

कार्यालय प्रधान मुख्य वन संरक्षक (कक्ष-भू प्रबंध) वन भवन, मध्यप्रदेश, भोपाल**सी-ब्लॉक, द्वितीय तल, लिंक रोड नं:-2, तुलसी नगर, भोपाल-462003**

क्रमांक/एफ-3/100/404710/0005/12

दिनांक: ई-साइन अनुसार

प्रति,

वन महानिरीक्षक, (एफ.सी.)
भारत सरकार, पर्यावरण वन एवं जलवायु मंत्रालय,
इंदिरा पर्यावरण भवन, अलीगंज,
जोरबाग रोड, नई दिल्ली-110003

विषय:- जिला सागर अंतर्गत कोपरा मध्यम सिंचाई परियोजना के निर्माण हेतु (वनमंडल दक्षिण सागर की 3.61 हे० एवं वनमंडल नौरादेही की 268.39 हे०) 272.00 हेक्टेयर वनभूमि कार्यपालन यंत्री, जल संसाधन संभाग क्र-1, जिला सागर को उपयोग पर देने बाबत। (FP/MP/IRRIG/143864/2021)
संदर्भ:- भारत सरकार, पर्यावरण वन एवं जलवायु मंत्रालय, नई दिल्ली का पत्र दिनांक 17/02/2023

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विषयांकित प्रकरण में भारत सरकार द्वारा चाही गयी जानकारी का उत्तर आवेदक विभाग/वनमण्डलाधिकारी से प्राप्त किया जाकर निम्नानुसार प्रस्तुत है।

क्रं	प्रकरण में ली गयी आपत्तियां	आपत्तियों का उत्तर
1	The basic details of proposed dam like its height, length, command area, technical approval, hydrological assessment etc. along with alternatives examined with relevant maps shall be submitted.	इस संबंध में आवेदक विभाग द्वारा प्रस्तुत विवरण एवं विकल्पों को दर्शाने वाला मानचित्र परिशिष्ट-1 पर संलग्न है।
2	The site specificity of the proposal shall be re-examined and a detailed report along with justification as to why the project cannot be executed in non-forest area shall be submitted.	आवेदक विभाग द्वारा प्रस्तुत परियोजना वनक्षेत्र में लगाने संबंधी औचित्य टीप की प्रति परिशिष्ट-2 पर संलग्न है।
3	The presence important floral species like Tectona grandis, Lagerstromia, Parviflora, Lanea grandis, Anogeissus latifolia, Agele marmelos, Terminalia tomentosa etc has been reported in proposed diversion area. In this regard, a detailed report shall be submitted along with mitigation measure to protect these species.	इस संबंध में वनमण्डलाधिकारी, नौरादेही (वन्यप्राणी) ने अवगत कराया है, कि परियोजना अंतर्गत 300 हे० भूमि पर 3,00,000 पौधे रोपित करने की वृक्षारोपण योजना तैयार की गई है, जिसमें 30 प्रतिशत औषधीय पौधों के रोपण का प्रावधान किया गया है।
4	The CCF, Sagar in his Site Inspection report has mentioned the presence of Tiger, Wolf, Sloth Bear, Leopard along with reptile's butterflies and other schedule animals in the forest land proposed for diversion. Further, it has been mentioned that the Indian wolf is the keystone species of Nauradehi Wildlife Sanctuary. Therefore, the	इस संबंध में प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं मुख्य वन्यजीव अभिरक्षक, मध्यप्रदेश द्वारा अनुमोदित वन्यप्राणी संरक्षक योजना की प्रति संलग्न है।

	comment of Chief Wildlife Warden in this regard needs submission.	
5	Out of total, 268.39 ha proposed forest land is located within Nauradehi Wildlife Sanctuary. Further, as per online Part-II, a part of the forest land proposed for diversion is located within Eco-sensitive zone (ESZ) of Nauradehi Wildlife Sanctuary. In this regard the comments of the Chief Wildlife Warden along with the status of the approval of the proposal by the SCNBWL shall be submitted.	इस संबंध में आवेदक विभाग ने अवगत कराया है, कि प्रकरण में वन्यप्राणी बोर्ड एवं राष्ट्रीय वन्य प्राणी बोर्ड की अनुमति हेतु प्रकरण प्रक्रियाधीन है।
6	As per DSS analysis, the proposed forest land is having presence of Agricultural land, Road and Plantations carried out in the past. The same needs clarification.	इस संबंध में वनमण्डलाधिकारी, नौरादेही (वन्यप्राणी) ने अपने पत्र दिनांक 09.02.2024 से अवगत कराया है, कि प्रस्तावित परियोजना के निर्माणार्थ मौका स्थल पर गाड़ी गयी एफ.टी.एल. की मुढियां अनुसार डूब प्रभावित वनग्राम के 16 वन अधिकार पत्र धारकों की भूमि एवं 19 व्यक्तियों की राजस्व भूमि प्रभावित हो रही है। साथ ही परियोजना अंतर्गत प्रस्तावित राजस्व विभाग की जमीन पर लगभग 1 से 1.5 हेक्टेयर भूमि पर आवला एवं सागौन प्रजाति का वृक्षारोपण ग्रामवासी धिरारी के श्री चक्रेश पिता बाबूलाल जैन द्वारा किया गया है, जिसकी अवधि करीब 16-18 वर्ष पूर्व का होना प्रतित होता है।
7	The DGPS map indicating the purpose wise breakup of the forest land proposed for diversion shall be uploaded on PARIVESH.	आवेदक विभाग द्वारा प्रस्तुत DGPS map परिशिष्ट-3 पर संलग्न है।
8	The KML file of submergence area i.e. 772.521 ha non forest land shall be uploaded on the PARIVESH portal.	आवेदक विभाग द्वारा परियोजना अंतर्गत डूब में प्रभावित गैर वनभूमि की के.एम.एल. फाईल को आनलाईन भाग-1 के बिन्दु क्रमांक c(ii) में 0 हेक्टेयर की रूप में अपलोड की गयी है।
9	The copy of CAT plan as submitted does not mention that the same is approved by the Principal CCF & HoFF or any other officer authorized by him for the purpose as prescribed under the Chapter-9 at para 9.2 (vi) of Comprehensive guideline Handbook, 2019. The same need submission.	केचमेंट एरिया ट्रीटमेंट प्लान की छायाप्रति मय तकनीकी स्वीकृति सहित परिशिष्ट-4 पर संलग्न है।
10	The proposal involves the rehabilitation of people, therefore the copy of approved R&R plan needs submission.	इस संबंध में आवेदक विभाग ने अवगत कराया है, कि भूमि अर्जन, पुनर्वासन और पुनर्व्यवस्थापन में उचित प्रतिकर और पारदर्शिता का अधिकार अधिनियम, 2013 के तहत कार्यवाही प्रक्रियाधीन है, जिसे भारत सरकार की औपचारिक स्वीकृति से पूर्व प्रस्तुत कर दिया जावेगा।

11	The Cost Benefit analysis has been calculated on the old NPV rates, Moreover the complete analysis as per the prescribed format has not been submitted. Therefore, revised cost-benefit analysis is required to be submitted.	आवेदक विभाग द्वारा तैयार संशोधित लागत लाभ विश्लेषण पत्रक परिशिष्ट-5 पर संलग्न है।
12	The number of trees at FRL-2 & FRL-4 meters has been mentioned as Nil. The correct enumeration detail of the trees may therefore be submitted for each level of the proposed Dam.	परियोजना अंतर्गत प्रभावित होने वाले कुल 44582 वृक्षों का विवरण परिशिष्ट-6 पर संलग्न है।
13	Examination of proposed CA patches through satellite data revealed that the villagers/inhabitants from the proposed CA land have been relocated/ shifted to some other place and now this vacated land has been proposed for CA. Therefore, the State Govt. shall clarify that the land proposed to be given for CA was not part of any village relocation project for which forest land was diverted under Forest(Conservation) Act,1980.	इस संबंध में वनमण्डलाधिकारी, नौरादेही (वन्यप्राणी) ने अवगत कराया है, कि वनमण्डल नौरादेही अंतर्गत विस्थापित ग्राम नौरादेही, पीपला, कुशयारी एवं रम्पुरा सड़ाज की सम्पूर्ण शासकीय भूमि 437.575 हे० में से कलेक्टर, सागर द्वारा 310.00 हे० भूमि कोपरा मध्यम सिंचाई परियोजना हेतु वन विभाग के पक्ष में हस्तांतरित की गयी है, उक्त भूमि विस्थापन में प्राप्त भूमि नहीं है। किन्तु उक्त क्षेत्र अधिसूचना क्रमांक 700-624-दस-2-75 दिनांक 17/02/1975 द्वारा पूर्व से ही नौरादेही अभ्यारण्य के भाग के रूप में अधिसूचित है।
14	Satellite data shows the presence of Agriculture land, Road, River, Built-up area etc. within the proposed CA land. The same needs clarification.	आवेदक विभाग ने अवगत कराया है, कि क्षतिपूर्ति वनीकरण हेतु न्यायालय कलेक्टर जिला सागर के आदेश पत्र दिनांक 22/07/2017 से हस्तांतरित गैर वनभूमि को अतिक्रमण मुक्त किया जाकर वनविभाग के अधिपत्य में सौंपा गया है, प्रमाण पत्रों की छायाप्रति परिशिष्ट-6 पर संलग्न है एवं उक्त भूमि पर कोई नदी एवं पक्की सड़क नहीं है।
15	The State Govt. shall examine the proposed CA land and ensure that no part of proposed CA land is falling within the River.	परियोजना अंतर्गत क्षतिपूर्ति वनीकरण हेतु प्राप्त गैर वनभूमि अभ्यारण्य के अंतर्गत आने के कारण प्रधान मुख्य वन संरक्षक (वन्यप्राणी) मध्यप्रदेश से प्राप्त अभिमत अनुसार इस भूमि पर चारागाह विकास की योजनाएं तैयार की गई हैं। परियोजना में क्षतिपूर्ति वृक्षारोपण हेतु 300 हे० बिगड़े वन क्षेत्र का चयन किया गया है इस चयनित बिगड़े वनक्षेत्र में किसी भी नदी का बहाव नहीं है जिसकी पुष्टि वनमण्डलाधिकारी, नौरादेही (वन्यप्राणी) द्वारा की गयी है।
16	The KML file of degraded forest land identified for plantation work along with CA scheme shall be uploaded on PARIVESH.	बिगड़े वन क्षेत्र की के.एम.एल. फाईल आनलाईन भाग-2 के बिन्दु क्रमांक 13 में अपलोड की गयी है।
17	Some Non-forestry activity is visible within the proposed CA	वनमण्डलाधिकारी, नौरादेही (वन्यप्राणी) ने लेख किया है, कि वैकल्पिक वृक्षारोपण हेतु विस्थापित ग्राम नौरादेही

	site at Village Nauradehi. This needs justification.	में पूर्व से निर्मित वन विश्राम गृह स्थित है, अन्य कोई गैर वानिकी कार्य प्रचलित नहीं है।
18	It is observed that the Collector, Sagar District vide earlier order dated 10.07.2017 handed over 437.575 ha Private land and Revenue land in four (4) villages namely Noradehi, Kushyari, Rampura madaj & Peepla to the State Forest Department owing to the relocation of these villages and their habitants from the Nauradehi Wildlife sanctuary. Afterwards, the Collector, Sagar District vide revised order dated 22.07.2017 has reserved the entire 437.575 ha land for CA in lieu of diversion of forest land for Kopra Medium Irrigation project. Now only a part of the said 437.575 ha area is proposed to be used for CA against the instant proposal, which needs justification. The State Govt shall also ensure that land proposed to be given for CA was not part of any village relocation project for which forest land was diverted under Forest(Conservation) Act,1980.	वनमण्डलाधिकारी, नौरादेही (वन्यप्राणी) ने अवगत कराया गया है, कि वनमंडल अंतर्गत विस्थापित ग्राम नौरादेही, पीपला, कुशयारी एवं रम्पुरा मडाज की संपूर्ण शासकीय भूमि रकबा 437.575 हे० में से कलेक्टर सागर द्वारा 310.00 हे० कोपरा सिंचाई परियोजना हेतु वन विभाग को हस्तांतरित की गयी है। उक्त भूमि विस्थापन प्रक्रिया में प्राप्त भूमि नहीं है। किन्तु उक्त क्षेत्र अधिसूचना क्रं.700-624-दस-2-75 दिनांक 17.02.1975 द्वारा पूर्व से ही नौरादेही अभ्यारण्य के भाग के रूप में अधिसूचित है। प्रकरण में वैकल्पिक वृक्षारोपण हेतु प्राप्त राजस्व भूमि नौरादेही अभ्यारण्य क्षेत्र में आती है, जिस पर प्रधान मुख्य वन संरक्षक (वन्यप्राणी), मध्यप्रदेश द्वारा अभिमत दिया गया कि "नौरादेही अभ्यारण्य के खुले क्षेत्र घास के मैदान है जिनका उपयोग शाकाहारी वन्यप्राणियों द्वारा किया जाता है। अभ्यारण्य में घास के क्षेत्र बढ़ाये जाने की आवश्यकता है। अतः संरक्षित क्षेत्र के बाहर वृक्षारोपण कराये जाने का सुझाव है।" उपरोक्त अभिमत अनुसार प्रकरण में वैकल्पिक वृक्षारोपण हेतु आवश्यक पौधे अभ्यारण्य के खुले वनक्षेत्र (बिगडे वनक्षेत्र) में प्रस्तावित किये गये हैं।

अतः उपरोक्तानुसार अनुरोध है, कि प्रकरण में भारत सरकार की सैद्धान्तिक स्वीकृति प्राप्त कर अवगत कराने का कष्ट करें।
संलग्न:-उपरोक्तानुसार।

Signed by Hari Shankar
Mohanta

Date: 15-01-2025 15:27:53

(एच.एस.मोहन्ता)

अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध)
मध्यप्रदेश, भोपाल

प्रतिलिपि:-

1. प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं मुख्य वन्यजीव अभिरक्षक, मध्यप्रदेश।
2. मुख्य वन संरक्षक, (क्षेत्रीय) सागर वृत्त सागर, मध्यप्रदेश।
3. वनमण्डलाधिकारी, (सा०) वनमण्डल दक्षिण सागर/नौरादेही (वन्यप्राणी)/उत्तर सागर, म०प्र०।
4. कार्यपालन यंत्री, जल संसाधन संभाग क्रं-1, जिला सागर, म०प्र०।

की ओर सूचनार्थ अग्रेषित।

कार्यालय वनमंडल अधिकारी, नौरादेही (व.प्रा.) वनमंडल, सागर (म.प्र.)



कार्यालय का पता - प्रोद्दार कॉलोनी के सामने, तिली रोड, फॉरेस्ट कंपाउंड,
सागर (म.प्र.) फोन/फैक्स नं. - 07582-236867
e-mail - dfowlndehi@mp.gov.in



क्रमांक/सो.चि./2023/810
प्रति,

सागर, दिनांक - 10/7/2023

प्रधान मुख्य वन संरक्षक,
(कक्ष-सू प्रबंध),
म.प्र. भोपाल।

विषय :- जिला सागर के अंतर्गत कोपरा मध्यम सिंचाई परियोजना के निर्माण हेतु 272.00 हेक्टेयर वनभूमि जल संसाधन विभाग को उपयोग पर देने बाबत।

संदर्भ :- आपका पत्र क्र./एफ-3/100/2021/10-11/12/782 दिनांक 21.02.23.

