative sites in detail for locating the proposed project. Various non-forest and lesser forest land alternatives within the project influence area were examined with due diligence, keeping in view technical feasibility, administrative suitability, accessibility, availability of land, terrain conditions, proximity to the beneficiary population, and overall project viability.

During the examination of alternatives, it was observed that non-forest land options were either unavailable, fragmented, under private ownership, already utilized for essential public infrastructure, or unsuitable due to adverse topography, unstable geological conditions, inadequate access, or excessive distance from the service area. Some alternative sites, though technically feasible, involved substantially higher numbers of trees, larger forest area, or would have resulted in greater ecological disturbance compared to the presently proposed site.

Detailed enumeration of trees and area assessment were carried out for all explored alternatives. Comparative analysis revealed that the proposed forest land involves the minimum forest area, least number of trees, and lowest environmental impact among all examined options. Alternatives involving lesser forest area were found to be technically unviable, while those involving non-forest land were not acceptable due to compelling administrative, legal, and site-specific constraints.

The reasons for rejection or acceptance of each alternative have been duly recorded, clearly indicating that avoidance of forest land has been attempted to the maximum extent possible. However, in view of the absence of suitable non-forest land and the essential public utility nature of the project, the proposed forest land location has emerged as inescapable.

Accordingly, the proposed project site is unavoidable, and no other viable alternative exists which would cause lesser damage to forest resources. The proposal has therefore been submitted with complete justification, in accordance with the provisions of the Forest (Conservation) Act, 1980 and relevant guidelines issued by the Government of India.

Deputy Director of Forests,
Sukot Forest Division,
Sundernagar Distt. Mandi (H.P.)

Executive Engineer,
Sunder Nagar Division,
HP.PWD Sunder Nagar.

GOVERNMENT OF HIMACHAL PRADESH

PUBLIC WORKS DEPARTMENT



Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Constructon of Dharli To Balag road (Km 0/00 to 18/900, within the jurisdictions of Suket Forest Division H.P.

SOIL MOISTURE CONSERVATION PLAN

EXECUTIVE ENGINEER, SUNDER NAGAR DIVISION
Himachal Pradesh Public Works Department Sunder Nagar
Ph. 01907-266245, Fax: 266845, E-mail ee-sun-hp@nic.in

Prepared by: -

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REPORT ON SOIL CONSERVATION PLAN

1.0 INTRODUCTION:

THE STATE:

INTRODUCTION:

Himachal Pradesh having world's mightiest mountain ranges is one of the hilly States situated in the Northern part of India. It is blessed with some of the most spectacular and beautiful landscapes. It came into being in November, 1966 after the re-organization of States. Earlier, it was part of the combined State of Panjab. The various hill towns in the State not only provide visitors reprieve from the heat of the plains, but offer beautiful scenic sites which are real treat to the eyes Kullu and Kangra valleys offer natural beauty which is no less than Kashmir Valley. Valleys and streams, snow clad mountains and temperate forests offer tourists and sportsmen all they want. Earlier the economy of the State mostly depended on tourism and a large number of tourist sites had been developed by the State. However, after the re-organization, the State has made big strides in the field of industrialization also. The State has good deposits of minerals like gypsum, lime stone and slate etc. It has big reserve of minerals which can be used in various types of industries. Mining of minor minerals is also, therefore, an extensive Industry in the State. Industries like Cement, Electronics, Fertilizers, Pharmaceuticals and Liquor can be found in good number at different places in the State. Hydel Power in the State has given a big boost to the Industries. A number of Industrial areas have been developed in the State, where all facilities are provided to the entrepreneurs. Parwanoo, Barotiwala, Baddi, Paonta Sahib and Raja Ka Bagare some of the important industrial areas developed by the State in the last two decades.

MANDI DISTRICT:

Not much is known about the early history prior to the formation of Suket in 765 AD. The area had been under the control of Ranas or Thakurs. The only place that has an early mention in literature is Rewalsar and it is mentioned in the Skanda Purana as a sacred place of pilgrimage. Karnpur, a small village is said to have been founded by Karan, a hero of the Mahabharata. A temple at Gumma points to the locality where the Pandavas sheltered themselves when the attempt to burn them down failed. Beyond this not much of the erstwhile state's existence can be found in classical literature. According to the Tibetan

tradition, Padam Sambhav (750-800 AD), the great Buddhist Patriarch, who was summoned by king Tisong-De-Tsen of Tibet for preaching Buddhism, hailed from Zahor, which represents the country round about Rewalsar. On the basis of this it is concluded that Mandi must have been a great place of Buddhist learning about this time.

The chiefs of Mandi and Suket are said to be from a common ancestor of the Chandravanshi line of Rajputs of Sena dynasty of Bengal and they claim their descent from the Pandavas of the Mahabharata. The ancestors of the line believed to have ruled for 1,700 years in Indarprastha(Delhi), until one Khemraj was driven out by his Wazir, Bisarp, who then took over the throne. Khemraj, having lost his kingdom, fled eastward and settled in Bengal. where 13 of his successors are said to have ruled for 350 years. From there they had to flee to Ropar in Punjab, but here also the king, Rup Sen, was killed and one of his sons, Bir Sen, fled to the hills and reached Suket. The State of Suket is said to have been founded by Bir Sen, an ancestor of the Sena Dynasty of Bengal.

The separation of Mandi from Suket took place about the year 1200 AD, Upto that time, it was the single state of Suket. The then reigning chief Sahu Sen had a quarrel with his younger brother Bahu Sen, who left Suket to seek his fortunes elsewhere. Bahu Sen after leaving Suket settled at Manglan in Kullu, where his descendants lived for 11 generations. Then the chief, Kranchan Sen was killed fighting against the Kullu Raja and his Rani, who was pregnant at that time, fled alone to her father who was the chief of Seokot, who had no son. Here she gave birth to a baby boy who was named Ban, the tree under which he was born. Ban had hardly crossed the age of 15 when he defeated the chief of Kilti who used to plunder travelers. On the death of the chief of Seokot, Ban succeeded to the chiefship of Seokot. He, after some time killed the Rana of Sakor and took possession of his lands, he then changed his residence to Bhiu, on the banks of Beas and a few miles from the present Mandi town. Mandi emerged a separate state in the beginning of the sixteenth century. Down the line of descendants of Ban came Ajbar Sen. nineteenth in descent from Bahu Sen, who founded Mandi Town in 1527 AD, the capital of the erstwhile state of Mandi and the headquarters of the now Mandi District.


Ajbar Sen was the first great ruler of Mandi. He was probably the first to assume the designation of Raja. He consolidated the territories that he had. inherited and added to them new ones that he wrested from the hands of his neighbors. He built a palace here and adorned it with four towers. He also built the temple of Bhut Nath and his Rani constructed that of Triloki Nath. Down the line of descendants was Raja Sidh Sen, who succeeded Raja Gur Sen in 1678 AD. Mandi had never been so powerful before his reign and after that never was. He captured great areas from the adjoining areas. it was during his reign that Guru Govind Singh, the tenth guru of the sikhs visited Mandi in the close of the 17th century. He had been imprisoned by Raja Singh, the chief of Kullu, from whom he had sought assistance against Mughal troops and his followers believe that Guruji escaped by using miraculous powers. Raja Sidh Sen, who is also considered to be a

possessor of great miraculous powers, entertained his with great hospitality. He built the great tank before the palace.

He also built the temples of "Sidh Ganesha" and "Trilokinath". The entire history of both the states of Mandi and Suket is littered with wars with among themselves and other adjoining states. These two states had always been rivals and generally enemies, but there was no great result of their warfare. The fertile valley of Balh was the common ground of desire and dispute. On 21st February 1846 the chiefs of Mandi and Suket visited Mr. Erskine, Superintendent of the Hill States for the British Government, owing their allegiance and securing their protection. on 9th march, 1846 a treaty was concluded between the British and Government and the Sikh Durbar whereby the whole of the Doab area between the Beas and the Sutlej was ceded to the British Government, and this included the states of Mandi and Suket also. On 1st November 1921, both the state of Mandi and Suket were transferred from the political control of Punjab Government to that of Government of India till 15th August 1947, India's Independence Day.

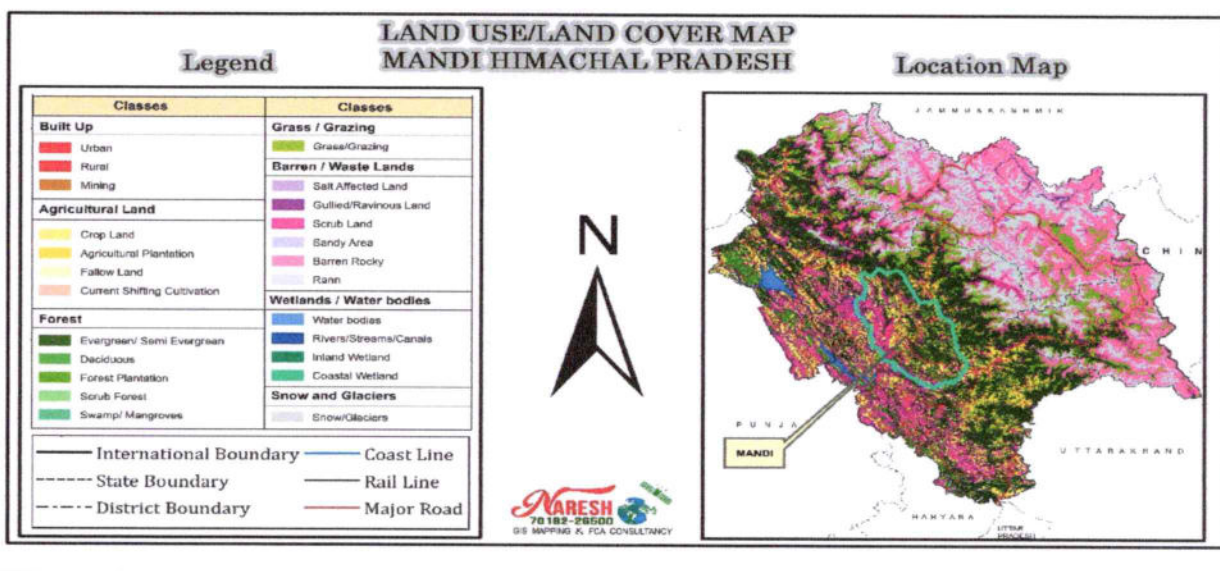
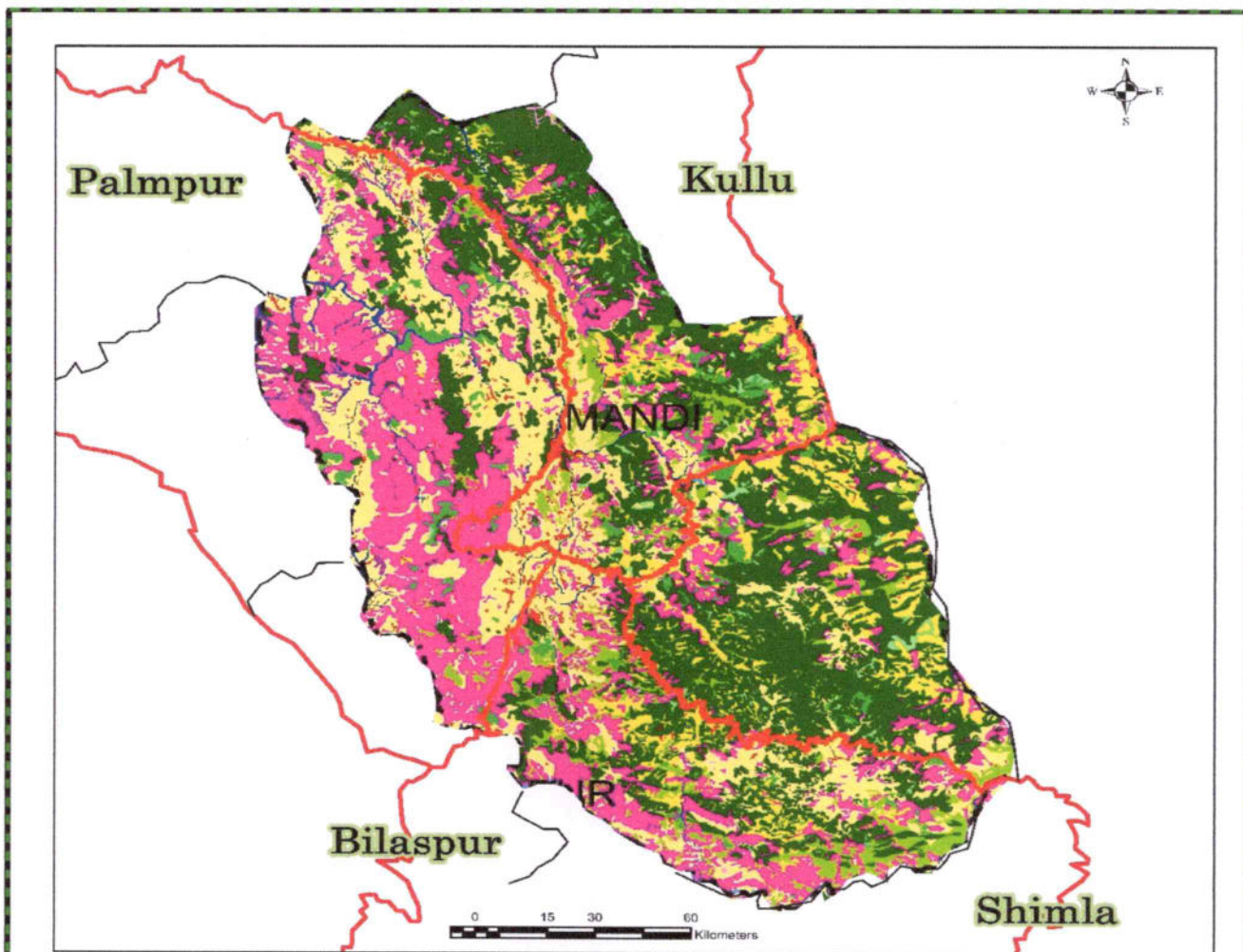
The present District of Mandi was formed with the merger of these two princely states Mandi and Suket on 15th April 1948, when the State of Himachal Pradesh came into existence. Ever since the formation of the district, it has not witnessed any changes in its jurisdiction.

Deputy Conservator of Forests
Suket Forest Division
Sundernagar Distt. Mandi (H.P.)