विषयांकित में निवेदन है कि आपके संदर्भित पत्र से चाही गई जानकारी निम्नानुसार बिन्दुवार तैयार कर आपके अवलोकनार्थ एवं आवश्यक कार्यवाही हेतु सादर सम्प्रेषित है :-

क्र.	बिन्दु	विवरण
1	2	3
i.	The basic details of proposed dam like its height, length, command area, technical approval, hydrological assessment etc. along with alternatives examined with relevant maps shall be submitted.	आक्षेप का संबंध आवेदक संस्थान से है। आवेदक संस्थान द्वारा अपने पत्र क्र.1424 दिनांक 19.04.23 द्वारा पूर्ति कर जानकारी प्रेषित की गई है।
ii.	The site specificity of the proposal shall be re-examined and a detailed report along with justification as to why the project cannot be executed in non-forest area shall be submitted.	आक्षेप का संबंध आवेदक संस्थान से है। आवेदक संस्थान द्वारा अपने पत्र क्र.1424 दिनांक 19.04.23 द्वारा पूर्ति कर जानकारी प्रेषित की गई है।
iii.	The presence important floral species like Tectona grandis, Lagerströmia Parviflora, Lanea grandis. Anogeissus latifolia, Agele mammelos, Terminalia tomentosa etc has been reported in proposed diversion area. In this regard, a detailed report shall be submitted along with mitigation measure to protect these species.	प्रस्तावित परियोजना से प्रभावित वनभूमि अंतर्गत सागौन प्रजाति के 18230 वृक्ष तथा सतकड़ा प्रजाति के 26352 वृक्ष प्रभावित होंगे, जिसके एवज में 300 हे. वनभूमि पर वैकल्पिक वृक्षारोपण योजना अंतर्गत 3,00,000 पौधे रोपित किए जावेंगे, जिसमें 30 प्रतिशत औषधीय पौधारोपण का प्रावधान किया गया है, जिसकी तकनीकी स्वीकृति मुख्य वन संरक्षक, सागर वृत्त, सागर के आदेश क्र./111 दिनांक 16.11.2022 एवं क्र./06 दिनांक 17.01.2023 द्वारा जारी की गई है।
iv.	The CCF, Sagar in his Site Inspection report has mentioned the presence of Tiger, Wolf, Sloth Bear, Leopard along with reptile's butterflies and other schedule animals in the forest land proposed for diversion. Further, it has been mentioned that the Indian wolf is the keystone species of Nauradehi Wildlife Sanctuary. Therefore, the comment of Chief Wildlife Warden in this regard needs submission.	मुख्य वन्य प्राणी अभिरक्षक, म.प्र. भोपाल द्वारा अभिसन्त प्रदाय हेतु लेख किया गया है।

v.	Out of total, 268.39 ha proposed forest land is located within Nauradehi Wildlife Sanctuary. Further, as per online Part-II, a part of the forest land proposed for diversion is located within Eco-sensitive zone (ESZ) of Nauradehi Wildlife Sanctuary. In this regard the comments of the Chief Wildlife Warden along with the status of the approval of the proposal by the SCNB WL shall be submitted.	अभयारण्य के ईको सेंसिटिव जोन क्षेत्र के अंतर्गत परियोजना के क्रियान्वयन से लगभग 656.00 हे क्षेत्र प्रभावित होगा।
vi.	As per DSS analysis, the proposed forest land is having presence of Agricultural land, Road and Plantations carried out in the past. The same needs clarification.	आक्षेप का संबंध आवेदक संस्थान से है। जो आवेदक संस्थान द्वारा पृथक से उपलब्ध कराया जावेगा।
vii.	The DGPS map indicating the purpose wise breakup of the forest land proposed for diversion shall be uploaded on PARIVESH.	आक्षेप का संबंध आवेदक संस्थान से है। आवेदक संस्थान द्वारा अपने पत्र क्र.1424 दिनांक 19.04.23 द्वारा पूर्ति कर जानकारी प्रेषित की गई है।
viii.	The KML file of Submergence area i.e. 772.521 ha non forest land shall be uploaded on the PARIVESH portal.	आक्षेप का संबंध आवेदक संस्थान से है। आवेदक संस्थान द्वारा अपने पत्र क्र.1424 दिनांक 19.04.23 द्वारा पूर्ति कर जानकारी प्रेषित की गई है।
ix.	The copy of CAT plan as submitted does not mention that the same is approved by the Principal CCF & HOFF or any other officer authorized by him for the purpose as prescribed under the Chapter-9 at para 9.2 (vi) of Comprehensive guideline Handbook, 2019. The same need submission.	आक्षेप का संबंध मुख्यालय स्तर से है।
x.	The proposal involves the rehabilitation of people, therefore the copy of approved R&R plan needs submission.	आक्षेप का संबंध आवेदक संस्थान से है। आवेदक संस्थान द्वारा अपने पत्र क्र.1424 दिनांक 19.04.23 द्वारा पूर्ति कर जानकारी प्रेषित की गई है।
xi.	The Cost Benefit analysis has been calculated on the old NPV rates, Moreover the complete analysis as per the prescribed format has not been submitted. Therefore, revised cost-benefit analysis is required to be submitted.	आक्षेप का संबंध आवेदक संस्थान से है। आवेदक संस्थान द्वारा अपने पत्र क्र.1424 दिनांक 19.04.23 द्वारा पूर्ति कर जानकारी प्रेषित की गई है।
xii.	The number of trees at FRL-2 & FRL-4 meters has been mentioned as Nil. The correct enumeration detail of the trees may therefore be submitted for each level of the proposed Dam.	कार्यालयीन पत्र क्र./234 दिनांक 27.02.2023 से जानकारी प्रेषित की गई है। पुनः संलग्न कर प्रेषित है।
xiii.	Examination of proposed CA patches through satellite data revealed that the villagers/inhabitants from the proposed CA land have been relocated/ shifted to some other place and now this vacated land has been proposed for CA. Therefore, the State Govt. shall clarify that the land proposed to be given for CA was not part of any village relocation project for which forest land was diverted under Forest(Conservation) Act, 1980.	वैकल्पिक वृक्षारोपण हेतु भूमि नौरादेही (व.प्रा.) वनमंडल अंतर्गत विस्थापित ग्राम नौरादेही, पीपला, कुशयारी एवं रमपुरा मड़ाज की संपूर्ण शसिकीय भूमि रकबा 437.575 हे. मी. से कलेक्टर, सागर द्वारा 310.00 हे. कौपरा मध्यम सिंचाई परियोजना हेतु वन विभाग के पक्ष में हस्तांतरित की गई है। उक्त भूमि विस्थापन प्रक्रिया में प्राप्त भूमि नहीं है। किन्तु उक्त क्षेत्र अधिसूचना क्र. 700-624-दस-2-75 दिनांक 17.02.1975 द्वारा पूर्व से ही नौरादेही अभयारण्य के भाग

xiv.	Satellite data shows the presence of Agriculture land, Road, River, Built-up area etc. within the proposed CA land. The same needs clarification.	के रूप में अधिसूचित है। वैकल्पिक वृक्षारोपण हेतु भूमि नौरादेही (व.प्रा.) वनमंडल अंतर्गत विस्थापित ग्राम नौरादेही, पीपला, कुशयारी एवं रमपुरा मड़ाज की संपूर्ण शासकीय भूमि रकबा 437.575 है। में से कलेक्टर, सागर द्वारा 310.00 है। कोपरा मध्यम सिंचाई परियोजना हेतु वन विभाग के पक्ष में हस्तांतरित की गई थी। पुनः प्रधान मुख्य वन संरक्षक (कक्ष भू-प्रबंध) म.प्र. भोपाल के पत्र क्र./4247 दिनांक 14.12.2022 द्वारा दिए गए निर्देशानुसार उत्तर वनमंडल, सागर तथा दक्षिण वनमंडल, सागर हेतु 150-150 है। दुगना बिगाड़ा वन चयनित कर वैकल्पिक वृक्षारोपण हेतु योजना तैयार की गई है।
xv.	The State Govt. shall examine the proposed CA land and ensure that no part of proposed CA land is falling within the River.	वैकल्पिक वृक्षारोपण हेतु भूमि नौरादेही (व.प्रा.) वनमंडल अंतर्गत विस्थापित ग्राम नौरादेही, पीपला, कुशयारी एवं रमपुरा मड़ाज की संपूर्ण शासकीय भूमि रकबा 437.575 है। में से कलेक्टर, सागर द्वारा 310.00 है। कोपरा मध्यम सिंचाई परियोजना हेतु वन विभाग के पक्ष में हस्तांतरित की गई थी। प्रधान मुख्य वन संरक्षक (कक्ष भू-प्रबंध) म.प्र. भोपाल के पत्र क्र./4247 दिनांक 14.12.2022 द्वारा दिए गए निर्देशानुसार वैकल्पिक वृक्षारोपण योजना हेतु वनमंडल दक्षिण सागर अंतर्गत प्रस्तावित क्षेत्र कक्ष क्र. पी.एफ. 678 रकबा 36 है, आर.एफ. 673 रकबा 33 है, आर.एफ. 785 रकबा 31 है, आर.एफ. 943 रकबा 25 है, आर.एफ. 991 एवं पी.एफ. 993 रकबा 25 है। क्षेत्र कुल रकबा 150 है। एवं उत्तर सागर वनमंडल अंतर्गत पी.एफ. 400 रकबा 50 है, आर.एफ. 374 रकबा 50 है, आर.एफ. 381 रकबा 50 है। क्षेत्र कुल रकबा 150 है। क्षेत्र चयनित वैकल्पिक वृक्षारोपण योजना तैयार की गई है। वैकल्पिक वृक्षारोपण हेतु चयनित उक्त क्षेत्र 300 है। के किसी भी भाग में नदी का बहाव नहीं है।
	The KML file of degraded forest land identified for plantation work along with CA scheme shall be uploaded on PARIVESH.	वनमंडल दक्षिण सागर द्वारा KML फाइल अपलोड की जावेगी।
	Some Non-forestry activity is visible within the proposed CA site at Village Nauradehi. This needs justification.	नौरादेही असंयारण्य अंतर्गत वैकल्पिक वृक्षारोपण हेतु आवंटित विस्थापित ग्राम नौरादेही में पूर्व से निर्मित वन विश्राम गृह स्थित है। अन्य कोई गैर वानिकी कार्य प्रचलित नहीं है।
	It is observed that the Collector, Sagar District vide earlier order dated 10.07.2017 handed over 137.575 ha Private land and Revenue land in four (4) villages namely Noradehi, Kushyari, Rampura Mudaj & Peepla to the State Forest Department	वैकल्पिक वृक्षारोपण हेतु नौरादेही (व.प्रा.) वनमंडल अंतर्गत विस्थापित ग्राम नौरादेही, पीपला, कुशयारी एवं रमपुरा मड़ाज की संपूर्ण शासकीय भूमि रकबा 437.575 है। में से कलेक्टर, सागर द्वारा 310.00 है।

owing to the relocation of these villages and their habitants from the Nauradehi Wildlife sanctuary. Afterwards, the Collector, Sagar District vide revised order dated 22.07.2017 has reserved the entire 437.575 ha land for CA in lieu of diversion of forest land for Kopra Medium Irrigation project. Now only a part of the said 437.575 ha area is proposed to be used for CA against the instant proposal, which needs justification. The State Govt shall also ensure that land proposed to be given for CA was not part of any village relocation project for which forest land was diverted under Forest(Conservation) Act, 1980.

कोपरा मध्यम सिंचाई परियोजना हेतु वन विभाग के पक्ष में हस्तांतरित की गई थी। उक्त भूमि विस्थापन प्रक्रिया में प्राप्त भूमि नहीं है। किन्तु उक्त क्षेत्र अधिसूचना क्र. 700-624-दस-2-75 दिनांक 17.02.1975 द्वारा पूर्व से ही नौरादेही अभयारण्य के भाग के रूप में अधिसूचित है। प्रधान मुख्य वन संरक्षक (कक्ष भू-प्रबंध) म.प्र. मीमांसा के पत्र क्र. /4247 दिनांक 14.12.2022 द्वारा दिए गए निर्देशानुसार उत्तर वनमंडल, सागर एवं दक्षिण वनमंडल, सागर अंतर्गत 150-150 हे. दुगना बिगड़ा वन क्षेत्र चयनित कर वैकल्पिक वृक्षारोपण हेतु योजना तैयार की गई है।

संलग्न - उपरोक्तानुसार।

पृ.क्रमांक/मा.चि./2023/811

- प्रतिलिपि :- 1. मुख्य वन संरक्षक, सागर वृत्त, सागर की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु सम्प्रेषित।
2. वनमंडल अधिकारी, उत्तर/दक्षिण वनमंडल, सागर की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

वनमंडल अधिकारी
नौरादेही (व.प्रा.) वनमंडल
सागर (म.प्र.)

सागर, दिनांक : 0-7-23

वनमंडल अधिकारी
नौरादेही (व.प्रा.) वनमंडल
सागर (म.प्र.)

(14)

KOPRA MEDIUM PROJECT
BASIC DETAILS OF THE PROPOSED DAM

S. No.	PARTICULARS	DETAILS	Remarks
BASIC DETAILS OF DAM			
1	Type of Dam	Composite	
2	Length of Dam(m)	1510 m	
3	Top Width of Dam(m)	6 m	
4	Maximum Height of the dam(m)	23.81	
5	Type of Spillways	Central Spillway	Ogee Spillway
6	No. of Spillways	6	
RESERVOIR DATA			
7	Gross Storage	48.43 MCM	
8	Live Storage	41.24 MCM	
9	Dead Storage	7.19 MCM	
HYDROLOGY DETAILS			
10	Catchment Area(sq km)	231.80 sq km	
11	Average Precipitation(mm)	1100	
12	Maximum Flow(cumecs)	1597.69	
IRRIGATION & WATER USE			
13	Culturable Command Area(Ha)	9990	
14	Designed Irrigation Area(Ha)	9990	
15	Type of Irrigation	Drip	
16	Rural Drinking Water Supply(MCM)	5	
17	Reserved for Wildlife Use(MCM)	1	

Shankar
(S.E.)

Ganesh

th
(निशेष गोस्वामी)
अनुविभागीय अधिकारी
जल संसाधन उपसंचायक
क.३-र.दु.कोटा (सागर)

(AKHIL BIRTHARE)
(AKHIL BIRTHARE)
EXECUTIVE ENGINEER
Water Resources Division No. 1
SAGAR (M.P.)