Executive Engineer,
Sundernagar Division
HPPWD. Sundernagar

The Mandi District is located on the 19 Survey of India Toposheet
(1:50,000) as given below in the figure.

Land use pattern and Social aspect of the area:



Deputy Conservator of Forests
 Suket Forest Division
 Sundernagar Distt. Mandi (H.P.)

Executive Engineer,
 Sundernagar Division
 HPPWD. Sundernagar

Economy:

General Information

Mandi is one of the fastest developing towns of Himachal Pradesh, located on cross junction of National Highway-20, 21 and 70. It acts as a gateway to Kullu, Lahaul, Leh Ladakh, area of Jammu & Kashmir. Being District headquarters, the entire District depends upon the city for trade & commerce. services and civil administration. The economy of the region is predominately agrarian as around 79% of the total population is dependent on agriculture and activities allied to it, for earning their livelihood.

Climate:

Temperature Varies from 40° C in plains during summer -20° C in the Alpine Zone during winters. (b) Rainfall varies from 152 cms to 178 cms in outer Himalayas. Due to sufficient rainfall, unused land is covered with forests or forms rich grazing land. In the hills the forests are extensive and valuable. Deodhar, blue pine, silver fir, spruce, chil and various kinds of oak are plentiful. Below 4,000 feet the forests are not extensive, the only valuable ones consisting of chil, but there is considerable scrub jungle and the wide areas of grass covered slopes support the herds of cattle. As may be expected from the varied altitude, the climate shows large variations in the different parts of the district. It is pretty hot in the lower portion in the summer and the cold letter in the hills during the winter. And as such in every season, except the rainy season, there is some place in the season where the climate is inviting.

Agriculture:

Agriculture and the rural economy of Himachal Pradesh, particularly in villages like Nihri, Dharli, Balag and Serkothi, are dominated by small and marginal farmers who depend on mixed farming systems suited to the hilly terrain. Most households cultivate cereals such as maize, wheat and barley on terraced fields, while some also grow vegetables or engage in horticulture where altitude and climate permit. Because landholdings are typically less than one hectare and irrigation is limited, farming alone seldom sustains a family, leading villagers to rely on livestock, seasonal labour, or small cottage-based activities to supplement income. The geography of these regions restricts large-scale agriculture but supports diversified practices, making animal husbandry, horticulture and allied activities important components of the local economy. Despite agriculture's declining contribution to the state GDP, it remains the backbone of livelihood in these villages, with government schemes and rural development programmes playing a crucial role in improving productivity, income stability and adoption of modern farming practices.

Table-3:

<u>Sr No.</u>	<u>Category</u>	<u>Area in Sq.kms)</u>	<u>percentage</u>
1	Area under forest, dense and open forest	2030	35.37
2	Culturable waste	268	4.053
3	Not available for cultivation, barren and un-culturable land	155	2.70
4	Land put to Non Agricultural uses	752	13.10
5	Permanent pastures	876	15.26
6	Land under miscellaneous tree crops etc.	82	1.42
7	Other Cultivated waste	1576	27.46
8	Total Area	5739	100%

Forest:

The range contains some good forests of chil pine. but the greater part of it consists of rich grass slopes. Its name is attributed to Sikander Lodhi, who, 375 years before the reign of Akbar, is supposed to have crossed it on his way to the conquest of Kangra. The range of altitudes in the district is high, with the highest point being around 13,000 feet on the Kullu border and the lowest point 1,800 feet near Sandhol where the Beas leaves the district. The only area which is similar to the plains is the Balh valley. Several of the valleys are open and are often irrigable from kuhls, or small water channels, and contain some of the most fertile land in the state. Due to the hilly terrain, some of the hills are so precipitous that cultivation in large scale is impossible. Due to sufficient rainfall, unused land is covered with forests or forms rich grazing land. In the hills the forests are extensive and valuable. Deodhar, blue pine, silver fir, spruce, chil and various kinds of oak are plentiful. Below 4,000 feet the forests are not extensive, forest cover area is about 178591 Hects.

GEOGRAPHY OF THE DISTRICT

a. Location: - The district is situated between 31-13-50 and 32-04-30 north latitude and 76-37-20 and 77-23-15 east longitude. It is bounded by Kangra on the north-west, Hamirpur & Bilaspur in the west, Arki tehsil of Solan district in the south, Shimla district in the south-west and Kullu district in the east.

b. Rivers: - The district has 2 main rivers viz. the Beas and the Satluj. The river Beas enters the district from close to Bajaura, at the boundary of Kullu and leaves the district at Sandhol. The Mandi town is also located on the banks of this river. For the greater part of its length, it runs between high banks and as it is of never great breadth, the current is swift, especially during the rains. Practically the whole

of the district drains into the Beas with only the south-east corner situated on the Satluj watershed. Within the district the principal tributaries of the Beas on the north bank are Uhl, Luni, Rana and Binu and on the south bank are the Hanse, Tirthan, Bakhli, Jiuni, Suketi, Ranodi, Son and Bakar.

LOCATION:

Mandi district covers an area of 3950 sq kms and lies in the middle portion of H.P and is bounded in the north by district Kangra, Kullu in the West in the south are the districts of Shimla & Solan, Bilaspur in the south West and Hamirpur in the North West.

Major part of the district lies in the lesser Himalayan region, which presents the rugged mountainous terrain. The mountains are composed of crystalline, metamorphic unfossiliferous sedimentary rocks of oldest system. Mountains are developed in different stages. Initially a Geosyncline was formed which was gradually filled up with sediments, after this Geosynclinal deposits were subjected to folding and thrusting etc. Finally, the Geosynclinal sediments were pushed up gradually to form the mountains. In Mandi district between the steeply rising mountains are the valleys. Nihri, partly Kullu valley lies between the steeply rising mountains which remain mostly under snow for most part of the year. The valleys are the result of long erosion along the medial part of elevated tracts. These valleys are known as erosional valleys which have resulted because of glacial and stream erosion. Sutlej, Beas, Uhl and Suketi are the main rivers in the district.

FLORA AND FAUNA

a. Flora

The Chills considered the prevailing conifer up to about 1950 meter when it gives place to the Deodar and the blue pines. In Mandi district the forest range between scrub, sal and bamboo forest of the low hills to the fir and alpine forests of the higher elevation. Lowest point of the southern boundary of the district is 427 meter above sea level and highest range of is at an elevation of 2658 meters in the north. The forests grown between these two extremes vary as the elevation itself. The area under consideration following are the most common trees

The most prominent varieties of trees found in the district are: Simbal (*Bombax malabaricum*) Mango (*Mangifera indica*) Tun (*Cedrela toana*) Several species of acacia and albizia Salambra (*Odina wodier*) Terminalia (*Engenia jambolana*) Bamboo The common fruit trees are banana, apple, ber, jamun, mango, mulberry, almond, peach etc Shrubs The topography, climate and nature of soil is mainly responsible for the growth of various types of trees and shrubs, which are important for making the environment of the area most suitable for the survival of living beings. The trees and shrubs grow according to the heights in higher elevations the following trees are mostly seen to grow.

Local Name

1. Bhujpatar
2. Kharsu
3. Ban
4. Brah
5. Tos
6. Dyar
7. Safeda
8. Pipal
9. Behul
10. Chil

Botanical Name

- Betula Utilis
Quercus Semecarpifolia
Quercus hicana
Rhododendron Arborcum
Abies Pindron
Cedrus Deodara
Eucalyptus Citriodorn
Ficus Religiosa
Grewia Oppositifolia
Pirths Rox-Burghii Ber and other bushes

The most common shrub at the higher elevation is Barberis, indigopera and esmodium and following other shrubs are also found.

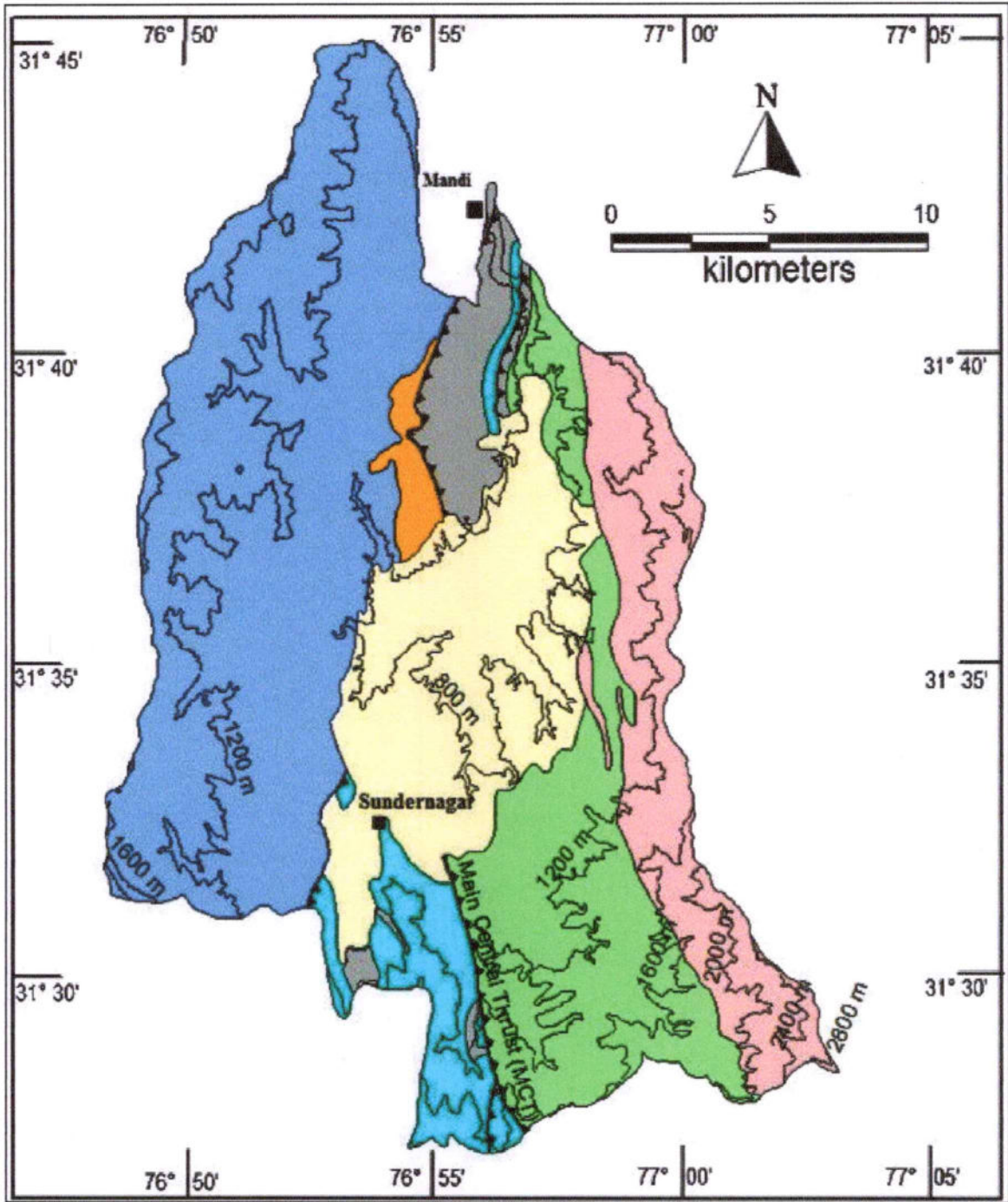
1. Vitex
2. Munj
3. Ber
4. Ipomea
5. Dodonea &
6. Bamboo.

The common fruit trees are banana, apple, ber, jamun, mango, pear, mulberry, apple, almond, cherry, peach etc.

Deputy Conservator of Forests
Suket Forest Division
Sundernagar Distt. Mandi (H.P.)

Executive Engineer,
Sundernagar Division
HPPWD. Sundernagar

Geological map of the Sunder Nagar, Mandi District, Himachal Pradesh



- | | |
|-----------------------|-------------------------------|
| Alluvium/Valley Fills | Sundernagar Group |
| Siwalik Group | Intrusive Dhauladhar Granites |
| Subathu Group | Salkhala Group |
| Shali Group | Thrust |
| Contour (1200 m amsl) | |



Deputy Conservator of Forests
Suket Forest Division
Sundernagar Distt. Mandi (H.P.)

Executive Engineer,
Sundernagar Division
HPPWD. Sundernagar

Project Description at Glance

a. DESCRIPTION OF THE PROJECT ROAD:

Diversion of 10.6019 Ha. Forest land for The proposed road will connect Dharli, Chakauli, Ropa Bandla, Dhora, Dhar, Salag, DPF Bunga, Balag villages /habitation and it will serve approx. 3108 populations. It will connect left out area, which is deprived with road facility. The road is urgently required as people of these villages are facing great hardships to reach the nearby town Slapper. After construction of this road they will connect directly with Hospital Sunder Nagar, Medical Hospital Ner chowk, Market center Sunder Nagar and Nerchowk. At present mule transport is only mode available for transporting the goods etc, the area is quit rich in the production of cash crops and agriculture production such as Maize potato rice & seasonal vegetable etc. The land is very fertile. But heavy cost of transportation for export of surplus production and different marketing position restrain people from taking farming in a whole hearted way as such their living standard is also poor.

The construction of this Road shall increase the economy of the area with the sufficient cheap and quick transportation of possible agriculture produce easy and extended marketing facilities more over availability of emergency medical help will also improve. With increased economic activity the overall living standard of the people shall also improve quickly. The proposed alignment for the said road has been carefully finalized after considering a total No. of three alternate alignments in all the cases a portion of the road shall pass through the forest area. The construction of the road involves negligible tree cutting and as such the loss of forest produce involved in it is very meagre in comparison to the benefits of the road. The proposed alignment does not form any part of national park, wild life sanctuary, Biosphere reserve, tiger reserve etc. The alignment is so located that is involves minimum forest land, minimum cutting is involved and maximum benefit to be beneficiaries due to this road. Due to construction of this road, there will be no erosion to be remaining soil / forest land.

1	Total Length	11.340
2	Location	Tehsil Sunder Nagar , Sub-Tehsil Nihri District Mandi
3	Terrain	Hilly
4	Name of the Protected Area within 10 km of protected zone(Buffer Zone)	Nil

The area is covered in the Survey of India Topo Sheet No. 53A15 (R.F. 1:50,000) and is bounded by the co-ordinates shown in table below.