कोपरा मध्यम परियोजना

वैकल्पिक एलाइनमेंट की जानकारी

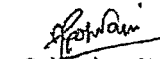
योजना की प्रशासकीय स्वीकृति प्राप्त करने के पूर्व योजना में तीन वैकल्पिक एलाइनमेंट का तुलनात्मक विश्लेषण किया गया था, तुलनात्मक विवरण निम्नानुसार है:-

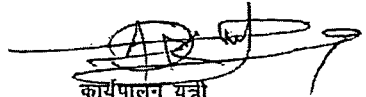
स. क्र.	वैकल्पिक एलाइनमेंट	कुल भराव क्षमता मिघमी.	कुल डूब क्षेत्र हे. में.	प्रभावित वन भूमि हे. में.	रिमार्क
1	एलाइनमेंट 1	48.43	1044.52	272	
2	एलाइनमेंट 2	48.43	1083.47	293.92	
3	एलाइनमेंट 3	48.93	1195.57	402.04	

अतः योजना निर्माण का विकल्प नं. 1 उपरोक्तानुसार सर्वोत्तम विकल्प है, अन्य विकल्प विस्थापन, वनभूमि एवं कृषि भूमि की डूबने की दृष्टि से तकनीकी, आर्थिक, सामाजिक एवं पर्यावरणीय दृष्टि से निर्माण योग्य सही प्रतीत नहीं होते हैं।

उपरोक्त तीनों विकल्पों पर मुख्य अभियंता धसान केन कछार जल संसाधन विभाग एवं अधीक्षण यंत्री जल संसाधन मण्डल सागर द्वारा विचार विमर्श किया गया एवं इस निष्कर्ष पर पहुँचे कि विकल्प नं. 1 का प्रस्ताव तकनीकी रूप सही है। विकल्प नं. 1 जिस पर प्रशासकीय स्वीकृति प्रस्ताव तैयार कर प्रस्तुत किया गया है वहीं सर्वोत्तम विकल्प है।


उपयंत्री


(निरीक्षक गोस्वामी)
अनुविभागीय अधिकारी
जल संसाधन उपसंभाग क्र. 3,
गढ़ाकोटा, सागर (म.प्र.)


कार्यपालन यंत्री
जल संसाधन संभाग क्र. 1,
सागर (म.प्र.)

KOPRA MEDIUM PROJECT ALTERNATE ALIGNMENTS MAP

79°9.000'

79°12.000'

23°36.000'

23°36.000'

ALTERNATE ALIGNMENT 3

FOREST SUBMERGENCE	TOTAL SUBMERGENCE
402.04 Ha	1195.57 Ha

ALTERNATE ALIGNMENT 2

FOREST SUBMERGENCE	TOTAL SUBMERGENCE
293.92 Ha	1083.47 Ha

ALTERNATE ALIGNMENT 1

FOREST SUBMERGENCE	TOTAL SUBMERGENCE
272.00 Ha	1044.52 Ha

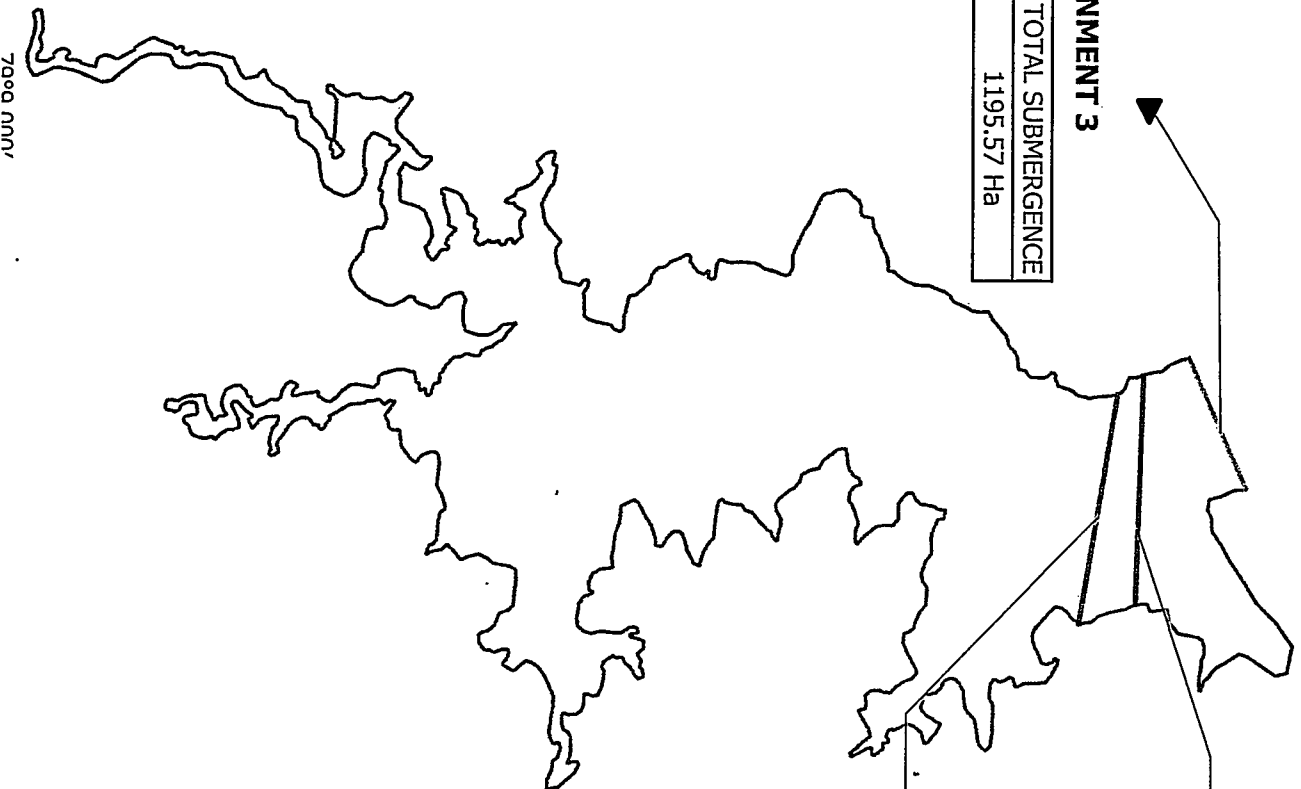
23°33.000'

23°33.000'

[Signature]

[Signature]

(निदेशिका)
संस्थापित वित्तिका
संस्थापित वित्तिका
संस्थापित वित्तिका



79°9.000'

79°12.000'

KOPRA MEDIUM PROJECT

Brief Summary of the Project & Justification for locating project in Forest land

The Kopra Medium Project proposed dam site is located across Kopra river near village Badarchuwan Tehsil Rehli, District-Sagar of Madhya Pradesh. The project is situated on Latitude as 23°36'22" N and Longitude 79°10'13" E. can be located on toposheet No. 55 M/2The site is situated about 60 km away from Sagar district headquarters.

There is no dependable water source in the Project area. At present irrigation in the project area from all sources is only 8.10% of net cropped area. Since the area is dependent on rains, scarcity conditions exist all the time. Crop yields are very low. People in the area are poor. The Project area needs water for domestic and agriculture purposes. Studies carried out earlier show that some unutilized flows are available and the physiographic conditions of the site are also suitable for harnessing the water resources. Hydrological studies of the site revealed the chosen alignment is the most feasible with respect to financial, social, and environmental considerations. The alternate alignment study has already been submitted.

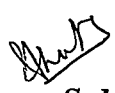
The local public representatives are well informed with the benefits of the project. Cost and benefit ratio has been calculated and is within the norms justifying the feasibility of this project. Also, provision for upstream and downstream utilization of water has been made in the project.


After construction of this dam, 9,990 Ha area will be provided with the Rabi irrigation facility. The drought prone land of 28 nearby villages of


Sagar district will be irrigated through the project. The project shall also enable development of fisheries in the reservoir. The project will also replenish the groundwater table of the region.

The project lies on the western periphery of Nauradehi Sanctuary Muhli range. So its importance for Nauradehi Sanctuary is wild life is rather more than the irrigation benefits of the project. The long spread Nauradehi Sanctuary area is facing severe scarcity of water for its wildlife especially during summer. The construction of this project will provide assured water availability to Nauradehi wild life and a water wall between Sanctuary and peripheral civil habitation. The Ken basin specially known suitability for crocodiles, the Kopar reservoir may be used as a good breeding center and crocodile Sanctuary along with all other aquatic life.

In addition, 5 MCM water is reserved for water supply to nearby villages of the project. 1 MCM water has also been reserved for consumptive use by the wildlife of the vicinity. The dam reservoir shall also act as a natural barrier between nearby villages & the adjoining forest area thus eliminating the encumbrances & overgrazing in the forest area.


Sub Engineer


(Nishesh Goswami)
SDO
WR Sub Dn. No.3
Garhakota


(Akhil Birlhare)
EE
WR Dn. No. 1
Sagar Dist. Sagar(MP)

कार्यालय प्रधान मुख्य वन संरक्षक (वन्यप्राणी), मध्य प्रदेश

भू-तल, सी-ब्लॉक, वन भवन, लिंक रोड नं. -2, तुलसी नगर, भोपाल-462003

दूरभाष : 0755-2674248, 2524275, फ़ैक्स : 0755-2766315 फ़ैक्स : 0755-2766315 E-mail : pccfwl@mp.gov.in

क्रमांक/माचि-1/GEN-192/ 2194
प्रति,

भोपाल, दिनांक 13-3-2024

✓ अपर प्रधान मुख्य वन संरक्षक,
(भू-प्रबंध) मध्यप्रदेश, वन भवन,
भोपाल, म0प्र0

विषय :- जिला सागर के अंतर्गत कोपरा मध्यम सिंचाई परियोजना के निर्माण हेतु 272.00 हेक्टेयर वनभूमि जल संसाधन विभाग को उपयोग पर देने बाबत।

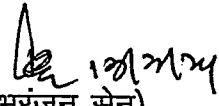
संदर्भ :- आपका पत्र क्रमांक/एफ-3/100/2021/10-11/12/4094-4095 दिनांक 12.09.2023
—0—

उपरोक्त विषयांतर्गत संदर्भित पत्र से जिला सागर के अंतर्गत कोपरा मध्यम सिंचाई परियोजना के निर्माण हेतु 272.00 हेक्टेयर वनभूमि जल संसाधन विभाग को उपयोग पर देने संबंधी प्रकरण में भारत सरकार स्तर से बिंदु क्रमांक (iv) एवं (v) के संबंध में मुख्य वन्यप्राणी अभिरक्षक, म0प्र0 का अभिमत चाहा गया है।

उक्त संबंध में वांछित जानकारी संलग्न अधिकारी, सागर वृत्त सागर द्वारा पत्र क्रमांक/FCA-TL/2023/2029 दिनांक 26.10.2023 के साथ वनमण्डल अधिकारी, वनमण्डल नौरादेही (व.प्रा.) वनमण्डल सागर, म0प्र0 के पत्र क्रमांक/माचि/1225 दिनांक 18.10.2023 द्वारा संलग्न कर प्रेषित की गई है।

वनमण्डल अधिकारी, वनमण्डल नौरादेही (व.प्रा.) वनमण्डल सागर, द्वारा प्रेषित उक्त प्रतिवेदन से सहमत होकर इस कार्यालय की सहमति व्यक्त की जाती है। वर्तमान में नौरादेही वन्यप्राणी अभयारण्य एवं दुर्गावती अभयारण्य को शामिल करते हुये रानी दुर्गावती टाईगर रिजर्व के गठन की अधिसूचना जारी हुई है। भारत सरकार के दिशा निर्देशों के अनुसार प्रकरण में राष्ट्रीय वन्यप्राणी बोर्ड की अनुमति आवश्यक होगी। तदनुसार का पत्र उपयोगकर्ता एजेंसी को इस कार्यालय के पत्र क्रमांक 9549 दिनांक 01.11.2023 एवं पत्र क्रमांक 1842 दिनांक 01.03.2024 से लेख किया गया है। तदनुसार इस कार्यालय का अभिमत सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है।

संलग्न: उपरोक्तानुसार -

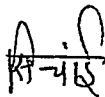

(शुभरंजन सेन)

प्रभारी मुख्य वन्यप्राणी अभिरक्षक एवं
प्रधान मुख्य वनसंरक्षक (वन्यप्राणी), म.प्र.

पृ0 क्रमांक/माचि-1/GEN-192/ 2195
प्रतिलिपि :-


भोपाल, दिनांक 13-3-2024

1. संलग्न अधिकारी, सागर वृत्त सागर की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
2. वनमण्डल अधिकारी, वनमण्डल नौरादेही (व.प्रा.) वनमण्डल सागर की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।


अनंद

अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध)
मध्यप्रदेश, भोपाल

14-3


प्रभारी मुख्य वन्यप्राणी अभिरक्षक एवं
प्रधान मुख्य वनसंरक्षक (वन्यप्राणी), म.प्र.



कार्यालय प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं मुख्य वन्यजीव अभिरक्षक, मध्य प्रदेश

भू-तल, सी-ब्लॉक, वन भवन, लिंक रोड़ नं.-2, तुलसी नगर, भोपाल-462003

दूरभाष : 0755-2674248, 2524275, फैक्स : 0755-2674206 E-mail : pccfwl@mp.gov.in

क्रमांक/व.प्रा./तक.-1/GEN.-192/ 10250

भोपाल, दिनांक 18-11-2024

प्रति,

कार्यपालन यंत्री,

जल संसाधन संभाग क्रमांक-1, (सिविल कोर्ट के पास)

सागर (म.प्र.)-470001 (E-mail: eewrdo1.sgr@gmail.com)

विषय :- कोपरा मध्यम सिंचाई परियोजना "Environment Impact Assessment of Flora, Fauna & Socio Economic Status of local Communities and action to be taken mitigate Impact of kopra medium project in Nauradehi Wildlife Sanctuary, Sagar District (M.P.)" रिपोर्ट प्रस्तुत किये जाने बाबत।

संदर्भ :- आपका पत्र क्रमांक 2833/कार्य/2023-24 दिनांक 11/08/2023 एवं उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर का पत्र क्रमांक/मा.चि./2024/960 दिनांक 28.08.2024

उपरोक्त विषयांतर्गत आपके द्वारा संदर्भित पत्र से कोपरा मध्यम सिंचाई परियोजना के संबंध में राज्य वन अनुसंधान, जबलपुर द्वारा मई 2023 में तैयार की गई "Environment Impact Assessment of Flora, Fauna & Socio Economic Status of local Communities and action to be taken mitigate Impact of Kopra medium project in Nauradehi Wildlife Sanctuary, Sagar District (M.P.)" की रिपोर्ट आवश्यक कार्यवाही हेतु संलग्न कर प्रेषित की गई थी। उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर द्वारा उक्त रिपोर्ट का सूक्ष्म परीक्षण कर संदर्भित पत्र दिनांक 28.08.2024 से अनुमोदन हेतु इस कार्यालय को प्रेषित की गई है।

उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर द्वारा उक्त क्षेत्र में पाये जाने वाले फलोरा-फौना के संरक्षण एवं संवर्धन हेतु 10 वर्षों के लिए तैयार की गई वन्यप्राणी संरक्षण योजना में राशि रुपये 235.26 लाख का प्रावधान किया गया है, जिसके मुख्य घटक निम्नानुसार है:-

Sr. No.	Description of work	Total Amount (Rs. In Lakh)	Years (Amount in lakh Rs.)									
			1	2	3	4	5	6	7	8	9	10
1	Installation of alert systems, setting up control room etc	9	9	-	-	-	-	-	-	-	-	-
2	Setting up of communication system	6	3	2	1	-	-	-	-	-	-	-
3	Setting up of Emergency Response organization	3	3	-	-	-	-	-	-	-	-	-
4	Public Information System	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
5	Installation of Fire Fighting Equipment	4.5	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45