Site Coordinates

Sr.No.	Latitude	Longitude
1 Start Point	31.423094°	76.945126°
2	31.422137°	76.944155°
3	31.422078°	76.945458°
4	31.421634°	76.943916°
5	31.420049°	76.944099°
6	31.422071°	76.947088°
7	31.421104°	76.946085°
8	31.421896°	76.947616°
9	31.420403°	76.947686°
10	31.417722°	76.950345°
11	31.416048°	76.950156°
12	31.418059°	76.950393°
13	31.420103°	76.950259°
14	31.418941°	76.955504°
15	31.418188°	76.956478°
16	31.418648°	76.951455°
17	31.415183°	76.956021°
18	31.412843°	76.960397°
19	31.411713°	76.958442°
20	31.411030°	76.959899°
21	31.406567°	76.958761°
22	31.407532°	76.961212°
23	31.404430°	76.960831°
24	31.406175°	76.964857°
25	31.405889°	76.966255°
26	31.401120°	76.969107°
27	31.397716°	76.971360°
28	31.400195°	76.966534°
29	31.402941°	76.963721°
30	31.403815°	76.959002°
31	31.404926°	76.955894°
32	31.402102°	76.962323°
33	31.402582°	76.957765°
34	31.399950°	76.961008°
35	31.395554°	76.961267°
36	31.397492°	76.964329°
37	31.393884°	76.960016°
38	31.391484°	76.964816°
39	31.388403°	76.967866°
40	31.385505°	76.969629°
41	31.383624°	76.971708°
End Point 42	31.381357°	76.973449°

Project Location (District Mandi Patch)

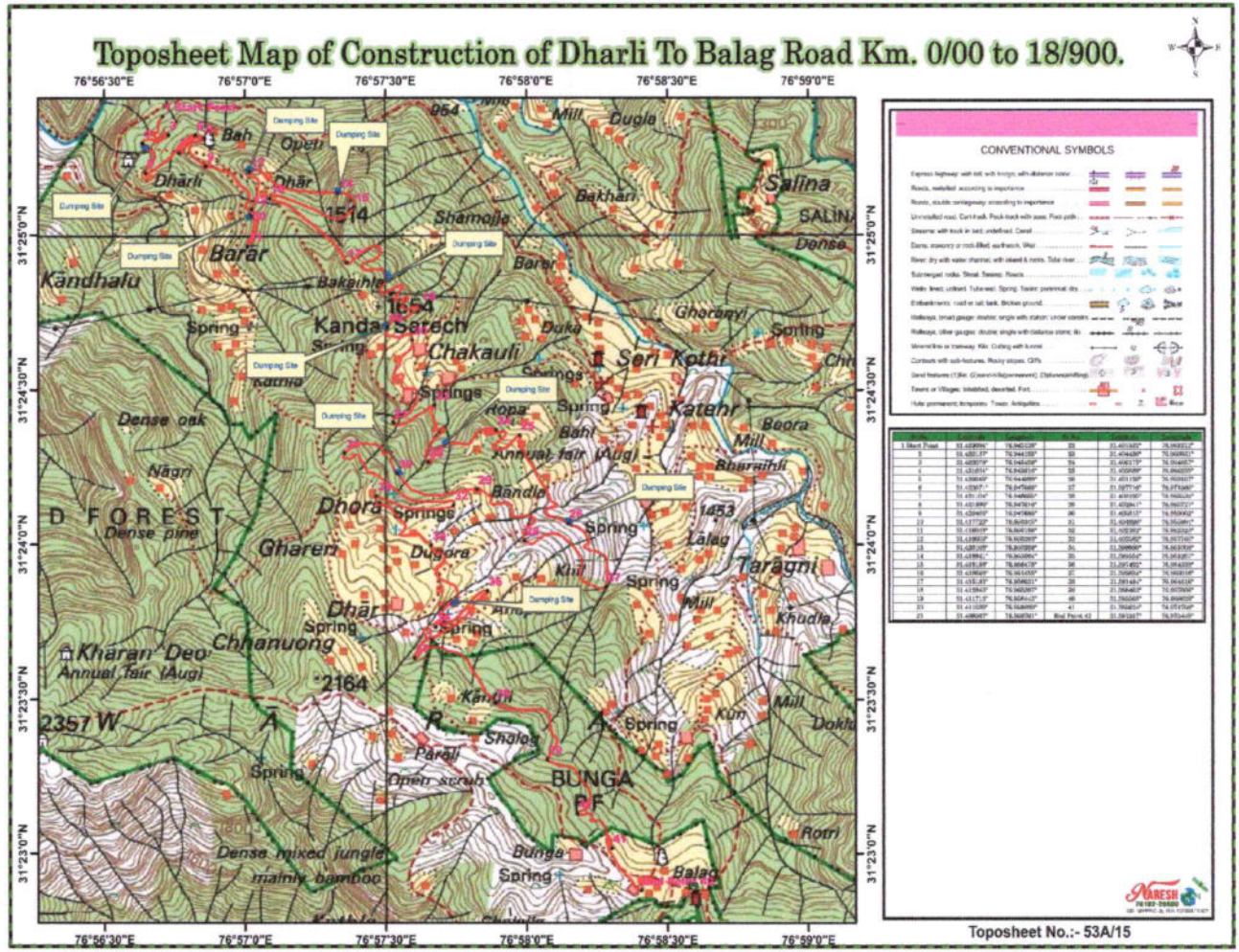
Sr.No	Aspect	Description
1.	Project	Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Constructon of Dharli To Balag road (Km 0/00 to 18/900, within the jurisdictions of Suket Forest Division H.P.
2.	Location	53A/15
(i)	State	Himachal Pradesh
(ii)	District	MANDI
(iii)	Tehsil	Sunder Nagar
(iv)	Villages	Dharli, Ropa Bandla, Salag, DPF Bunga, Balag
3.	Nearest Location	31.423094°, 76.945126°
(i)	Nearest Town	Nihri, Slapper, Sunder Nagar
(ii)	District Headquarters	Mandi

1.1 General

Diversion of 10.6019 Ha. Forest land for The proposed road will connect Dharli, Chakauli, Ropa Bandla, Dhora, Dhar, Salag, DPF Bunga, Balag villages /habitation and it will serve approx. 3108 populations. It will connect left out area, which is deprived with road facility. The road is urgently required as people of these villages are facing great hardships to reach the nearby town Slapper. After construction of this road they will connect directly with Hospital Sunder Nagar, Medical college Hospital Ner chowk, Market center Sunder Nagar and Nerchowk. All three roads maintained above are connecting different area and the left out villages are to be connected by the proposed road. The Public Works Department Sunder Nagar division has been to be submitted for Stage-I approval under FCA 1980.Now for Stage-I Approval Soil Conservation Plan (SMC) is to be submitted. The proposed Road passes through Two Ranges (Kangu & Jhungi) of Forest Divisions Suket.

The location map of road passing through area of Suket Division, Range Kangu & Jhungi is given in Figure 1.1.

FIGURE 1.1 LOCATION MAP



Deputy Conservator of Forests
 Suket Forest Division
 Sundernagar Dist. Mandi (H.P.)

Executive Engineer,
 Sundernagar Division
 HPPWD, Sundernagar

2.0 CLIMATE & RAINFALL

The climate of the district varies from semi-tropical to semi-arctic. Winter varies from December to February and summer extends from March to June while July to September is rainy months. The maximum rainfall in the district occurs between July to September. The rainfall in the district during 2012 was 1106 mm. Snowfall is received in the higher reaches. The minimum and maximum temperature at Saloni in 2011 was 1.1°C and 32.9°C in January and May respectively.

3.0 GEOMORPHOLOGY & SOIL TYPES

Mandi district presents an intricate mosaic of mountain ranges, hills and valleys. It is primarily a hilly district with altitudes ranging from 550 m near Sandhol where the Beas river leaves the district, to about 3960 m amsl near Kullu border. There is a general increase in elevation from west to east and from south to north. Master slope is southwesterly. The south western part consists of Siwalik ranges having scarped slopes. There are few small intermountain valleys; prominent among them is the Sunder Nagar valley, located in the lesser Himalayan ranges, having an average altitude of about 790 m amsl and have a general slope towards NNE. The valley floor is undulating and is marked by low hillocks and terraces fringing the hills and intervening low alluvial plain. The Beas and Satluj rivers form the major drainage system in the district. The river Beas and its tributaries, drain about 70% of the district area in the northern part, whereas the area in the south is drained by the river Satluj. Byas khad and its tributaries, chiefly drain Sunder Nagar valley. The Satluj khad maintains a perennial flow, because of effluent seepage from groundwater. There are three important lakes in the district, namely Rewalsar, Prasher and Kamrunag. Two types of soils are mainly observed in the district viz. Sub-Mountainous Soil occurring in Sunder Nagar, Nihri and Karsog blocks and Mountainous Soil occurring in remaining eight blocks of the district.

The sub-mountainous soil is high in organic carbon, low in available phosphorous and medium in potash, whereas the mountainous soil is brown in colour, medium in available nitrogen & potash and deficient in available phosphorous. The soil reaction is slightly acidic to neutral and texture in general varies from loam to sandy loam, except in low valley areas being heavy Textured.

4.0 GROUND WATER SCENARIO

4.1 Hydrogeology

The rock formations occupying the district range from pre-Cambrian to Quaternary period. The generalized geological succession in the district is given below.

Age	Formation	Lithology
Quaternary	Alluvium; Terrace & Fluvial deposits	Alluvium, clay, sands, gravels, pebbles, boulders and cobbles
Lower Pleistocene to Middle Miocene	Siwalik Group	Clay, siltstones, sandstones, and boulder beds

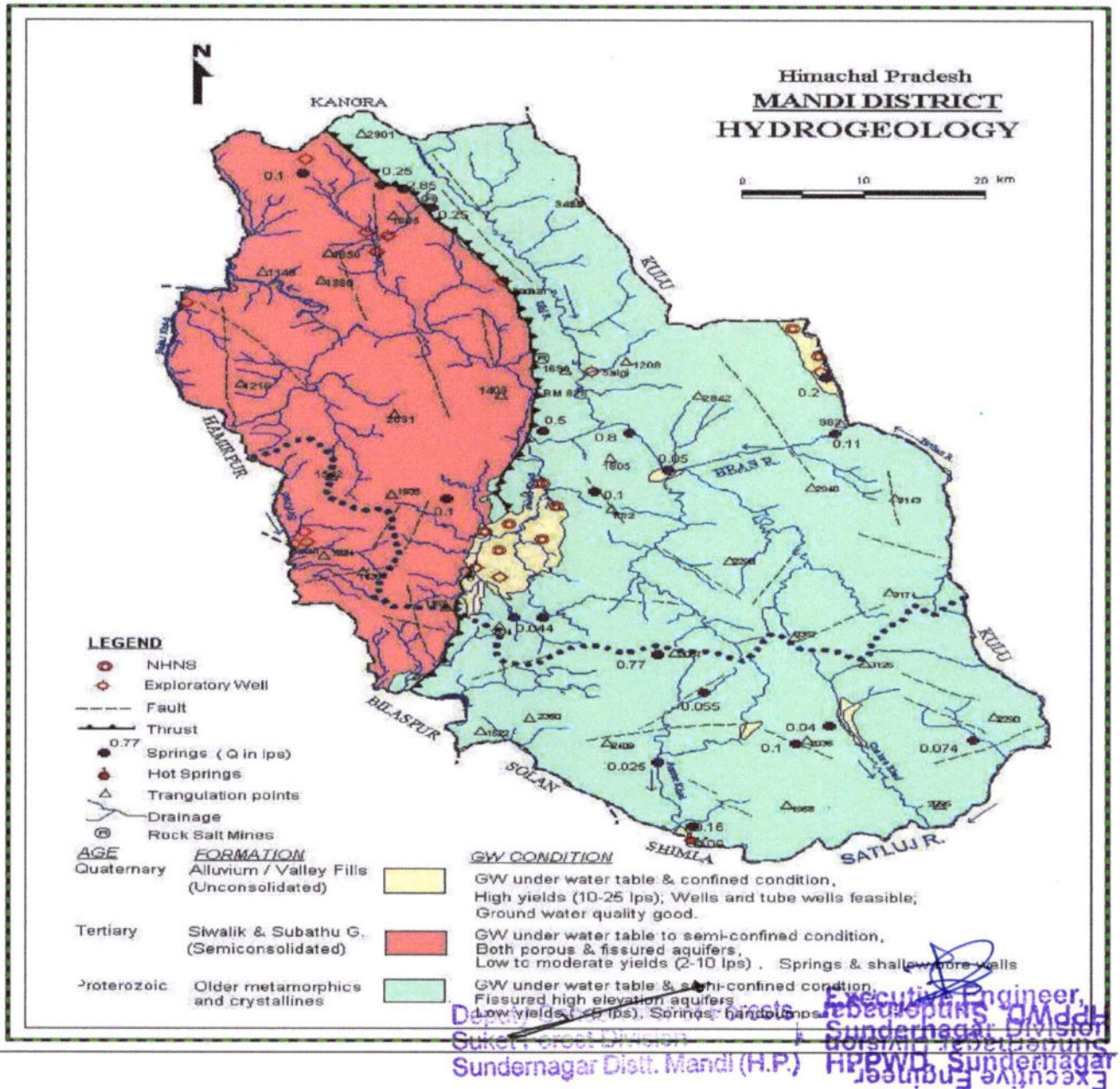
Oligocene to Lower Miocene	Dharamsala/Kasauli Formation (Sabathu Group)	Grey/green sandstones, splintery shale, clay etc.
Permian	Basic Volcanic intrusives	
Proterozoic	Shimla Group	Phyllites, Quartzites, limestone, shale and dolomite
	Shali/Sundernagar/Kullu Formation	Phyllites, Quartzites, dolomite conglomerate and limestone
	Jutogh Group	Quartzites, Schists and phyllites
		Dalhousie/Kullu granites and gneisses

Hard formations, form hilly and mountainous terrain and mainly comprises of igneous and metamorphic rocks, belonging to the Jutogh, Shali/Largi and Shimla group and occupy the major part of the area in the northern, central and eastern part. Granites and gneisses are intruded in the meta-sediments of Shali/Largi and Shimla group. In the western and southern parts sediments comprising of sandstone, shale, siltstone, conglomerate etc of Dharamshala/Sabathu group and Siwalik group of Tertiary age are observed. Alluvium, terrace deposits, fluvial deposits of Quaternary period occur in the intermontane valleys, viz., Balh valley, Sarkaghat valley etc., and constitute an important unit from ground water point of view.

Hydrogeologically, the district is divided into two distinct and well defined units viz. porous formations constituted by unconsolidated sediments and the fissured formations or hard rock formation constituted mainly by semi-consolidated to consolidated rocks.

The fissured formations include the semi-consolidated to consolidated (hard) rocks exposed in the district and are of sedimentary, metamorphic and igneous origin. These form low and high hill ranges throughout the district. Fractured and jointed sandstone, siltstone forms low potential aquifers in the area. In general, weathered and fractured hard rocks are favorable for groundwater aquifer. Fracture zones and contact zones form the important aquifers in the topographic low areas, with poor to moderate yields. These fracture or fault zones form potential ground

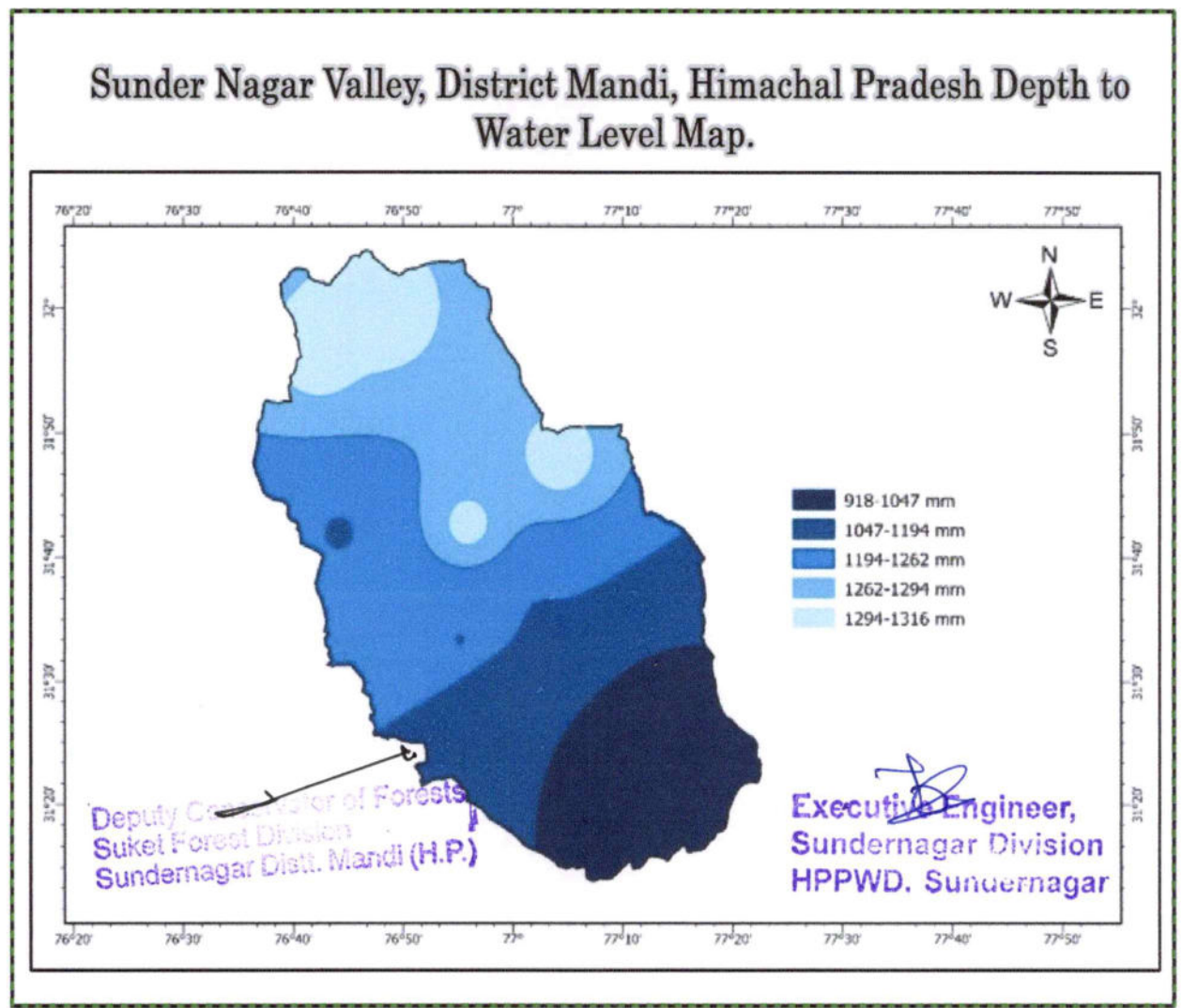
water zones. Ground water in these hilly areas oozes in the form of seepages, springs and utilized for domestic and other uses. At places, shallow boreholes fitted with hand pumps have been constructed to develop ground water. The yield of the bore wells constructed along the fault/fracture/contact zones varies from less than 1 to 30 m² hour. Weathered mantle in low topographic areas, also form poor aquifers. Borewells are constructed in oozing out spring/seepage zones for collecting water to fulfill the domestic water needs.



The unconsolidated sediments comprising fluvial, channel deposits, valley fills and terrace deposits and alluvial fan constitute the porous aquifers in the district. These sediments consist of sand, gravels, cobbles, pebbles and boulders interlayered with clay valley and isolated small pockets in the district, these unconsolidated sediments forming aquifer are observed. In Sunder valley, ground water occurs under phreatic to confined conditions. Dug wells form major source of

water for domestic and irrigation water supply. The depth of the wells ranges from 8 m to 26 m bgl, where depth to water level ranges from near surface 0.86m bgl to 9.92m bgl. In low plains, water levels are shallow and less than 5m and become deeper in terraces and fringe areas. Large number of tube wells, ranging in depth from 38.25 m to 140.98m have been drilled/constructed by tapping granular horizons. where water level ranges from artesian/free flow to about 19.35m bgl. The yield of the wells ranges from 15 to 999.24 Ipm for economic drawdown. Free flowing conditions are observed in low-lying areas of Byas, Satluj khad in southwestern part of Balag valley.

In Balag valley. CGWB monitors 9 hydrograph stations for groundwater regime monitoring under its National Network. The water levels are monitored four times and ground water quality once during pre-monsoon period every year. During the pre-monsoon (May 2012), depth to water level ranged between 0.86 to 9.92 mbgl. Similarly, during the post-monsoon (November 2012), depth to water level ranged between 0.37 to 5.83m bgl. Depth to water level map of pre-monsoon 2012, is given in Figure - 4.



4.2 Ground Water Resources

Rainfall is the major source of groundwater recharge, apart from the influent seepage from the rivers, irrigated fields and inflow from upland areas, whereas discharge from ground water mainly takes place through wells and tube wells; effluent seepages of ground water in the form of springs and base flow in streams etc.

Ground water resources and irrigation potential for Dharli & Balag valley in Mandi district have been computed as per the GEC-97 methodology. The resources for the year 2011, are as follows: -

1.	Area (Dharli & Balag valley) considered for GW Assessment	9500Ha.
2.	Net Ground Water Available	5942.33 ham
3.	Annual Ground Water Draft	912.77 ham
4.	Stage of Ground Water Development	15.36%

The stage of ground water development in Balh valley in Mandi district is 15.36% and falls under "Safe" category. There is thus, a scope for further ground water development.

4.3 Ground Water Quality

CGWB monitors the ground water quality of shallow aquifers through 9 National Hydrograph Stations, located mostly in Dharli & Balag valley and southernmost extension of Kullu valley falling in district Mandi. As per ground water samples collected in May 2012, the range of chemical parameters in Dharli & Balag valley is summarized below.

<i>S No</i>	<i>Parameters</i>		<i>Range</i>	
			<i>Min</i>	<i>Max</i>
1.	pH		7.38	7.89
2.	EC	uS/cm	180	1320
3.	HCO ₃	(mg/l)	67	214
4.	CL	(mg/l)	4	255
5.	NO ₃	(mg/l)	0.90	98
6.	F	(mg/l)	0.00	0.30
7.	Ca	(mg/l)	14	66
8.	Mg	(mg/l)	6	54
9.	Na	(mg/l)	11	102
10.	K	(mg/l)	2.20	16
11.	TH as CaCO ₃	(mg/l)	108	792

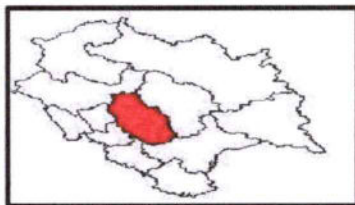
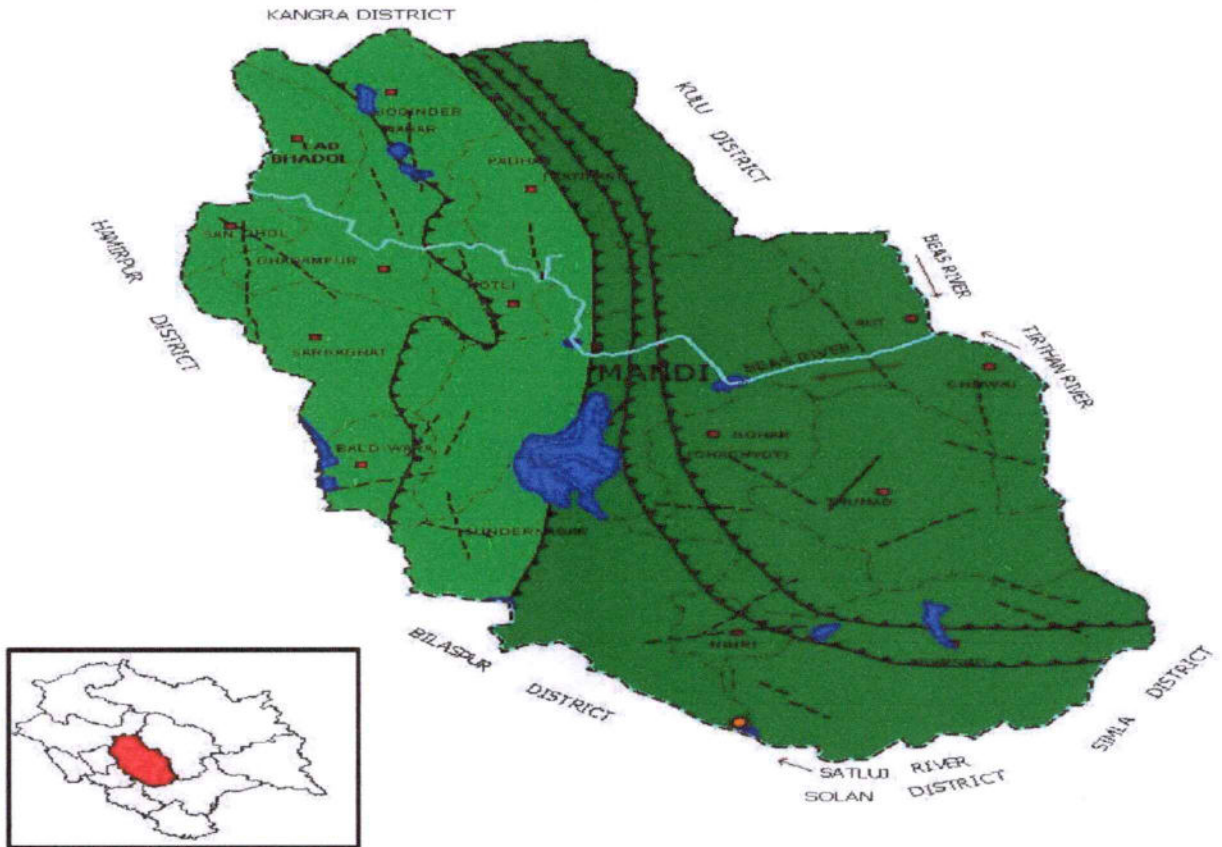
Deputy Conservator of Forests
Suket Forest Division
Sundernagar Distt. Mandi (H.P.)

Executive Engineer,
Sundernagar Division
HPPWD. Sundernagar

**GROUND WATER USER MAP
DISTRICT MANDI, HIMACHAL PRADESH
CENTRAL GROUND WATER BOARD
MINISTRY OF WATER RESOURCES**



0 10 20
kilometers



	Wells feasible	Rigs suitable	Depth of Well (m)	Discharge (lpm)	Suitable artificial Recharge structures
Soft rock aquifers	Tube well	Percussion & Percussion cum Rotary Manual	100-120	1200-2500	Check dam, Check dam cum ground water dam, Recharge shaft
	Dug well		10-20	300-500	
Hard rock aquifers	Bore well	DTH with Odex	100-150	1000-2000	
	Dug well	Manual	10-20	300-500	
	Spring Development			30-2000	
▲▲▲ Thrust					
Major drainage Hot water spring (50°C) Spring	Fault/Lineament Tehsil boundary District boundary State boundary				

Executive Engineer
 Sundernagar Division
 HPPWD, Sundernagar

Scope of Work:

Deputy Conservator of Forests
 Suket Forest Division
 Sundernagar Distt. Mandi (H.P.)

1. Preparation Soil Conservation Plan:

- Proper mitigate measures to minimize soil erosion and choking of streams shall be prepared.
- Planting of adequate drought hardy plant species and sowing of seeds to arrest soil erosion.

- Study of construction of check dam, retention/Breast walls to arrest sliding down of the
- excavated material along the contour.
- Additional measures to avoid the soil Erosion.

1.2 Location of the Project:

Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Construction of Dharli to Balag road (Km 0/00 to 18/900, within the jurisdictions of Suket Forest Division H.P Comprising total area of 10.6019 Hectare of Forest Land has been Proposed by Himachal Pradesh Public Works Department, Sunder Nagar Division. The Location of the project is The area is covered in the Survey of India ToposheetNo.53A/15 (R.F. 1: 50,000)) and is bound by

Latitude: Longitude:

Sr.No.	Laititude	Longitude
1 Start Point	31.423094°	76.945126°
2	31.422137°	76.944155°
3	31.422078°	76.945458°
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40	31.385505°	76.969629°
41	31.383624°	76.971708°
End Point 42	31.381357°	76.973449°

1.3 Location of Study Area:

INTRODUCTION TO DIVISION/RANGEWISE LOCATION SPECIFIC SMC PLAN:

It is important that a "*SOIL AND MOISTURE CONSERVATION PLAN*" should provide site specific prescription be the activities to be undertaken under each heading of the SMC Plan components.

Objective of Study

1. The broad objectives for preparation of Soil and Moisture Conservation are outlined as under:

2. Checking soil erosion and land degradation by taking up adequate and effective soil conservation measures, both engineering as well as biological, in erosion prone areas (mainly under very severe and severe erosion intensity categories)

3.ii) Rehabilitation of degraded forest areas through afforestation and facilitation natural regeneration 3

4.ii) Rehabilitation of degraded slopes and landslide areas.