Sr. No.	Description of work	Total Amount (Rs. In Lakh)	Years (Amount in lakh Rs.)									
			1	2	3	4	5	6	7	8	9	10
6	Installation of alert system, setting up control room etc	2.5	2.5	-	-	-	-	-	-	-	-	-
7	Purchasing Installation of Trap cameras	40	8	8	8	8	8	-	-	-	-	-
8	Purchasing of vehicle	15	15	-	-	-	-	-	-	-	-	-
9	Culvert as per design sanction by PWD for Passing wild life	40	16	16	8	-	-	-	-	-	-	-
10	Collection of grass seeds from forest	4.8	1	1	1	1	0.8	-	-	-	-	-
11	construction of water tank /reservoir/stop dam	30	15	15	-	-	-	-	-	-	-	-
12	Patrolling camp/Watch tower	15	15	-	-	-	-	-	-	-	-	-
13	Water Monitoring & Cleaning	10	1	1	1	1	1	1	1	1	1	1
14	Motor Boat	6	6	-	-	-	-	-	-	-	-	-
15	Other Miscellaneous Exp.	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Total	192.8	95.65	44.15	20.15	11.15	10.95	2.15	2.15	2.15	2.15	2.15
16	Miscellaneous Administrative & Monitoring Expenses (2% of project cost)	3.86	-	-	-	-	-	-	-	-	-	-
17	Escalation Cost & Unforeseen (20% of project cost)	38.6	-	-	-	-	-	-	-	-	-	-
	Grand total	235.26	95.65	44.15	20.15	11.15	10.95	2.15	2.15	2.15	2.15	2.15

उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर द्वारा अनुशंसित वन्यप्राणी संरक्षण योजना के पृष्ठ क्रमांक 52 से 55 पर क्षेत्र में पाये जाने वाले फलोरा-फौना के संरक्षण, संवर्धन एवं प्रबंधन हेतु दर्शाये गये कार्यों के लिए रुपये 235.26 लाख की 10 वर्षों की वन्यप्राणी संरक्षण योजना का अनुमोदन किया जाता है। उक्त अनुमोदित वन्यप्राणी संरक्षण योजना की एक प्रति मुख्य वन संरक्षक, सागर वृत्त एवं एक प्रति उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर को उपलब्ध कराये।

प्रकरण में भारत सरकार/राज्य शासन की अंतिम स्वीकृति उपरांत समय-सीमा में वन्यप्राणी संरक्षण योजना में वन्यप्राणी प्रबंधन हेतु वन विभाग द्वारा कराये जाने वाले प्रावधानित कार्यों हेतु योजना में प्रावधानित राशि रुपये 235.26 लाख (रुपये दो सौ पैंतीस लाख छब्बीस हजार मात्र) एक मुश्त कैम्पा मद में जमा करायी जाकर उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर एवं इस कार्यालय को अवगत कराना सुनिश्चित करेंगे तथा आपके द्वारा कराये जाने वाले कार्यों को समय-सीमा में पूर्ण करायेगें।

संलग्न :- उपरोक्तानुसार।

8/11/2024
(व्ही.एन. अम्बाडे)

प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं
मुख्य वन्यजीव अभिरक्षक, म.प्र.
भोपाल, दिनांक 18-11-2024

पृ० क्रमांक/व.प्रा./वतअ.-1/GEN.-192/10201
प्रतिलिपि :-

1. अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध) वन-भवन, भोपाल की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित। उपरोक्त प्रकरण में वन (संरक्षण एवं संवर्धन) अधिनियम, 1980 के अंतर्गत आपके स्तर से जारी अंतिम अनुमति में अनुमोदित वन्यप्राणी संरक्षण योजना में प्रावधानित राशि रुपये 235.26 लाख आवेदक संस्था द्वारा कैम्पा मद में जमा कराकर उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर को एक मुश्त उपलब्ध कराने एवं कार्य समय-सीमा में पूर्ण कराये जाने की शर्त अधिरोपित करने का कष्ट करें।
2. मुख्य वन संरक्षक, सागर वृत्त सागर की ओर अनुमोदित वन्यप्राणी संरक्षण योजना की एक प्रति सहित सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
3. उप संचालक, वीरांगना दुर्गावती टाइगर रिजर्व, सागर की ओर उक्त अनुमोदित वन्यप्राणी संरक्षण योजना की एक प्रति सहित सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है। प्रकरण में भारत सरकार/राज्य शासन की अंतिम स्वीकृति के उपरांत परियोजना प्रारंभ होने के पूर्व वन्यप्राणी संरक्षण योजना में वन विभाग द्वारा कराये जाने वाले कार्यों के लिए प्रावधानित राशि एक मुश्त आवेदक संस्था से प्राप्त कर प्रावधानित कार्यों का समय सीमा में क्रियान्वयन किया जाना सुनिश्चित करें तथा तत्संबंध में की गई कार्यवाही से इस कार्यालय को अवगत कराया जावे।

8/11/2024
प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं
मुख्य वन्यजीव अभिरक्षक, म.प्र.

सिद्धांत

अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध)
मध्यप्रदेश, भोपाल



KOPRA MEDIUM IRRIGATION PROJECT

MITIGATION MEASURE OF IRRIGATION PROJECT & RISK ASSESSMENT & DISASTER MANAGEMENT

WATER RESOUC DEPARTMENT

(State Government of Madhya Pradesh)



CONTENTS PAGE

- 1- INTRODUCTION
- 2- OBJECTIVES
- 3- STUDY AREA
- 4- BACKGROUND
- 5- METHODOLOGY OF THE STUDY
- 6- RESULTS AND DISCUSSIONS
- 7- BIOPHYSICAL ENVIRONMENT
 - Impacts on Water Resources
 - Impacts on Flora and Fauna
 - Impacts on Aquatic Environment
 - Impacts on Air Quality and Noise
 - Impacts on Quarry and Borrow Pits
 - Impacts on Socio-Economic Environment
 - (i) Loss of Usable Lands
 - (ii) Impacts on sites of cultural and religious values

(iii) Impacts on public health and sanitation

8- Impacts on Biophysical Environment

❖ *Impacts on Soil resources*

❖ Impacts on water resources

9- METHODOLOGY OF THE STUDY

10- RESULTS AND DISCUSSIONS8

11- SOIL BUNDING

12- CONCLUSION

13-FLOW DISCHARGE

14- CULVERT

15- FLOOD CONTROL AND DAMAGE

16- RESERVOIR & POWER

17- DISASTERMANAGEMENT

18- COST ESTIMATED FOR MITIGATION MEASURES

1- INTRODUCTION-

Bundelkhand is a region of rolling hills and fertile valleys in the northern part of the state, which slopes down toward the Indo-Gangetic plain to the north. Gwalior is an historic center of the region. This region encompasses Gwalior, Sagar, Damoh, Panna, Chhatarpur and Tikamgarh Districts.

The Proposed dam site is located across river Kopra near village Bagaspura Tehsil Rehli, District Sagar of Madhya Pradesh. The site is located on topo sheet no 55 M/2 with latitude 23°36'22" N and longitude 79°10'13" E. The site is situated about 60 km away from Sagar district headquarters. River Kopra is a tributary of river Sonar ultimate part of KEN Sub Basin. The river Kopra originates near village Gopalpura of Tehsil Deori District Sagar. The catchment area up to the proposed Dam site is 231.80 sq km.

Kopra Medium Irrigation Scheme is a irrigation rises on Kopra River in the Block Rehli Forest area of South Sagar Division and Nouradehi (WL) Sagar Division in the Sagar district, of Madhya Pradesh. Kopra River originates near village Gopalpura of Tehsil Deori District Sagar. Kopra River flows in a generally north flowing direction is tributary of river Sonar ultimate part of KEN Sub Basin. The forest area boundary in the catchment as per the forest proposal is about 200.08 Sq.KM & about 2.72 Sq.K.M is in the submergence.

The proposed project of Kopra Medium Irrigation Scheme diversion weir irrigation is predicted to bring both beneficial and adverse impacts on physical, biological and socio-cultural environment. Although the implementation of Nouradehi Wild Life Sanctuary and South Sagar Division diversion weir irrigation project has many benefits, obviously it will also bring a number of adverse impacts to the physical, biological and socio-cultural environment.

Generally, the potential positive and negative impacts as well as the environmental mitigation measures of the irrigation project depend on: (a) nature and types of the proposed irrigation project, (b) environmental baseline condition of the project area i.e. the physical, biological and socio-cultural environment, (c) environmental health condition of the project area, (d) the technological option adopted, (e) the legal, institutional and policy framework, and (f) the environmental condition of the downstream.

2- OBJECTIVES

The aim of this study is to assess Environment Impacts and their mitigation measures. Major positive and negative impacts of this project during construction and operation phases as well as possible mitigation measures are briefly included in this study. Therefore, the main objective of this paper is to present a simple and unified framework along with examples and applications so that it can be accessible to a broader audience in the field.

3-STUDY AREA

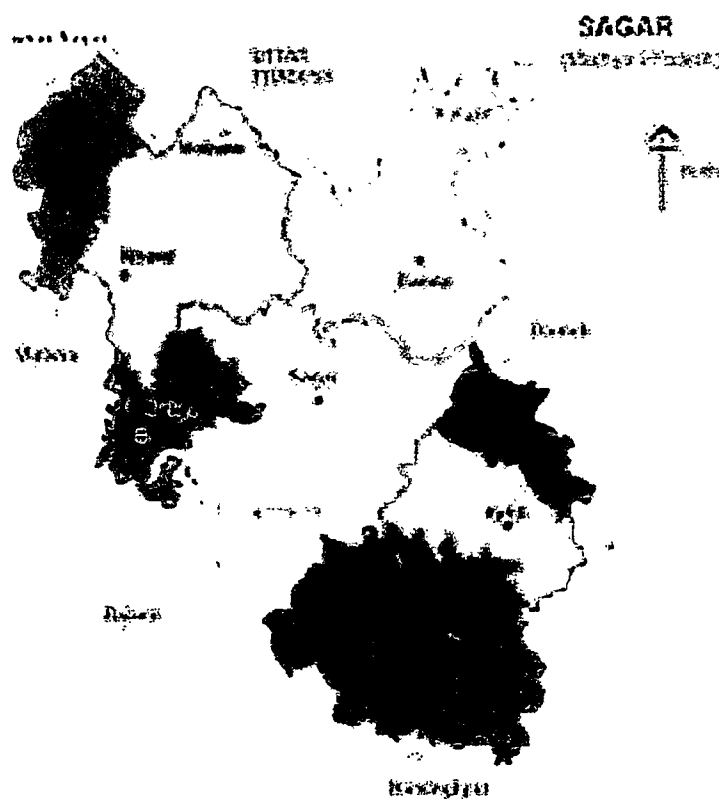
KEN Sub Basin. The river Kopra originates near village Gopalpura of Tehsil Deori District Sagar, which is found in the Easter part of Madhya Pradesh. The area has good potential water and land suitable for irrigation development. Dam is proposed with FRL 403.00 m, having design gross capacity 48.43 MCM, live capacity 41.29 MCM and dead storage 7.19 MCM. Though the Tank situated in down stream of ongoing Khatola Complex Tank, the replenishment of water in non-monsoon season is not considered. After construction of this dam, whereas the average elevation of the command area is 9990 Ha and it will be provided with the Rabi irrigation facility in drought prone land of Rehli tehsil of Sagar district will be irrigated through pressurized pipe irrigation system. The entire watershed lies in SWD5. The command area also lies within this. The small scale irrigation project is anticipated by diverting water from Kopra Stream which is a tributary of Sonar River that eventually drains to the Yamuna River. The catchment area of the Kopra Medium Irrigation watershed at the diversion site is 2.72 km². The maximum length of the river up to the diversion site is about 0.6 km. The elevation of the river center at the diversion site is 390 meter.

Name of villages coming under submergence with respective area - 13 nos

- (i) Bandarchua - 66.72 Ha.
- (ii) Chhirari - 93.70 Ha.
- (iii) Hinoti - 26.28 Ha.
- (iv) Motipar - 130.59 Ha.
- (v) Madkheda - 89.12 Ha.
- (vi) Khaikheda - 131.49 Ha.
- (vii) Samnapur Barkheri - 87.86 Ha.

- (viii) Hardua Baleh – 38.87 Ha.
- (ix) Ghughri Khurd – 23.76
- (x) Bhohari – 27.73 Ha.
- (xi) Hardua Rehli – 49.96 Ha.
- (xii) Salaiya – 7.73 Ha.
- (xiii) Simariya Harrakheda – 1.32 Ha.

Rainfall is the sole source of natural recharge to ground water regime and rainfall pattern has an important impact on groundwater level in the phreatic aquifer. Rainfall in the state occurs during south-west monsoon season (mid June to September) and sometimes during winter (November to February). Most of the rainfall (more than 90%) occurs during the south-west monsoon season



4-BACKGROUND

Since, there is no major project are being constructed on Sonar River or its tributaries until date. The construction of this project would help in maximum utilization of water in concerned areas facing a high scarcity of water for irrigation, resulting in to the development of the area. This project will also provide water for drinking purpose to the rural area situated in nearby area and would promote in development of more industries in the nearby area.

Further, the command area identified under KOPRA MEDIUM PROJECT lies in the deep black cotton soils and is water scarce region of Ken Sub basin. This project will definitely bring economic prosperity to this area due to increased agricultural activities by fulfilling the demand of irrigation water required by farmers.

The project lies on the western periphery of Nauradehi Sanctuary Muhli range. So its importance for Nauradehi Sanctuary is wild life is rather more than the irrigation benefits of the project. The long spreaded Nauradehi Sanctuary area is facing severe scarcity of water for its wild life especially during summer. The construction of this project will provide assured water availability to Nauradehi wild life and a water wall between Sanctuary and peripheral civil habitation. The Ken basin specially known suitability for crocodiles, the Kopa reservoir may be used as a good breeding center and crocodil Sanctuary along with all other aquatic life.

Though not planned, many other incidental benefits like recharge of ground water in command area, development of agro based industries/food processing units, employment generation in construction phase and afterwards, development of tourist spots, etc. Will be benefitted from the project. This will result in upliftment of socio - economic condition of people living in water scarce areas of Rehli Tehsil of Sagar district of Madhya Pradesh State. This will provide annual irrigation to about 9990 Ha.

(i) BRIEF DESCRIPTION OF RIVER SUB BASIN

The Kopra River is a tributary of the Sonar River, which is a tributary of Ken River of Yamuna basin. This river originates from Gopalpura village in Deori Tehsil of Sagar district of Madhya Pradesh. After flowing about 142 km in Sagar and Damoh District of Madhya Pradesh, the river Kopra finally joins Sonar River near Madhkola Village of Damoh District.

(ii) PRESENT & PROPOSED PROJECTS

There is no existing storage reservoir on river Kopra in its 142 kms length from its origin near village Gopalpura of Deori Block District Sagar to its confluence with Sonar River near Village Madhkola in District Damoh. One ongoing minor tank Khatola Complex is under construction on river Kopra in the up stream region of proposed KOPRA MEDIUM PROJECT. The construction of KOPRA MEDIUM PROJECT will help in optimum utilisation of water in concerned areas facing a high scarcity of water for irrigation, thus helping in the development of the area. This project will also provide water for drinking purpose to the nearby rural areas.

(iii) SUMMARY OF THE PROJECT PROPOSAL

Administrative Boundaries Based on Location Details :

The KOPRA MEDIUM PROJECT is located near village Bagaspura of Rehli Tehsil of Sagar district in Madhya Pradesh on river Kopra having Latitude as 23°36'22" N and Longitude as 79°10'13" E. can be located on toposheet No. 55 M/2, the site is situated about 60 km away from Sagar districts headquarter. Dam site is approachable from Sagar upto village Chhirari 58 Km from Sagar on Sagar-Rehli-Jabalpur road, then upto village Bagaspura and Project site right side 2.00 Km through Chhirari Baleh Road.