5. "*SOIL AND MOISTURE CONSERVATION PLAN*" is the optimal use of Soil and water resources within a given geographical area so as to enable sustainable production. It implies changes in land use, vegetative cover, and other structural and non-structural action that are taken in SMC. The overall objectives of "*SOIL AND MOISTURE CONSERVATION PLAN*" are to;

- a. increase infiltration into soil
- b. Control excessive run off
- c. Manage & utilize run off for useful purpose
- d. Shrub Plantation

e. Grazing and Development: -

f. Grazing land development can be undertaken for treatment under silvo-pastoral model. Areas should be closed and staggered trenching should be dug over the area to be treated. Trenches should be dug per hectare. Improved variety of grass should be sown on the berm of the tranches. In the space between the reaches, fodder tree species should be raised. Suggested species for grazing land development are and rrogons quarrosus (Khas-Khas), apluda mutica, arthraxon prionodes, Brachiaria mutica, Cenchrus ciliaris, Cenchrusciliarischlorisgayana (Rhodes grass) Cymdondactylon Desmostachya bipinnata, Digitaria decumbens (Pagnola grass) etc.

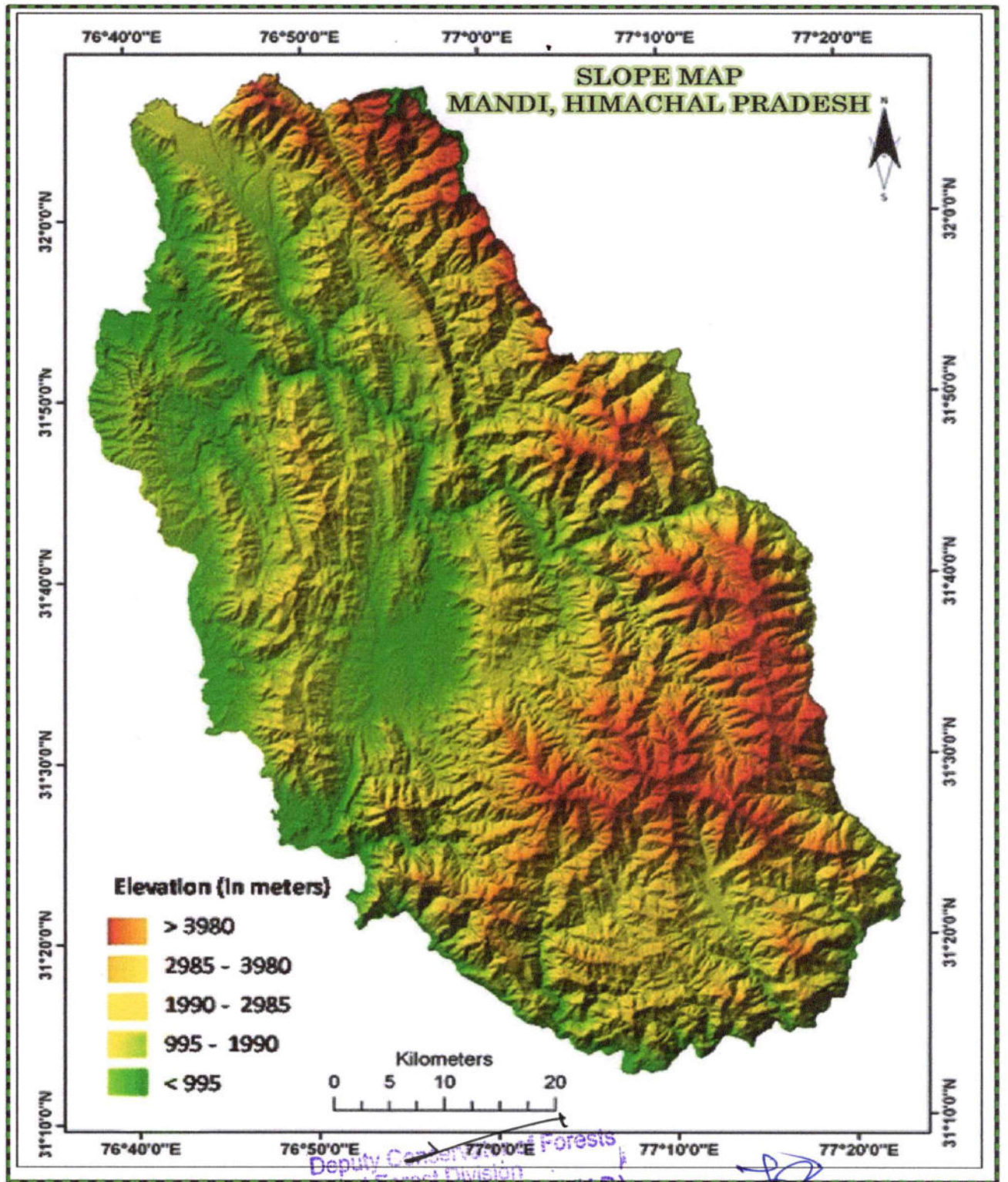
Engineering measures: -

- i) Moisture Retention measures.
- ii) Drainage Line Treatment Stabilization of landslide/landslips Slope.
- iii) The slope has a great influence on the soil and water loss from the area and thereby influences the land use capability. The slope determines the erosion susceptibility of the soil depending on its nature. This helps in classifying various lands in suitable capability classes which enables us to formulate suitable conservation measures for the prevention of soil erosion. The degree slope was divided into different slops classes as per rat and Land Use Survey of India (SLUSI) The areas falling under various standard slope categories in the catchment area have been tabulated below in Table The slope map is enclosed in Figure. As seen from the table and map, maximum of the slope falls under 2.4660 to 622 mtr slope range The degree of slope is explained in the below mention map.

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SLOPE MAP



1.4 Need for Soil Conservation Plan:

Soil Conservation Plan is normally applicable for Hydroelectric and Irrigation Projects where impounding of water is proposed by construction of Barrage, Dam etc. This project is Road Project and the part of project falling Under Bahtiyat Range does not fall near to any major river.

1.5 Objective of SC Plan:

The objective of SC Plan is to rejuvenate various potential and degraded ecosystems in the Mine area. The opencast Road activities disturb large tracts of land and produced greatly increased down stream sediment load.

The objective of this report is to present the outline of Road surface erosion problem, method of modeling sediment yield, measures to be taken for reducing or controlling sediment discharges. The action plans is to be prepared for this purpose with the following objectives.

- Conservation of soil cover and to arrest the soil erosion, flood and siltation of the Project area and its tributaries if any.
- Soil conservation through biological & engineering measures to reduce sediment load in river and tributaries, thus improving quality of water.
- Increase vegetative cover and water retaining properties.

SOIL CONSERVATION PLAN

Mitigative Measures

Mitigative measures to minimize soil erosion can be undertaken by two plan

- 1) Biological Conservation Plan,
- 2) Engineering Conservation Plan

5.1 Biological Conservation Plan:

5.1.1 Approach Plan

The following biological conservation plan can be adopted to mitigate soil erosion.

- Proper Dumping of Muck Generated. Dumping of soil and clayey material should be done away from the working area that is on farther end of the dump so that formation of weak planes is avoided.
- Afforestation by planting trees will help a lot in improving stability of dumps by preventing erosion.
- Provision of jute mesh for facilitating grass or vegetative growth on slopes, Provision of good soil mixed with manure and subsequent irrigation for growth of grass for anchorage on slopes. Plantation mixed with indigenous and fast growing plant species
- The degraded area can be reclaimed and rehabilitated with local species of plantation in a phased manner,
- Plantation should be carried out on waste dumps;
- The haulage roads should be flanked by trees on either side; and

- A belt of trees with thick canopy should be created along the mine boundary to intercept dust, gaseous pollutants and noise.

60 COST ESTIMATE

Cost of Mitigative Measures to arrest Soil Erosion & Top Soil Management Plan in respect of both Biological and Engineering plans are as proposed.

Cost estimate for Engineering Plan:

6.1 Total cost of Mitigative Measures for Soil Conservation:

The area of Diversion falling under Suket Division, Jhungi and Kangu Range is 10.6019 Hectare of forest land in favour of HPPWD for the construction of Dharli to Balag road (Km 0/00 to 18/900), within the jurisdictions of Suket Forest Division H.P. The area falling under the project is prone to Landslides and the sites to treated is mentioned in the list attached below with various SMC related activities proposed,

Hence as decided by the recent Guidelines of MoEFCC dated 07-06-2022, sum of Rs. 1,75,000/ will be deposited as per the cost of SMC accordingly to the % age of the Forest Land Diverted.

REFERENCE AND DATA SOURCE

- GOVERNMENT OF INDIA MINISTRY OF WATER RESOURCES, CENTRAL GROUND WATER BOARD, GROUND WATER INFORMATION BOOKLET, MANDI DISTRICT, HIMACHAL PRADESH.
- Survey of India.

Sr No	Name of block	Name of beat	Detail of work proposed	Name of area	Unit	Phy.	Amount	GPS		Re
								Lat.	Long	
1	Batwara	Gehru	Retaining Wall	Dharli	No.	1	250000	31.42189 6°	76.94761 6°	
2	Batwara	Gehru	Retaining Wall	Ropo Bandla	No.	1	200000	31.41604 8°	76.95015 6°	
3	Batwara	Dhawal	Culvert	Ropo Bandla	No.	1	150000	31.40903 4°	76.95874 0°	
4	Batwara	Dhawal	Culvert	Salag	No.	1	105000	31.40441 7°	76.96090 2°	
5	Trachh	Balag	Culvert	DPF Bunga	No.	1	110000	31.40020 8°	76.96657 2°	
6	Trachh	Balag	Culvert	Balag	No.	1	250000	31.39386 9°	76.96001 5°	

Deputy Conservator of Forests
Suket Forest Division
Sundernagar Dist. Mandi (H.P.)

Executive Engineer,
Sundernagar Division
HPPWD, Sundernagar

1.Introduction:

The proposed road will connect Dharli, Chakauli, Ropa Bandla, Dhora, Dhar, Salag, DPF Bunga, Balag villages /habitation and it will serve approx. 3108 populations. It will connect left out area, which is deprived with road facility. The road is urgently required as people of these villages are facing great hardships to reach the nearby town Slapper. After construction of this road they will connect directly with Hospital Sunder Nagar, Medical Hospital Ner chowk, Market center Sunder Nagar and Nerchowk. All three roads maintained above are connecting different area and the left out villages are to be connected by the proposed road. The proposed road will facilitate the moment of people and it will also help to upgrade the living standard of the people of the area. Due to the proposed development, some of the existing trees are to be felled. To offset this impact, compensatory afforestation programme through tree plantation, median plantation, horticulture and landscaping strategy is proposed,

2. OBJECTIVE

The main objectives are as follows:

- Reducing the impacts of air pollution
- Natural noise barrier
- Arrest of land erosion
- Prevention of vehicle glare from vehicles coming from opposite direction
- Enhancement of aesthetic view of the corridors
- climatic amelioration
- Defining of ROW especially at sharp curves during night

Roadside vegetation is any vegetation growing along the roads. Planting trees, shrubs und grasses along the road can create a productive asset and can alleviate the negative effects of roads on the local environment. Negative effects include erosion, loss of fertile soils, gully formation that undermines road foundations, heavy dust, and more. In particular, dust lifted by vehicles, especially along unpaved roads, has a direct effect on the health of people mal livestock living near the roads and on crop production.

3.SPECIES SELECTION

Grasses, shrubs and trees are the main species that are readily available in India. Wherever possible, the use of non-native species should be avoided since they can out compete and displace native ports leading to loss of native biodiversity. To maximize the chances of success of survival of species, selection of species shall be done according to environmental conditions of the project site. Care should also be taken to select species with root systems that match the nature of the soil movement at the project site. Homogenous avenues of trees should be selected for long stretches as it provides

aesthetic qualities in the landscaping. One should also consider the economic and other social benefits while selecting the species for plantation. During the selection of species, preference should be given towards rapid growing, pollution tolerant and pest & disease resistant species. Shrub species, which are dwarf and pollution ant, are to be planted in the median to prevent the glare of traffic moving in opposite direction. Flowering, ornamentals plants and climbers can also be planted in urban areas to provide beauty. For this purpose, the species may be decided by interaction with local forest authority and local populace. Few species are recommended in the table below.

Table 1: Species Recommended

Scientific name	Common Name	Quality/Specification
Ailanthus excelsa	Maharukh/Adu Neem	Pollution Sink, Noise Barrier
Alstonia scholaris	Saptaparni	Pollution Sink, Aesthetic Value, Medicinal Value
Azadirachta indica	Neem	Noise barrier, Pollution sink, Economic & Medicinal Value
Bombax ceiba	Semal	Aesthetic Value, Economic Value
Butea monosperma	Dhak	Aesthetic value, Pollution sink
Calistemon viminalis	Bottle Brush	Aesthetic value, Pollution sink
Cassia fistula	Amaltas	Landscaping, Flowering plant, Pollution sink, Medicinal Value
Dulbergia sissoo	Sheesham	Economic Value, Pollution Sink
Ficus bengalensis	Bargad	Noise barrier, Pollution sink, Medicinal Value & Religious value
Ficus religlosa	Peepal	Noise barrier, Pollution sink, Religious values
Mellu uzeduruch	Bakain	Noise Barrier, Pollution Sink, Economic and Medicinal value
Moringa oleiferu	Sahajana	Economic Value, Medicinal value
Pongumia pinnata	Karanj	Economic Value, Medicinal value
Syzygium cumini	Jamun	Pollution sink, Economic Value

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4. Plantation Model:

Since the proposed road is new construction to motorable with paved shoulder configuration, and the area being hilly, no avenue plantation has been proposed. But still plantation according to IRC:SP:21-2009 norms on suitable area will be done.

Table 2: Area identified for landscaping & tree plantation

Sr.NO	Type of plantation	Location(Km)	Remarks
1	Shrubs	In median except structures	Ornamental type plantation shall be provided
2	Landscaping	All service areas interchanges O&M centers	Ornamental type plantation shall be provided
3	Plantations	Available open land along Row	About 1100 nos, of trees to be planted preferably indigenous species like Jamun, Neem, Habul, Peepal, Shisham etc.

RECOMMENDATIONS

Due care should be taken to ensure that a greenbelt is developed around the plant. All areas devoid of Vegetation and having low density should be systematically and scientifically afforested. Greenbelt will be a set of rows of trees planted such a way that they form an effective barrier between the plant and the surroundings. The persistence of plantation plan is to contribute to the following factors:

- To attenuate noise levels generated from the plant.
- To improve the aesthetics of the plant area:
- To trap the vehicular emissions and fugitive dust emissions;
- To maintain ecological homeostasis;
- To prevent soil erosion and to protect the natural vegetation;

- To utilize the treated effluents.

The plantation species should be considered based on the following:

- Adapted to the Geo-climatic conditions of the area;
- Mix of round, spreading, oblong and conical canopies,
- Different heights ranging from 4 m to 20 m.
- Tolerance to specific conditions or alternatively wide adaptability to Eco physiological conditions;
- Rapid growth;
- Capacity to endure water stress and climate extremes after initial establishment;
- Differences in height and growth habits;
- Pleasing appearances;
- Providing shade.

5. Cost Estimate:

Cost of Plantation for different heads including Maintenance

Heads	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	Total Cost (Lakhs)
Cast of Saplings	52212	35266	17862	17862	17862	141064
SMC work Plantation cost	40000	40000	40000	40000	40000	200000
Survey Demarcation & Fencing Tree Guard	34991	34991	34991	34991	34991	174956
Plantation	51571	51571	51571	51571	51571	257855
Misc	13100	13100	13100	13100	13100	65500
Contingency	11257	11257	11257	11257	11257	56285
Total Cost (Lakhs)	203131	186185	168781	168781	168781	895660

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**FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM.
0/00 TO 18/900.**

File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

DETAIL OF MUCK/DEBRIS TO BE PRODUCED


**Name Of Work:- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO
18/900. TO BE CONSTRUCTED IN DISTRICT MANDI STATE HIMACHAL PRADESH.**

Detail of quantity to be produced and used during the construction of road

Sr. No.	Description of items	Quantity
1	Total quantity to be produced during construction	161028.00
2	To be used for soling of road (6.5%), wearig of road (6.5%) and filling behind retaining walls of road (20%) total (33%)	53139
3	To be used for local use for construction of road average (total 33%)	53139
	Total Quantity to used (2+3)	106278
4	Net quantity to be dumped (3-(1+2))	54750.00
5	Soil factor 40%	21900
	G-Total (4+5):-	76650.00

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PERFORMA-V

STATEMENT SHOWING DETAIL OF PLACES FOR DISPOSAL OF MUCK/DEBRIS OF CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900. TO BE CONSTRUCTED IN DISTRICT MANDI STATE HIMACHAL PRADESH.

Sr. No.	Name of dumping places	Location of Dumping place i.e. village Khasra No.	Slope of dumping place	Length and width (in mtrs.) and Area of Dumping place (in sqm.)	Quantity of muck/Debris to be dumped [in 1000 cum]	Height of dumping expected.	Remarks (Area in bigha)
1	1st Dumping Place : Dharli	RD 0/00 to 4/630 Khasra No.274/252/5	1:7	40.5 x 20 = 810 Sqm	4860.00	6.00	0.081
2	2nd Dumping Place :Dharli	RD 0/00 to 4/630 Khasra No.245/3	1:7	40.5 x 20 = 810 Sqm	4860.00	6.00	0.081
3	3rd Dumping Place : Dharli	RD 4/665 to 8/305 Khasra No.271/2	1:7	40.5 x 20 = 810 Sqm	4860.00	6.00	0.081
4	4th Dumping Place :Ropabandla	RD 8/305 to 8/475 Khasra No.77/3	1:7	40.5 x 20 = 810 Sqm	4860.00	6.00	0.081
5	5th Dumping Place : Ropabandla	RD 9/745 to 9/995 Khasra No.218/4	1:7	40.5 x 20 = 810 Sqm	4860.00	6.00	0.081
6	6th Dumping Place :Ropabandla	RD 10/065 to 10/575 Khasra No.935/404/2	1:7	40.4 x 20 = 808 Sqm	4848.00	6.00	0.0808
7	7th Dumping Place : Ropabandla	RD 10/995 to 11/895 Khasra No.676/3	1:7	40.4 x 20 = 808 Sqm	4848.00	6.00	0.0808
8	8th Dumping Place :Ropabandla	RD 12/113 to 11/880 Khasra No.577/2	1:7	40.4 x 20 = 808 Sqm	4848.00	6.00	0.0808
9	9th Dumping Place : Salag	RD 12/880 to 13/870 Khasra No.693/34/2	1:7	40.4 x 20 = 808 Sqm	4848.00	6.00	0.0808
10	10th Dumping Place :DPF Bunga	RD 15/595 to 18/025 Khasra No.12/2	1:7	40.4 x 20 = 808 Sqm	4848.00	6.00	0.0808
			Total:-	8090	48540.00		0.809

Say 0.8090 Hect.


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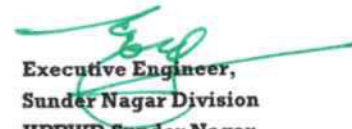
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PROFORMA-III (REFER ITEM-8)

STATEMENT SHOWING DUMPING QUANTITY OF MUCK/DEBRIS TO BE DUMPED WITH OTHER DETAIL FOR PROJECT CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900. IN DISTRICT MANDI

Sr. No.	Name of component from Muck/Debris is to be produced	Total Qty. of Muck/Debris to be produced (000M3) (in Cum)	Qty. of Muck/Debris to be utilized locally (000M3) (in Cum)	Qty. of Muck/Debris to be Dumped on compact basis (000M3) (in Cum)	Factor of increase in Vol. for Dumping (in Cum)	Qty. of Muck/Debris to be Dumped on basis of increase (000M3) (in Cum)	Name of dumping places	Slop of dumping place	Location of Dumping place, Police Station & Nearby road	Distance of dumping place from river (In KMS)	Area of dumping place with Length and Breadth (In hect)	Area of forest land out of land in Column-10 (In hect)	Height of Muck/Debris dump expected (Vol. Area) (in mtrs.)	Remarks
1	2	3	4	5	6	7	8	14	10	11	12	13	14	15
1	Formation cutting work	161028.00	66% = 106278.00	34% = 54750.00	1.40	76650.00	Dharli. RopaBandl a ,Salag, DPF Bunga	1H : 3V			0.8090	10.6019	7.98	

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FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.


File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

Financial Components For The Material Required To Be Filled To The Recognised Dumping Sites.

Carriage of excavated material required hauling for dumping at the proposed site.	Net Quantity to lift Cum.	Rate of cattiage Cum.	Amount.
1 Average lead = 2 Km.	137535.3	15.87	2182685.21
2 Unit cost of carriage Rs. Per cum.			
3 Rate of carriage = Average lead x Unit cost			
C/O Retaining structure for dumping sites (Dumping site cost appended)	Sr. No.	Dumping site No.	Amount.
	1	10	1245640.00
	Total -		1245640.00
Total Cost of Dumping the muck (1+2) (Rs.)			3428325.21


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FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.

File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

**Consumption of Material
SH: Construction of Dumping Sites**

Sr. no	Description of item	Qty.	Unit	Unit Special Gelatine 80%		Electric Detonator		S.F Coil	
				Rate	Qty.	Rate	Qty.	Rate	Qty.
	Formation cutting								
	Cutting in Earth work								
I	Pick work	32323.7	P/Cum	0.00	0.00	0.00	0.00	0.00	0.00
II	Jumper work	35470	P/Cum	0.00	0.00	0.00	0.00	0.00	0.00
II	Blasting work	11061.6	P/Cum	0.00	0.00	0.00	0.00	0.00	0.00
IV	Hard Rock	11061.6	P/Cum	10.00	110616	1.38	15265.01	0.00	0.00
			Total		110616.00		15265.01		0.00


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File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

**Consumption of Material
SH: Construction of Dumping Sites**

Sr.no	Description of item	Qty.	Unit	Cement in Tonne		Sand in Cum		Agg. 40mm in Cum		Boulder in Cum		G.I. Wire	
				Rate	Qty.	Rate	Qty.	Rate	Qty.	Rate	Qty.	Rate	Qty.
1	Boulders	74.7	Cum	0.00	0.00	0.00	0.00	0.00	0.00	1.00	74.7	0.00	0.00
2	GI wire 4 mm Dia	74.7	Sqm	0.00	0.00	0.00	0.00	0.00	0.00	0.00		11.37	849.34
			Total	0.00	0.00	0.00	0.00				74.70	11.37	849.34

0.85
Tonne


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FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.


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**Extra cost Material
SH: Construction of Dumping Sites**

Sr.No.	Description of item	Qty.	Unit	Rate as per HPSR	Market Rate/Stone issue rate	Difference	Amount
1	Special Gelatine	4314	Kg	75.00	80.00	5.00	21570.00
2	Electric Detonator	15270	Nos	7.00	25.00	18.00	274860.00
3	S.F Coil			0.00	0.00		
						Total	296430.00


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**Extra cost Material
SH: Construction of Dumping Sites**

Sr.No.	Description of item	Qty.	Unit	Rate as per HPSR 2009	Market Rate/Stone issue rate	Difference	Amount
1	Boulders	74.7	Cum	300.00	700.00	400.00	29880.00
2	GI wire 4 mm Dia	850	Kg	60.00	100.00	40.00	34000.00
						Total	63880.00


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FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.


File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

**Extra Carriage Material
SH: Construction of Dumping Sites**

Sr.No.	Description of item	Qty.	Unit	Rate	Amount
1	Carriage of earth/muck from site of work to dumping site as per Muck Management Plan	40110	Kg	15.90	637749.00
				Total	637749.00


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FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.


File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

**Extra Carriage Material
SH: Construction of Dumping Sites**

Sr.No.	Description of item	Qty.	Unit	Rate	Amount
1	Boulders	74.7	Kg	178.16	13308.55
2	GI wire 4 mm Dia	0.85	Tonne	268.70	228.40
				Total	13536.95

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FULL TITLE OF PROJECT :- CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.


File No. :-FP/HP/ROAD/49449/2020

Date of Proposal :-05 Sep 2020

ABSTRACT OF COST

Sr.No.	Description of item	Qty.	Unit	Labour Rate	Amount	Through Rate	Amount
1	Earth work in excavation for structure as per drawing and technical specifications clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious materials and disposal upto a lead of 50.00 mtr., dressing of sides and bottoms and back filling in trenches with excavated suitable materials. Ordinary soil upto 3.00 metres depth.	7.717	per Cum	128.15	988.93	128.15	988.93
2	Providing and laying boulder apron laid in wire crates with 4 mm dia G.I. wire conforming to IS: 4826 in 100x100 mm mesh (woven diagonally) including ten percent extra for laps and joint laid with stone boulder weighing not less than 25 Kg each as per drawing and technical specification clause 1301.	124.6	per Cum	125.15	15593.69	1458.40	181716.64
				Total	16582.62		182705.57
	Add labour enhancement 100% on labour rate						16582.62
						Total	199288.20
	Add Extra carriage of material						13536.95
	Add extra cost of material						63880.00
						G. Total	276705.14


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COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Nature of Project: - Construction of Dharli to Balag Road Km. 0/00 To 18/900 in the state of Himachal Pradesh.

File No.:- FP/HP/ROAD/49449/2020

Date of Proposal: - 05/09/2020

Purpose: -This cost benefit Analysis is being undertaking for Proposed Diversion of Forest Land Being affected due to Construction of Dharli to Balag Road Km. 0/00 To 18/900 in the state of Himachal Pradesh.in the state of Himachal Pradesh.

Guidelines for concluding cost-benefit analysis for projects Involving Forest diversion

- (i) While considering proposal for diversion of forest land for non-forestry use, it is essential that ecological and environmental losses and eco-economic distress caused to the people who are displaced are weighted against economic and social gains.
- (ii) Whenever the forest land is involved in the development projects, the cost of ecosystem services and fragmentation of habitat of wildlife and economic distress caused to people dependent on forests and the cost of settlement of people dependent on forest should also be added as the cost of forest diversion in addition to the standard project cost which would have been incurred by the user agencies without involvement of forest land while conducting the cost benefit analysis of the project. Similarly, the benefits from the project accruing due to diversion of forest land and used in the project should also be accounted for in the benefits component in addition to the standard benefits of the project which would have been accrued without involvement of forest land while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iii) the cost of compensatory afforestation and its maintenance in future and soil & moisture conservation at present discounted value and future benefits from such compensatory forestation accruing over next 50 years monetized and discounted to the present value should be included as cost- and benefits respectively of compensatory afforestation while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iv) Table-A lists the details the types of projects involving forest land for which cost benefit analysis will be required Table-B lists the parameters according to which the cost aspect of forest land diverted for the development projects will be determined, while Table-C lists the parameters for assessing the benefits accruing to the project using of forest land.
- (v) A cost-benefit analysis as above should accompany the proposals sent to the Central Government for forest clearance under the Forest Conservation Act.

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COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Table-A: Cases under which a cost-benefit analysis for forest diversion are required

No.	Nature of Proposal	Applicable/ Not Applicable	Remarks
1	All categories of proposals involving forest land up to 20 hectares in plains and up to 5 hectare in hills.	Not applicable	These proposals may be considered on a case to case basis and value judgment.
2	Proposal for defense installation purposes and oil prospecting (prospecting only)	Not applicable	
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction.	Not applicable	
4	All other proposals involving forestland more than 20 hectares in plains and more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation projects, hydro projects, mining activity, railway lines, location specific installations centers, TV towers etc.	Applicable	These are cases where a cost-benefit analysis is necessary to determine when diverting the forest land to non-forest use in the overall public interest.

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COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Table-B: Estimation of cost of forest diversion

No.	Parameters		Remarks
1	Ecosystem services losses due to proposed forest diversion.	9.9732 ha. of forest land to be diverted. NPV cost of the forest area $9.9732 \times 1005210 = \text{Rs. } 10657136/-$ for 50 years. NPV obtained from HP Forest Department website given as per Supreme Court order dated 06.01.2022 value used for Class V dense forest.	Economic value of loss of ecosystem services due to diversion of forests shall be the net present value (NPV) of the forest land being diverted as prescribed by the Central Government (MoEF& CC).
2	Loss of animal husbandry productivity, including loss of fodder.	1065713/- (10 % of NPV is more than loss of animal husbandry productivity, including loss of fodder.	The loss of animal husbandry productivity, including loss of fodder has been calculated.
3	Cost of human resettlement	Since there will be no residential village area getting affected, there will be no cost of human resettlement.	Nil
4	Loss of public facilities and administrative infrastructure (Roads, Building, Schools, Dispensaries, Electric lines, Railways etc.) on forest land, which would require forest land if these facilities were diverted due to this project	Since no public facilities and administrative infrastructure (Roads, Building, Schools, Dispensaries, Electric Lines, Railways etc.) on forest land being diverted due to the project, there will be no such loss.	No loss will be sustained during the construction this road.
5	Environment losses erosion effect on hydrological cycle, wildlife, habitation, micro climatic rattooing of ecological balances.	3197141/- (30% of environmental Costs (NPV)= 10657136/-)	30% of environment costs (NPV) due to loss of forests or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum.