Project Components : The project comprises of four main components namely Head works (Dam with side spillway & appurtenant works) Pump House, Distribution chamber and Pressurized Canal works.

Physical Features : The physical features include:

Dam: The KOPRA MEDIUM PROJECT envisages construction of an earthen dam with Side Spill Way, pump house on Submergence with rising main. The project constitutes the following:

- (I) Construction of 1620.00 M long Dam with a maximum height of 23.81 M.
- (II) The 82.50 M long Side Spillway & 30 m NOF including key wall (on both side) with 6 Nos radial gates (including 1 standby) of size 11.00 M x 6.00 M with a maximum discharging capacity of 1597.69 Cumecs. And there is no need to provide foundation gallery.

- (III) The 1620.00 M long earthen bund inclusive of 112.50 mts of OF and NOF concrete Dam on right flank between RD 1380 M to 1520M.
- (IV) Storage formed by the construction of Dam will have a Gross Storage 48.43 MCM live storage of 41.24 MCM, it will irrigate 9990 ha in rabi season with 5 MCM reserved for rural drinking water supply and 1 MCM for wild life consumptive use. 7.19 MCM will be kept as passive (dead) storage reserve for wild life and aquatic life in the sanctuary area and use it all weather tourist point.
- (V) Rehabilitation and Resettlement is required for one village being submerged namely Badrchua. FTL of project is marked at RL 403.00 M. On the other hand, total private land under submergence and other components is 734.00 Ha., Govt. land 0.00 Ha. In addition, forestland is 290.24 Ha.

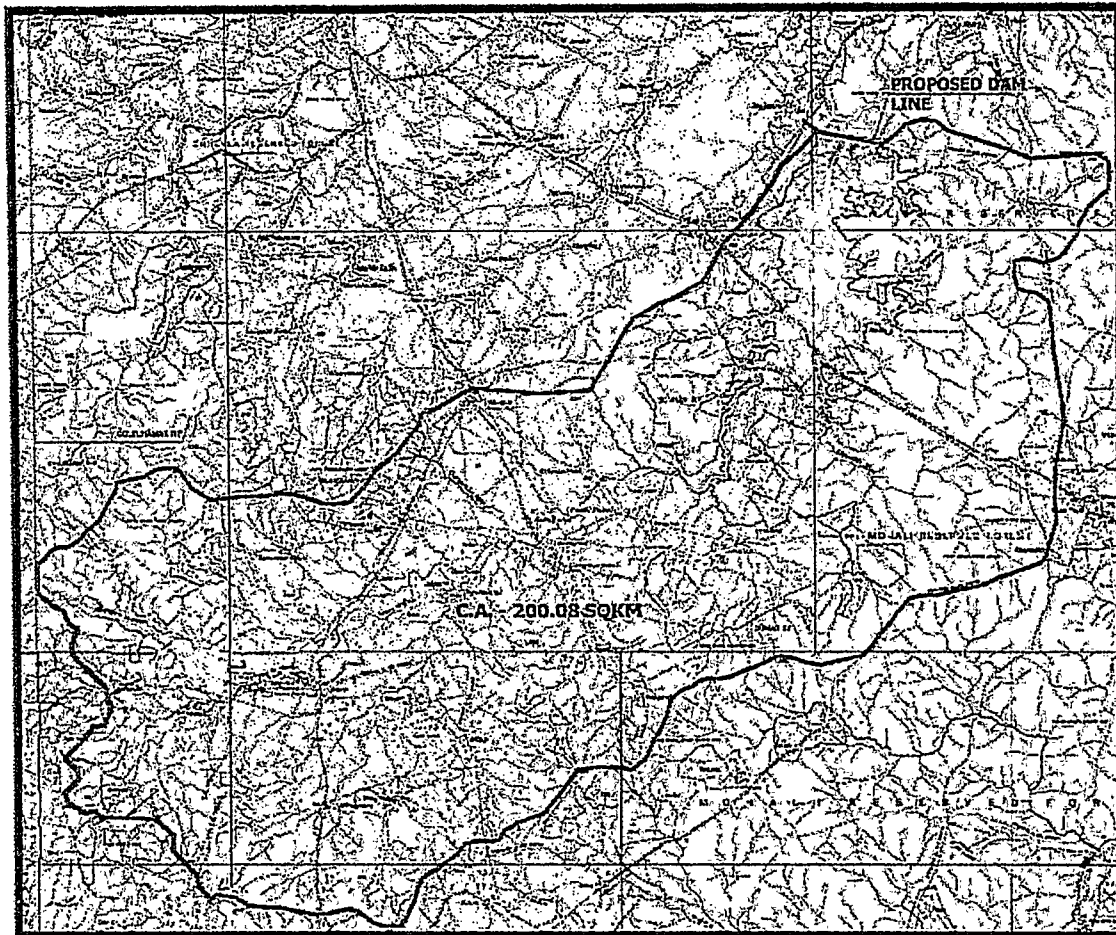
Canals :

It consists of a pressurized pipe system of approx 20 km. with micro network system to irrigate 9990 ha., In Rabi Season, Pipe canal system to irrigate 9990 Ha area of Sagar district, total 60 km network of rising main and gravity main with micro distribution network will be required for command area 1 and 2 to irrigate area of 6833 and 3157 ha. respectively.

SURVEY AND INVESTIGATION -

1.1. Topographic survey - The topographic survey for Basin, Submergence has been done. Sample survey for 5% of the command to worked out the extend of micro distribution network etc.; along with geological investigation and fixation boundary stone on FTL, FTL-2, FTL-4 lines etc will be done side by side.

Catchment Area of Kopra Medium Irrigation Project



9- METHODOLOGY OF THE STUDY

The methodology used in this assessment study was aimed at plainly defining and describing the environmental impact situation of the area and out lining the major environmental impacts and developing recommendations for implementation.

Primary and secondary data were collected from the NWRD development agents, farmers and agricultural and development office using checklists through group discussion and key informant interview positive environmental impacts, negative environmental impacts and their mitigation measures.

10- RESULTS AND DISCUSSIONS

(1) Potential positive impacts of Kopra Medium Irrigation project

Regardless of some adverse impacts, the project will have various positive impacts and benefits to the social, ecological and physical environment. The positive impacts that are assessed to be expected after the implementation of the Kopra Medium Irrigation Project Increase in agricultural yields and production, generating additional revenues directly from the project output.

- ❖ Crop diversification. The introduction of irrigation enables farmers to diversify their crops based on local markets demand and export.
- ❖ Employment opportunities: during the construction phase there will be improved employment opportunities for local people and new comers.
- ❖ The project will provide water for cultivation of crop, irrigated fodder development, domestic purpose, livestock etc.
- ❖ Food security further improved. In this case, the proposed small scale diversion weir irrigation will have a paramount importance in further improving the overall living conditions of the people residing in and around the project environment and will plays its own role in alleviating food shortage at the rural level.
- ❖ Improved forage varieties provided and increase animal productivity and production.
- ❖ Increase the opportunities to nursery site establishment, and forest seedling production and forest tree plantation.
- ❖ Mitigation of drought syndrome. Implementation of the project will be a means for drought syndrome.

(II) Impacts during construction phase and their Mitigation Measures

- **Biophysical Environment**

- ❖ **Impacts on soil erosion**

The main activities that will disturb the topsoil and subsoil, and exposed to erosion will be construction of canals, drains, headwork structures (diversion weir) and quarrying to obtain construction materials.

Main Canal and other canals construction aggravate soil erosion due to its effects in diverting and concentrating runoff water, and creating larger water harvesting areas. Soil erosion can be more serious along the main canal alignment where considerable cut and fill works are involved.

Specifically, construction of canals for this irrigation scheme will enhance soil erosion mainly due to:

- Cutting into the soils and rocks as well as clearing of the protective ground cover to construct the canal.
- Construction of cut off drains above the main canal to prevent from eroding the canal itself. Runoff flow collected from slopes and concentrating at the canals can cause remarkable soil erosion especially on hilly and undulated command areas especially if the rains commence before the accomplishment of the construction phase.
- Inappropriately disposed materials i.e. cutting of top soils is easily washed away by running water.

11- Soil Bund: Classification, Design & Construction | Soil Management

A soil bund is a structural measure with an embankment of soil or stones, or soil and stones, constructed along the contour and stabilized with vegetative measures, such as grass and fodder trees. The height of the bunds depends on the availability of stones.

The different types of bund used in practice are given as under:

- 1- Side Bunds – These bunds are formed at the extreme ends of the contour bund, running along the land slope.
- 2- Lateral Bunds – Lateral bunds are constructed between two side bunds along the slope for preventing the concentration of water at one side, and also to break the length of contour bund into convenient bits.
- 3- Supplemental Bunds – The bunds constructed between two contour bunds to limit the horizontal spacing by its maximum extent, are nomenclature as supplemental bunds.
- 4- Marginal Bund – These bunds are formed at the margin of the field, road, river etc., to demarcate their boundary.

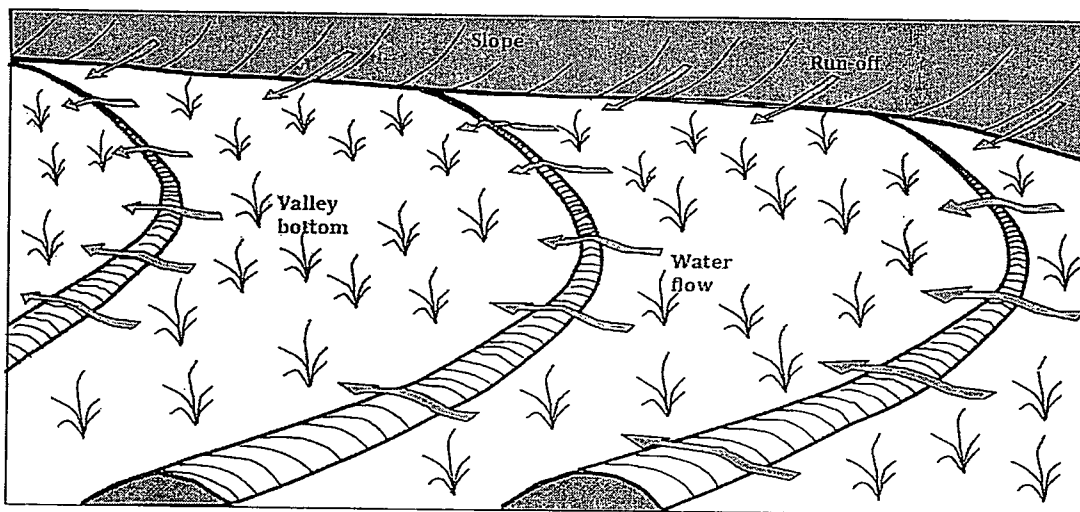


Figure bund used for Soil erosion

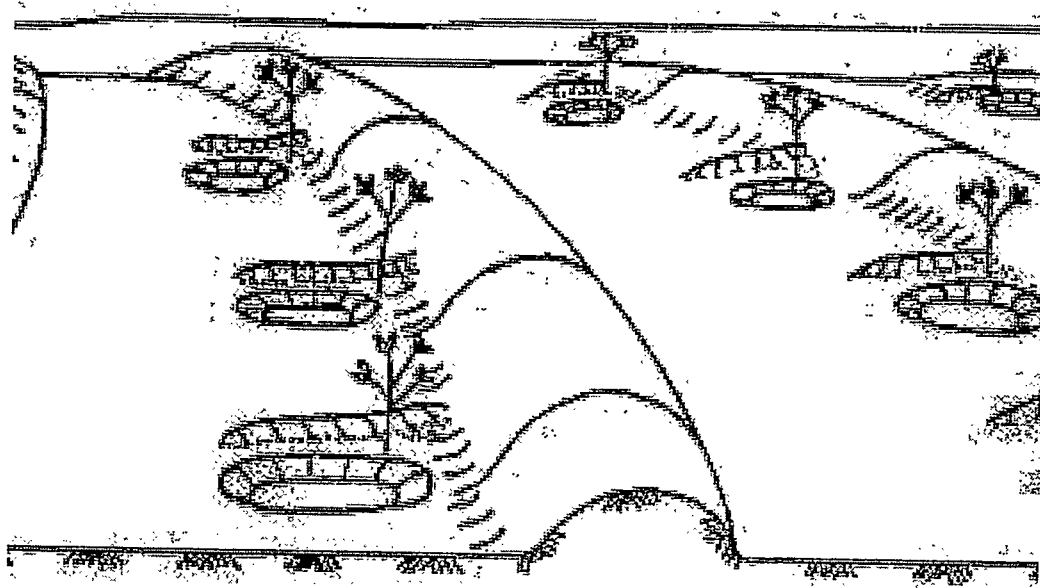


Figure- Soil Bunds

The design and construction of this irrigation project should integrate prevention and mitigation measures to reduce soil erosion and adverse impacts on soils. These are:

- ❖ Minimize the area of ground clearance i.e. land clearing for headwork and canal construction should be restricted to what is absolutely necessary for the headwork and canal construction. Clearance and cutting into the soil outside the cleared width and the selected material sites should be avoided as far as possible;
- ❖ Replanting right species of trees, shrubs and grasses in a right time on disturbed areas by headwork and canal construction, gullies, and erosion prone areas;
- ❖ Excavated top soils or loss soils cut-off from the canal and selected material sites should be collected and preserved for reuse particularly clay soils for lining of canals and others for filling of gullies, borrow and quarry sites;
- ❖ Control the volume, location and speed of water flows in the vicinity of exposed soils and slopes by providing with cut off drains to catch water before it reaches critical areas (gullies, and erosion), and diverting drains that can

avoid excessive concentration flow and energy dissipation structures designed to slow fast running storm water in drains and by doing this reduce its downstream erosive potential;

- ❖ Make allowance for seasonal climatic variations particularly rainfall and adjust the construction program accordingly. Cuts on erodible surface should be properly executed during dry season i.e. before the summer rains commence.

Plants Prevent Erosion

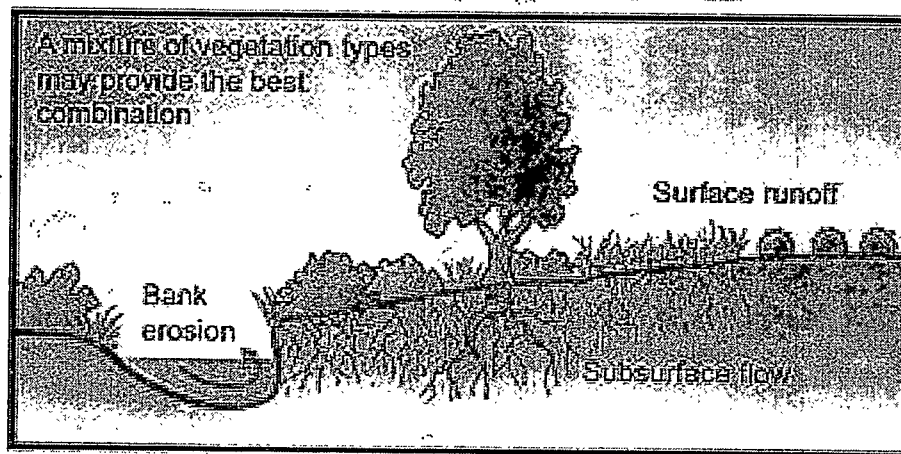


Figure 2 Soil Erosion Prevention

❖ *Impacts on Water Resources*

The head work construction will modify the natural flow of the Kopra River. Depending on local conditions especially in mountains and hilly areas, these changes can contribute to stream bank erosion, flooding, channel modification and siltation of streams and rivers.