6	Suffering of austeers.	Nil	No, any local public are suffering from the construction of the road.
7	Habitat Fragmentation Cost.	5328568/- (50% of environmental Costs (NPV)= 10657136/-	While the relationship between fragmentation and forest goods and services is complex for the sake of simplicity the cost due to Fragmentation has been pegged at 50% of NPV applicable as a thumb rule.
8	Compensatory afforestation and soil & moisture conservation cost.	4423172 CA Plantation +175000 soil & moisture conservation cost. Total=4598172/-	The actual cost of compensatory afforestation and for its maintenance in future at present discounted value has been calculated as per the norms approved by the Pr. CCF(HoFF) HP Shimla.

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COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Table-C: Existing guidelines for estimating benefits of forest-diversion in CBA

No.	Parameters		Remarks
1	Increase in productively attribute to the specific project	Directly the project will have the potential for temporary employment generation for local people for 1 year generating 59780 Mandays during construction almost Rs 269.01 lacs.	To be quantified and expressed in monetary terms
2	Benefits to economy due to the specific project	Salient benefits of the project are minimum Guaranteed amount of Rs 691.97 lacs. Total 1488 nos. of local people to be benefited from the construction of project and 30 percent local people getting employment.	The project will field significant economic benefit to the state. Construction of road will lead to much better connectivity, which will play significant role in improving the socio-economic condition of the people of the state in any folds.
3	No. of population benefited due to specific project.	The construction of this project will provide fast economical and environment friendly transportation of local fruits, crops and vegetables as such the local habitants will be benefited indirectly (Shopkeepers, hoteliers, taxi, potters etc.). Total pilgrims/tourists visit in a year is app 1.5 lakhs. The total of population concerned Panchayat is 1488. On an average each person earns minimum of Rs 500.00 per day. 30% of total population is 580 x 500 x one year (365 days) =1058 lakh annually.	As per detailed project Report


4	<p>Economic benefits due to of direct and indirect employment due to the Specific project.</p>	<p>Economic Benefit due to direct employment:</p> <p>During construction period of 24 months, approximate 59,780 mandays of temporary employment will be generated by the construction which in monetary terms calculates at the present wage rate to Rs. 59,780 x = Rs. 269.01 Lacs.</p> <p>Economic Benefit due to indirect employment:</p> <p>The total quantified indirect benefit to a local population will be Rs 269.01 lacs annually. This benefit will also increase @ 8 to 10% each year for 100 years.</p>	<p>As per detailed project Report.</p>
5	<p>Economic benefits due to compensatory afforestation</p>	<p>Economic benefit due to Compensatory Afforestation: As per MoEFCC guidelines these benefits are the benefits are the form such CA accruing over next 50 years monetized and discounted to the present value should be included as benefits of CA. For benefits of CA guidelines of Ministry for NPV Sim estimation have been consulted and these benefits have been calculated on two heads namely benefits to CA and benefits due to carbon storage by the afforestation done on CA land. The results are as under:</p>	<p>Benefit from such compensatory Afforestation accruing over next 50 years monetized and discounted to the present value should be included as benefits of CA.</p>

	<p><i>1. Economic benefit due to CA= 21.2038 x 176009 = 3732059/-</i></p> <p><i>2. Economic benefit due to Carbon storage due to CA in Rs lakhs = 21.2038 x 13947=295729/-</i></p> <p><i>Total-(1+2)= 4027788/-</i></p>	
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Total Loss = Rs. 10657136+1065713+3197141 +5328568+4423172 = 24671730/-	Total Gain/Benefit from project Rs. 26901000+4027788 = 30928788/-
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Cost Benefit Ratio:- Environment loss/benefit from the project = $\frac{24671730}{30928788} = 0.79 < 1$,
so project is found viable based on given/above described criteria.

Deputy Conservator of Forests
Suket Forest Division
Sundernagar Distt. Mandi (H.P.)


Executive Engineer,
Sunder Nagar Division,
HP.PWD Sunder Nagar.


Note-1: Net Present value (NPV) of environment and ecosystem services loss:

The concept of Net Present value of the forest land diverted is a scientific method of calculating the environmental cost and other losses caused due to diversion of forest land for non-forestry purposes. The NPV represents the net value of various ecosystem services and other environmental services in monetary terms which the forest would have provided if the forest would not have been diverted.

Note-2: Possession value of forest land diverted:

The forest land diverted for the project such as irrigation, hydropower, railways, roads, wind, and transmission lines and mining etc are unlikely to be returned and remains in possession of the user agencies. Therefore 30% of the net present value (NPV) of forest land diverted or market rate of adjoining area in the district should be added as a cost component as "possession value of forest land" in addition to the environmental costs due to loss of forests.


Deputy Conservator of Forests
Suket Forest Division
Sundernagar Distt. Mandi (H.P.)


Executive Engineer,
Sunder Nagar Division,
HP.PWD Sunder Nagar.

MLA Priority 2020-21

70

Book on MLA Priority

वस्तुविक्रय नई स्कीमें

सड़कें एवम् पुल

(₹ लाख में)

जिला / निर्वाचन क्षेत्र	स्कीम का नाम	बजट अनुमान 2020-21
35 जयपुर	01 राणाबाग से कंडीबाग अप-टू-बालू तक सड़क M/T-II स्ट्रेट पक्का करने के लिए।	0.25
	02 ठांम से कुशैणी बाया दशोनी, इंडीधार, जटेक, शाणू सड़क निर्माण।	0.25
36 मनाली	01 निर्माण बाहन योग्य पुल पुनिम लाईन बाथिंग से बामतट खरुड तक।	0.25
	02 मनाली पुल से क्लब हाउस तक बाय पाम सड़क का निर्माण।	0.25
37 लाहौल स्पिति		
38 लाहौल स्पिति	01 Upgradation on link road to Mooring Chowkhang Naingarh road Km. 0/0 to 15/200 Tehsil Lahaul, Distt. L/Spiti.	0.25
	02 C/o Tailing Bridge, GP Sagnam, Tehsil Spiti, Distt. L/Spiti.	0.25
39 मण्डी		
36 करसोग	01 सड़क निर्माण सरत्योला से मांजू।	0.25
	02 सड़क निर्माण शिन्ह से थर्मी बाया पोखी।	0.25
37 नाचन	01 सड़क निर्माण ब्रखमणी से दुगराई बाया समोट।	0.25
	02 सड़क निर्माण ग्रेडिंग हाउस चैल चौक से समोह बाया चौखडी लम्बीधार।	0.25
	03 सड़क निर्माण भग्यार से भलाणा। माननीय विधायक ने सड़कें एवम् पुल स्कीम क्रम संख्या 3 लघु सिंचाई स्कीम क्रम संख्या 2 के स्थान पर वीं हैं।	0.25
	04 सड़क निर्माण डी० ए० वी० स्कूल बासा से बैहरी बाया गुलाड व ज्यूणी खड्ड पर मोटर योग्य पुल का निर्माण।	0.25
	05 मोटर योग्य पुल का निर्माण (घांघल खड्ड पर)। माननीय विधायक ने सड़कें एवम् पुल स्कीम क्रम संख्या 4 व 5 पेयजल योजनाएं स्कीम क्रम संख्या 1 व 2 के स्थान पर वीं हैं।	0.25
38 सुन्दरनगर	01 धारली से बलग बाया मझास सड़क का निर्माण।	0.25
	02 जाबल से लुहणु बाया बडीण सड़क को पक्का करना कि० मि० 0/0 से 3/345।	0.25
39 बल्ह	01 C/o Dayoda Pul Chhajwan Khabu Panchayat Ghar Dusra Khabu to Darbyas road Km.0/0 to 7/500.	0.25

Executive Engineer
Sundernagar Division
HPPWD, Sundernagar

**NAME OF WORK/ PROPOSAL :- CONSTRUCTION OF DHARLI TO
BALAG ROAD KM. 0/00 TO 18/900.**

File No. :- FP/HP/ROAD/

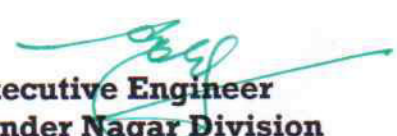
Date of Proposal :-

CHECK LIST SERIAL NUMBER:-12-A

**UNDERTAKING FOR THE PAYMENT OF ADDITIONAL
NET PRESENT VALUE OF FOREST AREA**

It is to certify that I, Executive Engineer, Sunder Nagar Division, HPPWD Sunder Nagar. have applied for diversion of **10.3574 HA** of forest area, for the purpose of **CONSTRUCTION OF DHARLI TO BALAG ROAD KM. 0/00 TO 18/900.**

It is further certified that the additional amount of Net Present Value will be paid by the under signed as per direction of the Hon'ble Supreme Court of India at the later stage.


**Executive Engineer
Sunder Nagar Division
HPPWD Sunder Nagar**

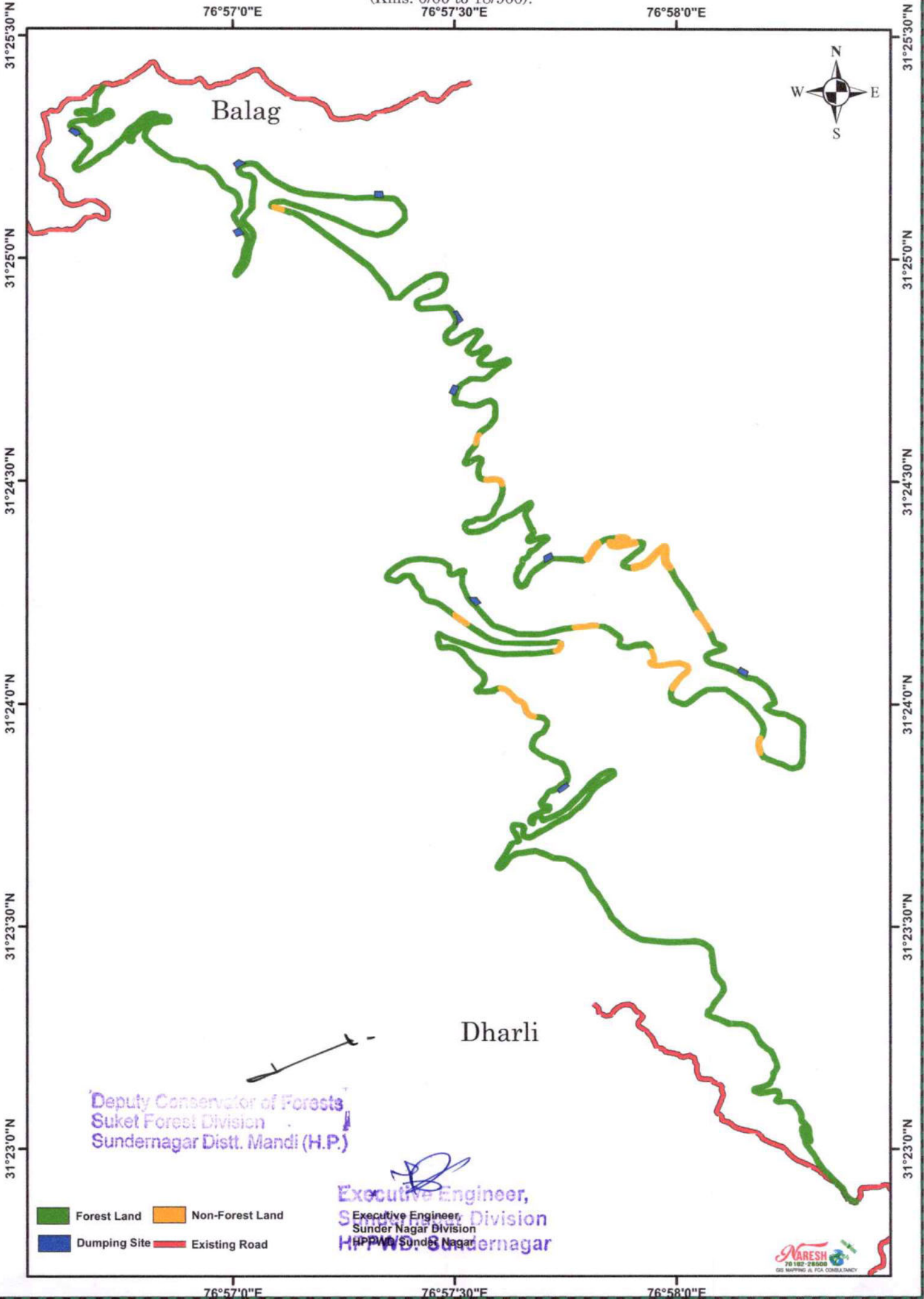
Countersigned by:-


Divisional forest Officer
Sunder Nagar Division
Office Seal.....175018...
Sundernagar (H.P.)

Place :- Sunder Nagar

Date:-

Layout Plan of Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Construction of Dharli to Balag road
(Kms. 0/00 to 18/900).



Fr. 3121 / 4-11-2020

No.C.I.7/ 3802 /
H.P. Forest Department.

Dated Kullu, the/ 02-11-20 .



From: - Divisional Forest Officer,
Wild Life Division, Kullu.

To: - Executive Engineer,
Sunder Nagar Division,
HP.PWD, Sunder Nagar, Distt. Mandi, HP.

Subject: - Eco-Sensitive Zone Certificate for Diversion of Forest Land for the following orads:-

1. C/o. Dharli to Balag road Km.0/00 to 18/900.
2. C/o. Bagda to Serikothi Via Baroat, Traihach, Selen, Dugla Km 0/00 to 13/040.
3. C/o. Ambulace road from Turandi to Paurakothi Via Terli Dharl KM 0/00 to 5/255.

FR/WA

Sir,

Kindly refer to your office letter No. PW/SNR-WA-R-27/19-10805-08 dated 24.09.2020, on the subject cited above.