Apart from the modification of the natural flow, the existing and possible water pollution sources during the construction period are: (a) the excavation of the earth, (b) the handling of construction materials, especially the concrete and (c) Organic or toxic pollution, as a result of oil and oil products leakage.

Abstraction of water from rivers for irrigation project construction may affect the daily demand for animal and ecological services.

In summary, the possible preventive and mitigation measures to minimize water pollution and conflicting demands include:

- Carry out soil conservation measures;
- Run off from the vicinity of crushing plant, quarry and construction lay down area should be collected and treated as required;
- Avoid the risk of pollution to surface and groundwater.

❖ **Impacts on Flora and Fauna**

The proposed main canal alignment passes all through cultivated land, grazing land, shrub land and barren lands. The main canal alignment does not intersect with natural or plantation forest. Therefore, no large natural trees that will be affected by the main canal or the head work structures.

In general, the main canal alignment does not intersect a habitat that can provide protection for wild animals. During construction phase, apart from deforestation the operation of various construction equipments and vehicular movements are likely to generate noise. These activities will lead to some disturbance of wild life population. Since natural forest area of the watershed that rich in wild animals is located near to the headwork area and will be disturbed by noise and dusts generate from headwork construction activities. But in this case, so long as it is a small scale irrigation project, construction equipments that will generate maximum sound will not be utilized.

The design and construction of this irrigation project should integrate prevention and mitigation measures to reduce or avoid the impacts of flora and fauna. These are:

- ❖ Locate the project (the head work and canal construction) from environmentally sensitive areas such as priority(protected) forest and grazing lands(wetlands);
- ❖ Avoid the extraction of stone, sand, gravel etc from forest areas and river bottom;
- ❖ Minimize the area of ground clearance i.e. land clearing for headwork and canal construction should be restricted to what is absolutely necessary for the headwork and canal construction:

- ❖ Avoid the use of dynamite/explosive particularly at the headwork area since the natural forest at the watershed, the home of wild life, located above the headwork may be disturbed by the noise.

❖ **Impacts on Aquatic Environment**

Impacts to the aquatic environment from the construction phase will result from headwork structures (diversion weir) installation and diversion structures in bypassing river flow. Locally, this will result in some loss of aquatic habitat and organisms at the headwork structures (diversion weir). As no migratory fish species are present in the rivers project area, due to their location, no significant impacts to fishery aquatic resources are anticipated.

The dredging and deposition of dredged material is likely to affect the survival and propagation of micro benthic organisms. The macro-benthic life which remains attached to the stones, boulders etc. gets dislodged and is carried away downstream by turbulent flow. The areas where construction materials would be excavated, the benthic fauna will get destroyed. In due course, the area would however, get re-colonized, with benthic fauna. The density and diversity of benthic fauna, is however, much less than with the pre-dredging levels.

Mitigation measure to reduce impacts on aquatic environment:

- Minimize the dredging of materials (basaltic river blocks, boulders and cobbles) i.e. the amount of dredging materials should be restricted to what is absolutely necessary for head work structure.

❖ **Impacts on Air Quality and Noise**

The major effects on air quality and noise during the construction phase of this irrigation project will be impacts due to vehicular movement, an emission from various crushers, noise and vibration, and impacts due to operation of construction equipment.

During construction phases of this irrigation project, there will be vehicular movement for transportation of various construction materials to the project site. Large quantities of dust and traffic problem are likely to happen due to movements of vehicles. Noise from construction equipment and vehicular movement will affect nearby residents

and schools because the irrigation project site is nearby from settlement area. The operation of the crusher during the construction phase is likely to generate fugitive emission. In addition to these, during construction operations both mobile and stationary equipment such as grader, concrete mixers and air compressors can generate noise in excess of the above noted guideline.

Mitigation measure to minimize impacts on air quality and noise:

- ❖ Reduce noise at the source to minimize its effects on wildlife and people living along or around the project;
- ❖ Materials will be stored in appropriate places and covered or sprayed to minimize dust
- ❖ Since it is a small scale irrigation project using hand hammer;
- ❖ Construction activities will be scheduled carefully to minimize noise impact from construction machinery. Night time & use of noisy machines will be prohibited.

❖ Impacts on Quarry and Borrow Pits

Extraction of materials from quarries/borrow pits involve site clearance and movement of large construction materials from local sources to the construction sites, and will result in significant quantities of wastes or eroded materials, and possible changes in topography or ground surface relief features. In this project, the source of dimension stone and coarse aggregate is from the river bank. Additionally site soil compaction is selected. The site is a private farm land of four household. Thus, the impact would be to forgone the crop product obtained from the land. potential soil erosion and where the excavated pits are deep they present a risk to animals. Impacts of Quarry:

- ❖ The extent of each pit quarry should be clearly marked on the ground;
- ❖ Filling excavated top soils or loss soils cut-off from the canal and leveling of the exploited blocks before abounding the used quarry;
- ❖ To minimize the erosion effect, plantation of trees and grasses that provide anchoring effects against water runoff.

- ❖ In order to minimize the effect of flood and erosion the surface rainwater has to be diverted through appropriate ditches or channels above the quarry. It is recommended that, above the quarry, the ditches of about 0.7m wide and 0.6m deep has to be constructed and lined with clay in the points where erosion pressure is strong;

❖ Impacts on Socio-Economic Environment

Loss of Usable Lands

The main canal alignment from the headwork up to the end is cultivated lands used to grow different annual crops. Some cultivated, and shrub land will be taken up by the proposed irrigation project main canal alignment. Those shrub lands are usually communal properties as well as the owners are direct beneficiaries of the project and so long as the project is primarily for serving the local community, there will be no direct compensation for loss of cultivated land and shrub land. The farmers were also interested to forgone their pieces of land touched by the canals without any compensation.

▪ **Impacts on sites of cultural and religious values**

The construction of the proposed irrigation project will not cause adverse impact on cultural, religious and other environmentally sensitive areas.

▪ **Impacts on public health and sanitation**

Even if the size of the project is small; experiences from other construction sites indicate that a large work force dominated by single men will attract women to the area for several purposes. This can lead to the aggravation of the prevalence of sexually transmitted diseases (STDs). In this case, if the contractor employees migrant daily laborers, the spread of sexually transmitted diseases will be high in the project area.

Some of the mitigation measures for impacts associated with health and sanitation following the construction of the project include:

- Employ the local people for labor work purpose
- Provision of health education including sex education

B. Environmental Impacts Forecast For Operation Phase and their Mitigation Measures

❖ Impacts on Biophysical Environment

▪ *Impacts on Soil resources*

This project may cause soil degradation particularly if the irrigation operations are non-conservation base. Acidification, organic depletion, compaction, nutrient depletion, chemical contamination, and erosion are all forms of soil degradation that can be brought about by inappropriate land use practices. As soil degradation develops, land productivity starts decline and in extreme cases it can stop nearly all plant growth.

As it was mentioned in the baseline condition of the project area (land degradation part), soil losses and land degradation were not a problem in the catchment since the population pressure is less as a result the catchment is still densely covered by forest. During the operation of this project, soil loss and land degradation problems will be aggravated at the command area. As it was indicated in the baseline condition, top (plough layer) of the soil has showed the indication of acidic soils. This problem would likely to be aggravated during irrigation operation.

Mitigation measures effective in reducing adverse impacts on soil resources are:

- Replanting right species of trees, shrubs and grasses in a right time on disturbed areas such as canals and cut off drains. It is proposed to develop plantation on both sides of the main canal. Thus, nursery should be developed one year ahead of the actual schedule of the plantation. Grass species and trees/shrubs up to a height 3m should be planted where canal passes through cultivated land.
- Biological and physical conservation measures. For the time being, naturally well treated. However, this should be kept sustainably. This will be achieved through local community participation and environmental protection committee.
- To reduce soil acidity, reduce the addition of artificial chemicals and adding alkaline substances like lime.
- Planting leguminous plants to improve soil structures and nutrient.
- To reduce stream bank erosion, leaving at least 20m buffer zones of undisturbed

vegetation between the site of the project (command area) and water body (River bank of Kopra).

▪ **Impacts on water resources**

During the operation of the project, the command area may have non-point sources of pollutants including nutrients (particularly nitrogen and phosphorous), sediment and pesticides on water sources. These crop farm pollutants may inter to the surface water through direct surface run off or through seepage to ground water. Moreover, sediments produced by farming induced erosion can often transport excess agricultural chemicals resulting in contaminated run off, which in turn affects aquatic habitat. The main source of excess nutrients in surface water from non-point sources of this project expected to be chemical fertilizers. Pesticides used for pest control in agricultural operations can also contaminate surface as well as ground water resources

12- CONCLUSION

This study was carried out to assess Environmental Impact Assessment and their mitigation measures. The proposed project of Kopra Medium Irrigation Project weir irrigation is predicted to bring both beneficial and adverse impacts on physical, biological and socio-cultural environment. Although the implementation of Kopra Medium Irrigation Project weir irrigation project has many benefits, obviously it will also bring a number of adverse impacts to the physical, biological and socio-cultural environment.

EIA certainly has a crucial role to play in addressing environmental issues surrounding project development and especially irrigation projects. The integration of environment into development planning is the most important tool in achieving sustainable development. Environmental protection and economic development must thus be dealt with in an integrated manner. EIA process is necessary in providing an anticipatory and preventive mechanism for environmental management and protection in any development. Several developing countries are still at the infancy stage of operationalization of their EIA processes. The need for capacity building for quality EIA is also eminent in these countries. Despite these small setbacks, environmental impact assessment has become an integral part of project planning one, which is continually being improved for posterity

Generally, the potential positive and negative impacts as well as the environmental mitigation measures of the irrigation project depend on: (a) nature and types of the proposed irrigation project, (b) environmental baseline condition of the project area i.e. the physical, biological and socio-cultural environment, (c) environmental health condition of the project area, (d) the technological option adopted, (e) the legal, institutional and policy framework, and (f) the environmental condition of the downstream.

After assessing the environmental impact, the project is found to be environmentally non degradable, technically appropriate, economically viable and socially acceptable.

Ground Water Use pattern

Groundwater is the water present beneath Earth's surface in soil pore spaces and in the fractures of rock formations. It is stored in and moves slowly through geologic formations of soil, sand and rocks called aquifers. The major land use type around the NW-1 is agriculture. The NW-1 area has a vast reservoir of groundwater, replenished every year at a very high rate. The conjunctive use of groundwater for irrigation, even within the canal command areas, not only ensures steady supply to the cultivated fields on time but also helps reduce water logging and Salinization due to consequent downward movement of subsurface moisture.

Rainfall is the sole source of natural recharge to ground water regime and rainfall pattern has an important impact on groundwater level in the pre-latic aquifer. Rainfall in the state occurs during south-west monsoon season (mid June to September) and sometimes during winter (November to February). Most of the rainfall (more than 90%) occurs during the south-west monsoon season

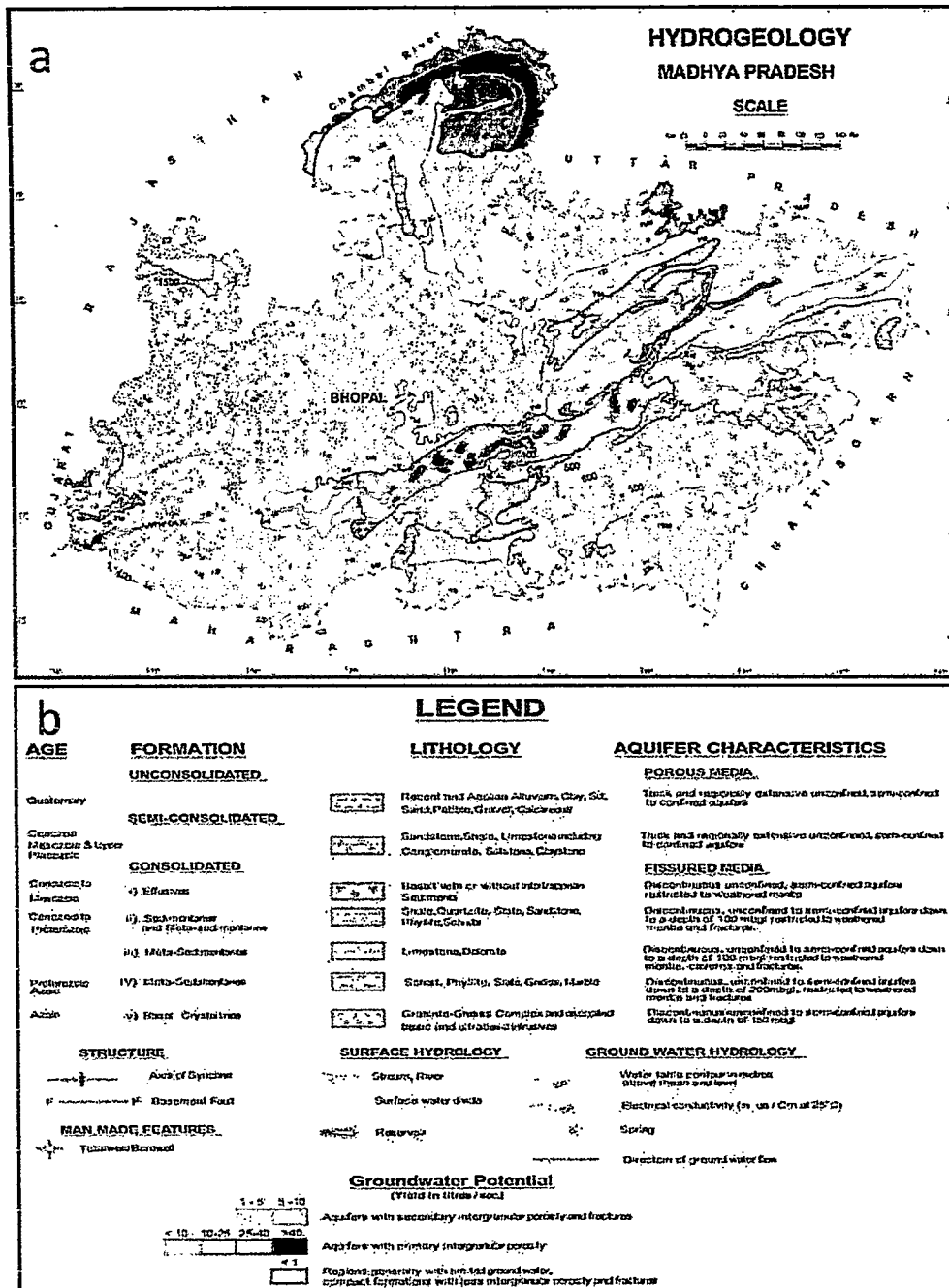


Figure Hydro geological Map of Madhya Pradesh

13- Flow Discharges

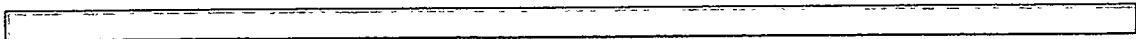
The South Asian monsoon system largely defines the climate and hydrology of the Sonar River. The monsoon brings heavy rains three months a year therefore, the Sonar River is characterized by high flows during the monsoon season, approximately from July until October, and low flows during the rest of the year. April and May are in general, the lowest flow months with negligible rainfall and a low base flow into the system. Due to the climate variability the timing of the onset of the monsoon period is uncertain. Climate change predictions suggest that for the Rivers Sonar the monsoon discharges will increase in the future (ref).

14- Culvert

A small bridge may be of 3 to 4 spans with the length of span not more than 3 m is known as culvert. In case of highway where culverts are constructed to cross the small distributaries etc., the span length may be about 4.5 m. Similarly, in case of railway track the maximum span length can be about 6 m and should not exceed this limit. Culvert and bridge design involve safely passing floods and debris while minimizing instability and maintenance requirements. Culverts and bridges also have the potential to reduce wildlife-vehicle conflicts (WVC) by facilitating safe passage of wildlife beneath roadways. design culvert structure of canal or water supply passing through wild life area for reducing the accidental death of wildlife new babies.



Figure- Design culvert structure of canal or water supply passing through wild life area



15- DESIGN FLOOD STUDIES:-

The total area drained by Kopra river up to KOPRA MEDIUM PROJECT is 231.80 sq.km. The catchment area in the upper reaches is hilly and forestland with barren high lands and in the lower reaches area rich cultural land is available as per topographical map.

Design Flood Studies for Reservoir Estimation of design floods is an essential pre-requisite for rational and safe design of major hydraulic structures. According to IS-11223 (1985) selection of design flood is governed by the gross storage and hydraulic height of dam. Considering the proposed storage and height particulars of these structures, the following design floods are selected for design of the spillway and checking safety of dam against overtopping:

KOPRA MEDIUM PROJECT: 1597.69 Cumecs Standard Project Flood (SPF)

Database and Methodology

In the absence of data on observed flood hydrographs for rivers, synthetic unit hydrographs are derived making use of the relationships between unit hydrographs parameters and the physical parameters as given in CWC Flood Estimation Report for Betwa Sub- zone 1 (C). The estimates of probable maximum and standard project storms were obtained from CWC Dam Safety Assurance and Rehabilitation Project: Generalized Preparation of New PMP Atlas Ganga River Basin Volume I: Main Report (May 2013).

Physiographic Parameters For the design flood review studies, the Physiographic Parameters of the project catchment have been estimated by processing SRTM_52_08 digital elevation model data using Arc GIS.

Physiographic and UH Parameters for Banda Dam Project

Detail	Sub Basin Name
	KEN (Sonar- Kopra)
Physiographic parameters	
Catchment Area (Km ²)	231.80 Km ²

Longest Flow Path L (km)	36.95 km
Censorial Flow Path, Lc (Km)	---- Km
Equivalent Stream Slope, S (m/Km)	1.70 m/Km
UH Parameters	
Tp (hour)	6.5 hour
Qp (cumec/sq. km)	0.29 cumec/sq. km
W50(hour)	7.20 hour
W75(hour)	1.36 hour
WR50(hour)	2.43 hour
WR75(hour)	1.36 hour
TB (hour)	27 hour
Tm (hour)	07 hour
Qp (cumec)	67.83 cumec

Estimated of PMS (Probable maximum storm)

The value of probable maximum storm rainfall depths were derived from data contained in the Generalized PMP ATLAS in respect of Betwa Basin. These are given in below:

Generalised PMP Values for Project Catchments

Dam Site	Catchment Area, km ²	1 Day PMP Rainfall mm
KOPRA MEDIUM PROJECT	231.89	452.06

Design Flood Studies and Results

Total study is based on the Data obtained from New PMP ATLAS G BETWA River Basin Volume I: Main Report (May 2023). The project was designed for design flood at ther Dam Sites as 1597.69 cumec for KOPRA MEDIUM PROJECT Reservoir.

15-FLOOD CONTROL AND DAMAGE:-

a. The structure being Dam, no flood cushion has been provided in the proposed project with storage mainly allowed up to banks only and the waterway area has been kept wide enough to pass a SPF of 1597.69 cumec. Since topography of area is having mild slopes, drainage problem is not expected.

16- RESERVOIR & POWER :-

1.1.1. The gross storage capacity and principal levels of KOPRA MEDIUM PROJECT as summarized below:

Gross capacity:	48.43 MCM.
Live capacity:	41.24 MCM.
Dead Capacity:	07.19 MCM.
Top level of Dam:	406.80 mt.
Top level of gates of Dam:	403.00 mt.
Crest level of Dam:	397.00 mt.
Riverbed level:	383.99 mt.

Total water available at KOPRA MEDIUM PROJECT for Utilization:

= Live capacity
= 41.24 MCM

POWER: Total area irrigated by pressurized pipe canal system is 9990 Ha, which requires one pump house to lift from Basin and thus requires total power of 1.92 MW.

SUBMERGENCE DETAILS:

The water spread area at FRL of 462.90 M is 453.04 ha. The breakup of affected land is as under:

S.No	Particulars	Approval in 1 st Revision	
1	No. of Villages Submerged	13	
3	Total Area in Hectare	1014.00 Ha.	

(a)	Private Land	734.00 Ha.	
(b)	Government / Revenue Land	00.00 Ha.	
(c)	Forest Land	280.00 Ha.	

Thus, the submergence percentage is 7.35% for cultivated land to annual irrigation area. The total submergence percentage is 10.15% to annual irrigation area. Suitable provision has been made for private culturable & uncultivable land compensation. The compensation of land and Houses are calculated as per collector guideline 2017-18. The average cost of irrigated & Unirrigated land are respectively 5.70 Lakh per Ha. And 2.85 Lakh per Ha. Provision of 15 lakh per Ha, for forestland is taken. All the details are enclosed in the detailed estimate of B-Land.

(iv) AFFECTED POPULATION :

Due to construction of KOPRA MEDIUM PROJECT, 13 villages namely (i) Bandarchua, (ii) Chhirari, (iii) Hinoti, (iv) Motipar, (v) Madkheda, (vi) Khaikheda, (vii) Samnapur Barkheri, (viii) Hardua Baleh, (ix) Ghughri, (x) Khurd, (xi) Bhohari, (xii) Hardua Rehli, (xiii) Salaiya, Simariya Harakheda. Families affected in all such villages are approximately 897 Nos. The one village Badarchua being fully submerged another village Hardua Baleh being partially under submergence, the affected population is to be displace and rehabited. The Suitable provision for R&R of affecting families has been made & compensation for the land being submerged has been made as per provision of Resettlement & Rehabilitation act 2013. There is no observed data of silt rate in river Kopra river Dam site is available. Hence as per present practice, a silt rate of 0.75 Acre Ft/Sq.mile/ Year is considered to get the silt load to be deposited during the life of reservoir. Assuming the life of reservoir as 100 years and taking the independent C.A. of project as 200.08 sq.km the silt load comes out to be 7.14 MCM.

PRINCIPAL LEVELS OF THE DAM:-

1.	Top Level of Dam:	406.80 mt.
2.	Top level of Gates of Dam:	403.00 mt.
3.	Crest Level of Dam:	397.00 mt.
4.	River Bed Level:	383.99 mt.
5.	Top width of Dam:	6.00 mt.
6.	Height of Dam:	23.81 mt.
7.	Gross Storage:	48.43 MCM.
8.	Live Storage:	41.24 MCM.
9.	Dead Storage:	7.19 MCM.
10.	Total length of Dam:	1620.00 mt
11.	No. of Gates:	5 Nos & 1 Standby (11mt x6.00m)

a. AREA CAPACITY TABLE :-

Area Capacity Table2							
KOPARA MEDIUM PROJECT SAGAR (MP)							
$H/3(A1+A2+\sqrt{A1 \times A2})$							
S.NO.	RL IN M.	Contour Interval	Contour Area in Sqm.	Cap. In cum	Cumulative Capacity (in cum)	Capacity (in Mcum)	Remarks
1.00	384.25	0.00	0.00	0.00	0.00	0.00	
2.00	384.50	0.25	78.95	6.58	6.58	0.00	
3.00	385.00	0.50	633.21	155.96	162.54	0.00	
4.00	385.50	0.50	1783.82	579.97	742.51	0.00	
5.00	386.00	0.50	3030.29	1189.85	1932.36	0.00	
6.00	386.50	0.50	7285.23	2502.35	4434.70	0.00	
7.00	387.00	0.50	9351.52	4148.45	8583.16	0.01	
8.00	387.50	0.50	32994.68	9985.30	18568.46	0.02	

(3D)

9.00	388.00	0.50	39866.69	18188.28	36756.73	0.04	
10.00	388.50	0.50	102011.41	34275.00	71031.74	0.07	
11.00	389.00	0.50	121030.92	55692.88	126724.62	0.13	
12.00	389.50	0.50	139823.91	65157.22	191881.84	0.19	
13.00	390.00	0.50	157928.89	74392.29	266274.13	0.27	
14.00	390.50	0.50	231271.87	96719.10	362993.23	0.36	
15.00	391.00	0.50	293945.17	130991.53	493984.76	0.49	
16.00	391.50	0.50	423052.33	178272.73	672257.49	0.67	
17.00	392.00	0.50	558550.45	244617.62	916875.11	0.92	
18.00	392.50	0.50	713992.84	317341.71	1234216.82	1.23	
19.00	393.00	0.50	906201.16	404095.04	1638311.86	1.64	
20.00	393.50	0.50	1067395.80	492849.75	2131161.61	2.13	
21.00	394.00	0.50	1465397.45	630576.12	2761737.73	2.76	
22.00	394.50	0.50	1644697.29	777092.63	3538830.36	3.54	
23.00	395.00	0.50	1857710.26	875061.59	4413891.95	4.41	
24.00	395.50	0.50	2139678.61	998517.45	5412409.40	5.41	
25.00	396.00	0.50	2419466.73	1139070.23	6551479.63	6.55	
26.00	396.25					7.19	LSL
27.00	396.50	0.50	2733615.58	1287471.85	7838951.49	7.84	
28.00	397.00	0.50	3107779.46	1459349.12	9298300.61	9.30	
29.00	397.50	0.50	3477649.96	1645491.10	10943791.71	10.94	
30.00	398.00	0.50	4157504.64	1906261.29	12850053.00	12.85	
31.00	398.50	0.50	4696137.34	2212043.85	15062096.85	15.06	
32.00	399.00	0.50	5211525.237	2475797.80	17537894.65	17.54	
33.00	399.50	0.50	5765249.592	2743029.10	20280923.76	20.28	
34.00	400.00	0.50	6371056.917	3032815.84	23313739.60	23.31	
35.00	400.50	0.50	7306722.553	3416774.79	26730514.39	26.73	
36.00	401.00	0.50	7805784.092	3777439.78	30507954.18	30.51	
37.00	401.50	0.50	8355211.212	4039470.31	34547424.49	34.55	
38.00	402.00	0.50	8972993.093	4331133.07	38878557.56	38.88	
39.00	402.50	0.50	9544431.443	4628621.20	43507178.76	43.51	
40.00	403.00	0.50	10141643.27	4920763.61	48427942.37	48.43	FTL

(v) IRRIGATION PLANNING:

a. The scheme will irrigate the area of the Wheat OLV-3100 Ha, Gram 6890 Ha. Total Rabi of 9990 Ha and Kharif 0 ha and so Annual Irrigation as 9990 Ha. Intensity as 100%.

11. COMMAND AREA

S No.	Type of Crop	Name of Crop	Area (Ha)	Intensity of Irrigation (% of CCA)	Method of Irrigation
2	Rabi	Wheat OLV	3100	31.05%	By Gravity Pressure/ Sprinkler
3	Rabi	Gram	6890	68.97%	By Gravity Pressure/ Sprinkler
	Grand Total		9990	100.00%	

- (i) Gross Command Area 11989 Ha
- (ii) Irrigable Command Area 9990 Ha
- (iii) Proposed Rabi Area 9990 Ha.
- (iv) Proposed Kharif Area 0 Ha
- (v) Annual Irrigation 9990 Ha

(vi) CANAL SYSTEM:

It consists of a pressurized pipe system of approx 60.00 km. to irrigate 9990 ha area of Sagar district.

Climate of Command Area

- (a) Average annual rainfall (weighted) - 1100 mm
- (b) Seasonal distribution (i) Monsoon
- (c) Temperature - 35⁰ C.
- (d) Humidity - 17 %
- (d) Evapo-transpiration (annual)

(vii) ESTIMATE:

The estimate prepared based on U.C.S.R. of M.P. Water Resources Department in force since 01.09.2017 Total cost works out to Rs 292.37 crore, 12 % GST & 3% Establishment charges has been included in the estimates.

Unit-I:

The cost of head works of KOPRA MEDIUM PROJECT including spillway, outlet works, gates, energy dissipation devices, regulator including intake structures, Pump Houses, cost of pumps, motors & electromechanical work, land acquisition & construction of the all components, etc. have been worked out under this head and estimated as Rs. 191.36 crore at USR - 2017 (including 12% GST & 3% Establishment charges)

1. FLOOD CONTROL

The dam proposed on Kopra River near village Apchand (Resi). Standard Project flood (SPF) at dam site is comes out to be 1596.69 Cumecs. Five no. of gates of 11M X 6.00 M has been provided to pass the flood, which is sufficient for safe operation.

CONSTRUCTION PROGRAMME AND MAN POWER AND PLANT PLANNING

The stipulated time of completion of the project is 36 months. The detail construction programmer will be prepared during fixation of the agency.

2. ENVIRONMENT, ECOLOGY AND FOREST ASPECT OF THE PROJECT

The water resources department Govt. of M.P. shall obtain all required statutory clearances from the ministry of Environment and Forest and ministry of Social Justice and empowerment like environmental clearances, and for rehabilitation and resettlement plan and all other clearances have been made in the project estimates.

3. ESTIMATE:

The estimate prepared based on U.C.S.R. of M.P. Water Resources Department in force since 01.09.2017 Total cost works out to Rs 292.37 crore, 12 % GST & 3% Establishment charges has been included in the estimates.

Unit-I:

The cost of head works of KOPRA MEDIUM PROJECT including spillway, outlet works, gates, energy dissipation devices, regulator including intake structures, Pump Houses, cost of pumps, motors & electromechanical work, land acquisition & construction of the all components, etc. have been worked out under this head and estimated as **Rs. 191.36 crore** at USR - 2017 (including 12% GST & 3% Establishment charges)

Unit-II:

The cost of proposed main telescopic pipe canal network, piped distribution network, micro irrigation works inclusive of all pucca works, drainage works etc. has been worked out and is estimated as **Rs. 101.01 crore** at USR - 2017 price level. (Including 12% GST & 3% Establishment charges)

4. FINANCIAL RESOURCES

Total cost of the scheme is worked out to Rs 292.37 crore for 9990 hectare CCA irrigation area. The cost per hectare works out to Rs. 2.93 Lakh per ha.

5. REVENUES

Irrigation : The water rates for per hectare of irrigation is Rs.350.00 and irrigation Cess is Rs.25.00 per Ha for rabi irrigation, The total Rabi irrigation of the project after completion will be 9990.00 Ha.