In this regard, it is informed that the proposed site for construction of above mentioned roads in Sunder Nagar, Distt. Mandi HP do not fall within the boundary of Bandli Wild Life Sanctuary as well as its ESZ. The aerial distance of above mention roads from the boundary of Bandli Wild Life Sanctuary & its proposed Eco-Sensitive Zone is as under:-

Sr. No.	Name of C/o Roads	Distance from the Boundary of Bandli Wildlife Sanctuary.	Distance from the Boundary of proposed Eco-Sensitive Zone of Bandli Wildlife Sanctuary.
1	C/o. Dharli to Balag road Km.0/00 to 18 / 900.	0.750Kms..	0.700.Kms..
2	C/o. Bagda to Serikothi Via Baroat, Traihach, Selen, Dugla Km 0/00 to 13/ 040.	3.500 Kms.	3.450Kms.
3	C/o. Ambulace road from Turandi to Paurakothi Via Terli Dharl KM 0/00 to 5/ 255.	5.500 Kms.	5.450Kms.

This is for favour of information please.

Yours faithfully,

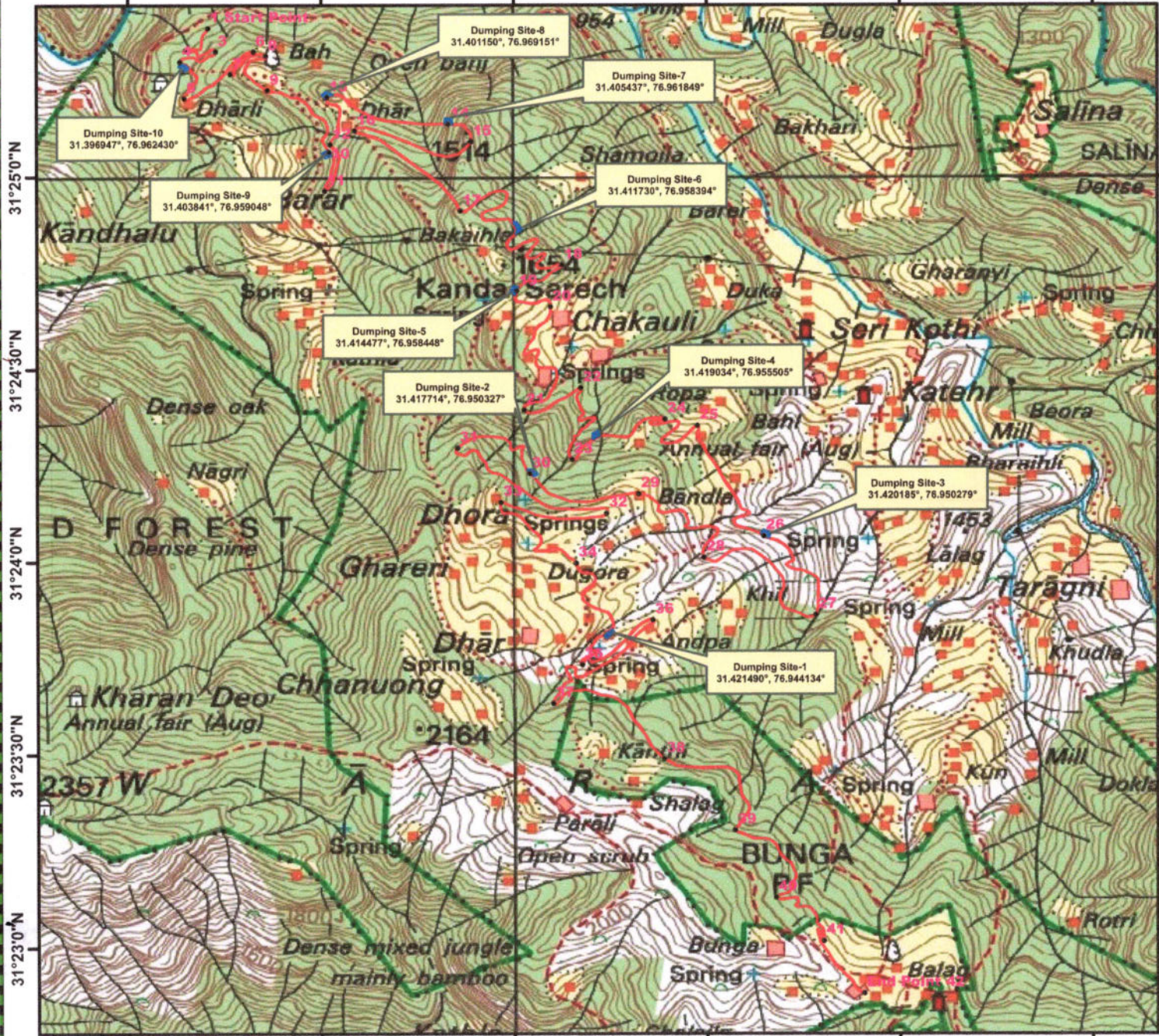
Divisional Forest Officer,
Wild Life Division, Kullu.

Handwritten notes and initials including 'FR/WA', 'FF', and '4/11/20'.

Toposheet Map of Construction of Dharli To Balag Road Km. 0/00 to 18/900.



76°56'30"E 76°57'0"E 76°57'30"E 76°58'0"E 76°58'30"E 76°59'0"E



31°25'0"N
31°24'30"N
31°24'0"N
31°23'30"N
31°23'0"N

CONVENTIONAL SYMBOLS

- Express highway; with toll; with bridge; with distance stone
- Roads, metalled; according to importance
- Roads, double carriageway; according to importance
- Unmetalled road. Cart-track. Pack-track with pass. Foot-path
- Streams; with track in bed; undefined. Canal
- Dams; masonry or rock-filled; earthwork. Weir
- River; dry with water channel; with island & rocks. Tidal river
- Submerged rocks. Shoal. Swamp. Reeds
- Wells; lined; unlined. Tube-well. Spring. Tanks; perennial; dry
- Embankments; road or rail; tank. Broken ground
- Railways, broad gauge; double; single with station; under constr.
- Railways, other gauges; double; single with distance stone; do.
- Mineral line or tramway. Kin. Cutting with tunnel
- Contours with sub-features. Rocky slopes. Cliffs
- Sand features: (1) flat. (2) sand-hills(permanent). (3) dunes(shifting)
- Towns or Villages; inhabited; deserted. Fort
- Huts; permanent; temporary. Tower. Antiquities

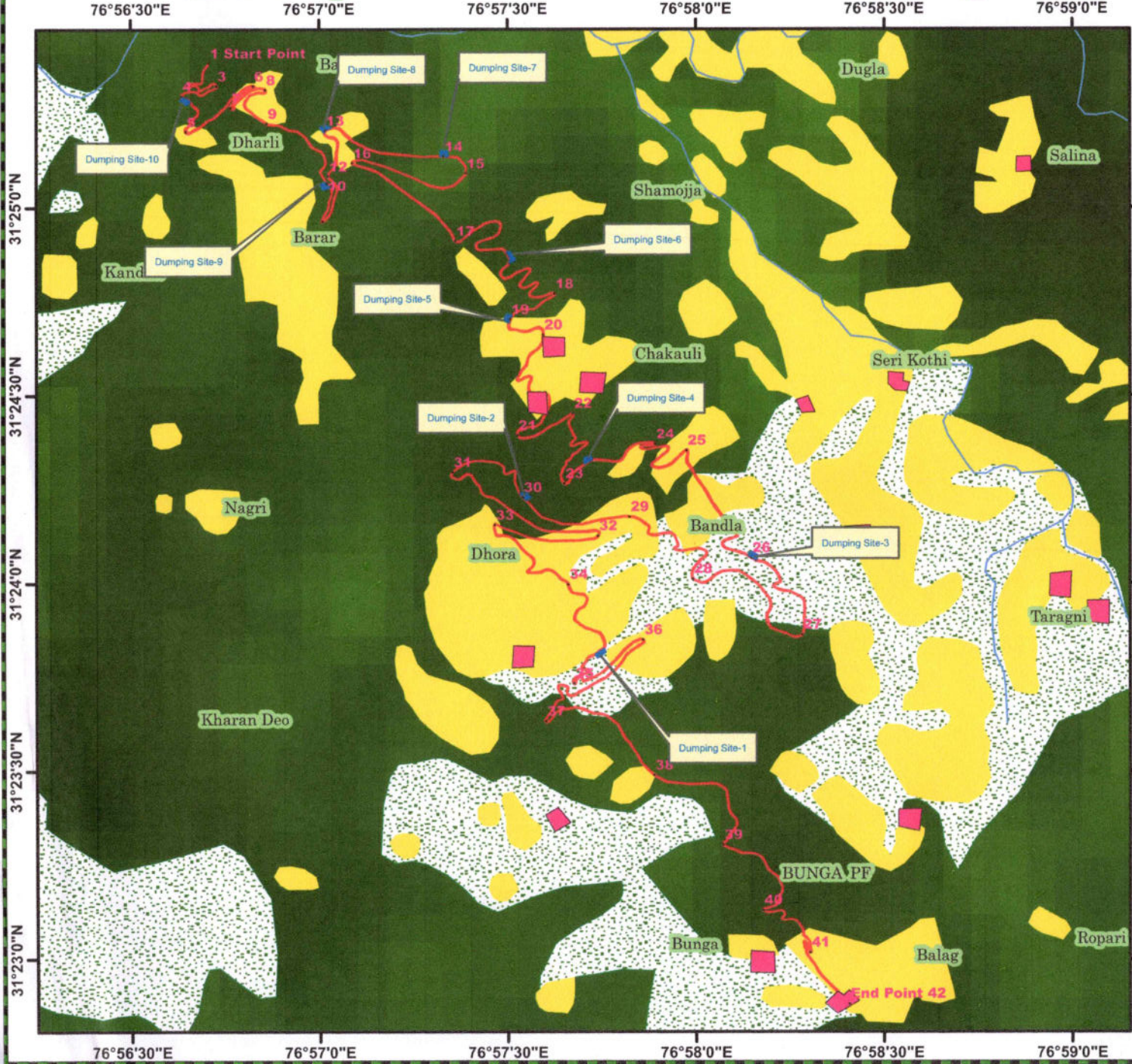
Sl. No.	Lat/Long	Sl. No.	Lat/Long
1 Start Point	31.423094° 76.945196°	22	31.407552° 76.961312°
2	31.423137° 76.944155°	23	31.404430° 76.960831°
3	31.422078° 76.945458°	24	31.406172° 76.964857°
4	31.421634° 76.943916°	25	31.405889° 76.966255°
5	31.420049° 76.944099°	26	31.401120° 76.969107°
6	31.422071° 76.947088°	27	31.397716° 76.971360°
7	31.421104° 76.946085°	28	31.400195° 76.966534°
8	31.421899° 76.947616°	29	31.402941° 76.963731°
9	31.420403° 76.947688°	30	31.403815° 76.959029°
10	31.417722° 76.950348°	31	31.404988° 76.955594°
11	31.416048° 76.950156°	32	31.402102° 76.962323°
12	31.418059° 76.950393°	33	31.402582° 76.957785°
13	31.420103° 76.950259°	34	31.399950° 76.961008°
14	31.418941° 76.950504°	35	31.395554° 76.961297°
15	31.419189° 76.954478°	36	31.397492° 76.964329°
16	31.419949° 76.951458°	37	31.398894° 76.960166°
17	31.415183° 76.956023°	38	31.391484° 76.964816°
18	31.412843° 76.960097°	39	31.388403° 76.967866°
19	31.411713° 76.958443°	40	31.385405° 76.969629°
20	31.411030° 76.959899°	41	31.383624° 76.971708°
21	31.406567° 76.957671°	End Point 42	31.381357° 76.973440°

Deputy Conservator of Forest,
Suket Forest Division
At Sunder Nagar.

Executive Engineer,
Sunder Nagar Division
HPPWD Sunder Nagar



DGPS Map of Construction of Dharli To Balag Road Km. 0/00 to 18/900.



Legend

- Forest Land
- Scrub Land
- Cultivated land
- Settlement
- Nalah


GPS of Proposed Road

Sr No.	Latitude	Longitude	Sr No.	Latitude	Longitude
1 Start Point	31.423084°	76.945126°	22	31.407532°	76.961212°
2	31.422197°	76.944155°	23	31.404430°	76.960831°
3	31.422078°	76.944458°	24	31.406175°	76.964857°
4	31.421634°	76.943918°	25	31.405886°	76.962655°
5	31.420049°	76.944099°	26	31.401120°	76.969107°
6	31.422071°	76.947088°	27	31.397716°	76.971360°
7	31.421104°	76.946085°	28	31.400195°	76.966634°
8	31.421898°	76.947616°	29	31.402941°	76.963721°
9	31.420403°	76.947886°	30	31.403815°	76.959002°
10	31.417722°	76.950345°	31	31.404928°	76.955894°
11	31.418048°	76.950166°	32	31.402102°	76.962323°
12	31.418089°	76.950393°	33	31.402582°	76.957765°
13	31.420103°	76.950259°	34	31.399950°	76.961008°
14	31.418941°	76.955504°	35	31.395554°	76.961267°
15	31.418188°	76.956478°	36	31.397492°	76.964529°
16	31.418648°	76.951455°	37	31.393884°	76.960016°
17	31.415183°	76.956021°	38	31.391484°	76.964816°
18	31.412843°	76.950397°	39	31.388405°	76.967866°
19	31.411713°	76.958442°	40	31.385505°	76.969629°
20	31.411080°	76.959899°	41	31.383624°	76.971708°
21	31.406567°	76.958761°	End Point 42	31.381367°	76.973449°

GPS of Proposed Dumping Sites

Sr No.	Site	Latitude	Longitude
1	Dumping Site 1	31.421490°	76.944134°
2	Dumping Site 2	31.417714°	76.950327°
3	Dumping Site 3	31.420185°	76.950279°
4	Dumping Site 4	31.419034°	76.955505°
5	Dumping Site 5	31.414477°	76.958448°
6	Dumping Site 6	31.411730°	76.958394°
7	Dumping Site 7	31.405437°	76.961849°
8	Dumping Site 8	31.401150°	76.969151°
9	Dumping Site 9	31.403841°	76.959048°
10	Dumping Site 10	31.396947°	76.962430°

Deputy Conservator of Forest,
Suket Forest Division
At Sunder Nagar.


Executive Engineer,
Sunder Nagar Division
HPPWD Sunder Nagar