6. BENEFIT COST RATIO

B.C. Ratio of the project is - 2.17

7. FUTURE UTILISATION OF FACILITIES CREATED.

Depending on the schedule of construction various facilities and assets ,as required in the project, will be developed in different phases .During the planning stage a judicious planning will be done as per the requirements so as to avoid wasteful expenditure and thus maximum utilization of the resources.

8. RECOMMENDATION:

The KOPRA MEDIUM PROJECT is located in Sagar tehsil of Sagar district. The Dam is proposed on Kopra river which is tributary of Sonar River of Ken sub basin. The river originates from Kishanpura village of Sagar Tehsil of Sagar District and after traversing a distance of 37 km, dam site is located. The water available at proposed site is about 52.00 Mcm out of which the upstream ongoing minor Khatola Complex Tank intercepts 9.011 Mcm. Net available 75% yield $52.00 - 9.011 = 42.989$ Mcm is being fully stored in KOPRA MEDIUM PROJECT. Therefore full utilization of available water is being made through this project.

The proposed command covers villages of Rehli & Garhakota Tehsil of Rehli assembly constituency Sagar District. The cultivators of the command area, presently facing acute shortage of water for irrigation and their daily need. They have to depend on the monsoon and also the topography of the area is almost hilly and undulated so that there is no other source of irrigation facility because the average level of cultivable area is much higher than the Sonar river flow level and ground water is insufficient to irrigate the command area. This project shall provide a modern method of irrigation by means of sprinkler and drip irrigation by storing water in the Dam upto a suitable level and then lifting the water to a highest available ground level so that the irrigation through pressurized pipe can be provided to the cultivators. It will generate employment during the construction period. The project also includes provision of water for domestic use.

17-DISASTERMANAGEMENT

While occurrence of natural disaster cannot be prevented altogether, their adverse impact can be reduced substantially by undertaking various preparedness and mitigation measures. Minimizing the loss of precious human life is the first priority in disaster management. It is important therefore, to prepare for such a crisis. It has been realized that preparedness is essential for proper and timely execution of post-disaster operations.

This chapter discusses various aspects concerning preparedness to face disasters with a view to minimizing losses to men and material besides measures to mitigate the impact of

disaster. It attempts to focus the various issues specially pertaining to disasters like fire and breakdown of the dam, unprecedented floods and other hazards identified under disaster assessment, besides recommending necessary measures. The study stresses the need for all efforts in this direction. In the following pages we shall look in greater detail at some of the measures and rationale underlying their adoption in disaster situations. Before taking up the risk of various disasters likely in Ken-Betwa Link Project Phase-I area and their management an attempt has been made in this chapter to describe the distinction between disaster prevention and preparedness.

Planners and decision makers have recognized a need for better understanding the social consequence of projects, programs and policies. An attempt is also made in this chapter to undertake Social Impact Assessment of the project. An attempt is also made in this Chapter to narrate the process of Public Consultation and document the outcome of such Public Consultation. Thus, this Chapter is divided into three sections. They are as follows:

- ❖ Risk Assessment and Disaster Management Plan;
- ❖ Social Impact Assessment of the Project and R&R Action Plan; and
- ❖ Process and Outcome of Public Consultation

1- RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

In this section an attempt is made to give details regarding disaster preparedness and prevention, identification of various types of disaster likely to occur in the project area and prepare a disaster management plan for preparedness and mitigation of after effects of a disaster.

2 Disaster Preparedness and Prevention

The UN Disaster Relief Office (UNDRO) uses the following definition of the two terms viz., disaster preparedness and prevention.

“Disaster Preparedness may be described as measures to organize and facilitate timely and effective response, relief, and rehabilitation operations in cases of disaster. Measures of

preparedness include, among others, setting up disaster relief machinery, formulation of emergency plans, training of specific groups with responsibility for response and relief, stockpiling supplies and earmarking funds for relief operations. Prevention and mitigation are used as synonyms. Mitigation means to reduce the severity of the human and material damage caused by the disaster. Prevention is to ensure the human action or natural phenomena do not result in disaster and emergence. The objective of disaster prevention is to avoid such situations as far as possible".

In general, therefore, prevention is concerned with long-term aspects, policies, and programs to prevent or eliminate the occurrence of disasters. Preparedness, on the other hand, covers the short-term aspects and is designed to include the action necessary during the approach of a possible disaster, during the existence of a disaster situation and in the ensuing period devoted to relief and rehabilitation. One is concerned with risk elimination, the other with risk mitigation. Disaster Prevention depends on the application of science and technology to prevent disasters whereas preparedness is concerned and conceived of in short-term, organizational and technical terms. From a practical standpoint the distinction is very important; for, the essential logistical and organizational measures that constitute disaster preparedness can be undertaken in a relatively short span of time. Prevention measures often involve weighty decisions and measures of public policy such as resettlement of whole communities, or legislation on zoning.

From the point of view of disaster preparedness, it is useful to classify disasters according to their predictability. The more predictable a disaster the easier it is to plan safety and precautionary measures. Some disasters are not predictable at all. Earthquakes and tornadoes fall in this category. The best that can be done in such circumstances is to arrange rescue, relief, and rehabilitation measures speedily following their occurrence. Cyclones can be predicted with a reasonable degree of accuracy about 24 to 48 hours before they hit the coast.

A major constraint in relief operations is finance. Since the Second Finance Commission, every state has been annually earmarked a specific amount for funds known as the 'Margin Money' for meeting the immediate requirements of relief. The Tenth Finance Commission recommends the constitution of a Calamity Relief Funds (CRF), with contribution of Centre and States in the proportion of 75 and 25 per cent respectively. The Commission also suggested that in addition to CILFs for states, on National Fund for Calamity Relief (NFCR) should be created to which the centre and states would subscribe and which will be managed by a national calamity relief

8.2.1 Likely Disasters in Project Area

The main hazards in the Kopra Medium Irrigation Project Phase-I area may occur due to dam break and catching of fires because of explosions, chemicals or gasses. The objective of the major emergency or disaster management plan is to make use of the combined resources of the project proponents and the outside services to achieve the following tasks:

- ☐ Effect the rescue and medical treatment of casualties;
- ☐ Safeguard other people;
- ☐ Minimize damage to property and the environment;
- ☐ Initially contain and ultimately bring the incident under control;
- ☐ Identify any casualties;
- ☐ Provide the need of relatives ;
- ☐ Provide authoritative information to the news media;
- ☐ Secure the safe rehabilitation of affected area;
- ☐ Preserve relevant records and equipment for the subsequent enquiry into the cause & circumstances of the emergency.

This likely disasters and necessary preventive measures to control disasters in the project area are discussed in the following paragraphs.



8.2.2 Dam Break Analysis and Disaster Management

Dam break analysis has been prepared based on the report provided by the National Institute of Hydrology, Roorkee. Dam failures are often caused by overtopping of the dam due to inadequate spillway capacity during large inflow to the reservoir from heavy precipitation generated runoff. Dam failures may also be caused by seepage or piping through the dam or along internal conduits, slope embankment slides, earthquake damage and liquefaction of earthen dams from earthquake and land slide generated waves in the reservoir. Usually the response time available for warning is much shorter than for precipitation-runoff floods. The protection and evacuation of the public from the consequences of dam failures has taken an increasing importance as population has concentrated in areas vulnerable to dam break disasters.

Occurrence of a series of dam failures has increasingly focused attention of scientific workers on the need for developing generally applicable models and methods to evaluate flash floods due to dam failure and for routing them through downstream areas, susceptible to heavy losses, so that potential hazards might be evaluated. Using these methods, inundated areas, flow depths and flow velocities can be estimated for different hypothetical dam failure situations. With the help of such studies, it could be possible to issue warnings to the downstream public and prepare strategies for disaster management when there is a failure of dam. The main difficulty in using such mathematical models is the failure description adopted in the model. Under these circumstances, a suitable assumption with regard to the adjustment of actual failure mode to suit the model failure mode is necessary.

Table 8.1: Summary of Dam Break Flood Characteristics

Location (mileage)	Maximum discharge (cumec)	Time of Maximum Discharge after failure of dam (hrs)	Maximum water surface elevation (m)
Dam site (11.4 km)	85415	0.00	288.96
25.98 km d/s of dam	76958	2.50	216.11
At Madla 31.49 km	76355	3.75	210.03
42.95 km d/s of dam	75693	5.55	202.91
AT Banda 157 km	75596	28.35	82.27
Source: Computed on the basis of data from NHI Study			

The computed maximum water surface elevations in all the cases closely followed the trend of river bed profile. The water surface elevations reached in Case 1 were the highest of all the three cases, as it represented the worst case of dam break flood. The water surface elevations reached in PMF wave propagation were the lowest of all at all the cross-sections in the whole reach.

A qualitative analysis for river morphology suggested that the river reach is of hard bed-rock not amenable to degradation due to short-term high river flows. Furthermore, since the river in most part of the reach is confined by stable banks, its banks are not amenable to shifting to exhibit meandering. The input data used for the three cases under study is given Annexure VIII.1.

8.2.3.1 Inundation and Flood Damage (vulnerability) Mapping

A chance of the river meandering due to dam break is not there as the river is confined by stable banks. At 25.98 km downstream side of the dam the maximum water elevation is 216.11 (m) which occurs in a time of 2.50 hrs. About 77 villages need evacuation within 30 minutes after the dam break. Detailed list of Villages situated along the Right Bank Downstream of Ken Project in Proposed Inundation Area Based on Dam Break Analysis is presented in Table 8.2.

8.2.3 Disaster Management Plan

The emergency planning for dam break scenario consists of 'hardware' aspects such as provision of evacuation pathways, setting up on alarms and warning systems, establishing communication systems besides the 'software' aspects concerning human behavior, procedures to be followed, roles and responsibilities, leadership, guidance and provision of information. Both hardware and software aspects need to be integrated into the design of emergency management. Following guidelines are provided for preparing a contingency plan or disaster management plan in the event of dam failure. It may be noted that this plan

would serve as a reference document consisting of salient information indicating the actions to be taken at the time of disaster and hence, it has to be made as comprehensive as possible and it needs to be tested and updated periodically. The suggested format of the disaster management plan is outlined in this chapter.

8.2.4.1 Purpose of the Plan

In order to delineate the tasks and needed response, it is essential to identify and characterize the vulnerable zones through inundation maps, the nature of damage potential and the characteristics of populations and structures on the downstream areas. Based on the characteristics of each hazard zone, the needed response could be delineated in the Disaster Management Plan. Hence the objectives of the plan could be provided for:

- Timely warning and alerts
- Assess the damage potential
- Delineate emergency organization and first response / action teams
- Define roles and responsibilities
- Delineate procedures for mitigation and control of incident
- Delineate access routes and safe locations
- Delineate emergency action
- Training the personnel
- Providing public information

8.2.4 Emergency Response Organization

The Emergency Response organization must have a Chief Emergency Coordinator (CEC), who will be overall in-charge of planning, execution and coordination of all activities of Disaster Management Plan. His alternate member is also to be notified for

Chief Emergency Coordinator is to be assisted by an Emergency Planning Group (EPG) constituted for the purpose of decision making and planning the emergency effort under the plan. This group involves all the Heads of Departments of Irrigation, Revenue, Health, Police and Public representative. To assist this group with technical information and advice, and Advisory Team consisting of various experts on dam safety and related issues need to be constituted.

A local level, preferably a Tehsil/settlement level, Emergency Action Groups (EAGs) need to be constituted for pooling, mobilizing and responding to the inundation situations. These groups essentially should consists of a local volunteer, engineering support group, rescue/evacuation team, medical / health volunteer, a police representative.

The CEC needs to report and coordinate with District collector on the disaster situation and should seek any further assistance / help from district Emergency Authorities. Alternate persons for all the constituents of groups are necessarily be identified and included in the plan.

a) Functions of Chief Emergency Coordinator

The following functions are delineated for the Chief Emergence Coordinator. He is expected to take various emergency decisions by convening the immediate meeting of Emergency Planning Group. Together, they are responsible for the following:

- Formulation and implementation of the plan
- Guidance/decision on matters of basic policy
- Activation of the emergency control centre and convening the emergency meeting
- Declaring the emergency zones with the help of technical personnel and experts
- Control on emergency operational preparedness of emergency machinery
- Holding periodic mock/ training exercises to ensure optimum preparedness at operational levels
- Development and updating hazard scenarios and cascading effects from time to time
- Mobilizing organizations, financial and human resources for the plan
- Liaison with external/ Govt. agencies and assessment of whether any public assistance is required
- Furnishing information on the incident to District, State and National level authorities and if needed competent bodies may be called for assistance
- Liaison with press/media, to report the emergency
- Declaring rehabilitation centers in case of evacuation, if called for

Monitoring post emergency situation in terms of health care, first aid,

b) Functions of Emergency Action Group (EAG)

Emergency Action Group carries out frontline activities at the time of disaster. Preferably as many local teams as possible are formulated for the purpose. The main activities of EAG are:

- Rush to the emergency zone;
- Make systematic assessment of hazard;
- Liaise with Chief Emergency Coordinator;
- Carryout evacuation, if necessary;
- Carryout emergency actions Extend relief, first aid, human assistance; and
- Organize rehabilitation centers

8.2.5.1 Emergency Response System

The overall emergency response system needs to integrate various functional sub- systems essentially designed to generate speedy response action in terms of warnings, communications, fire fighting, medical and first aid. It is essential to delineate these systems and plan their locations and operating procedures, besides training the personnel well in advance before any emergency. Following response systems are needed for the purpose of disaster management plan.

a) Emergency Control Centre (ECC)

Emergency Control Centre will be the focal point in case of an emergency from where the operations to handle the emergency the directed and coordinated. The centre will have to be equipped with adequate resources to receive and transmit information and directions from the Chief Emergency Coordinator. Besides equipping the centre, prior arrangements should be made so as to ensure that the centre would start activating other systems immediately, once the hazard is declared.

An emergency control centre should therefore contain a well-designed communication system consisting of:

- At least two external telephones (one incoming and the other one out going
- fitted with simultaneous/selective broadcasting systems) with a PABX.
- Wireless/Radio equipment (VHF / walkie talkie/ pager/mobile)
- Inundation/ vulnerability maps indicating risk zones, assembly points, alternate
- evacuation routes, safe areas, rehabilitation centres, etc
- Telephone directory of emergency response system
- List of all emergency equipment and personnel for evacuation, personnel
- List of ambulances, base medical facilities, hospitals, rehabilitation centres, etc
- Reference books/chemical dossiers
- Copies of Disaster management Plan

b) Communication System

An efficient and reliable communication system is required for the success of disaster management plan. The proposed communication systems must essentially integrate the following into an Emergency Communication System:

- An Alert System
- A warning or control system
- An Emergency communication system

Emergency Alert System:

An emergency alert is to be provided to the public immediately after sensing the hazard, based on the first response (FR) received from any source. Chief Emergency Coordinator should activate emergency Control Centre, and the Emergency alert may be disseminated. Initially, attempts should be made to control or localize the event in the first instance by looking into all technical aspects of the hazard and if necessary activate the needed

emergency action groups to localize the event as a first response measure. If it is not possible to control the emergency, on-site emergency be declared and response action be initiated in accordance with the plan.

Emergency Warning and Control System:

Based on the report of Emergency Alert, the emergency is to be notified. If the Chief Emergency Coordinator determines that the dam break is inevitable and affects health emergency plan.

The medical response plan has to cater for immediate pooling of all available medical resources and provide emergency medical treatment to the victims of the incident. A coordinated utilization of all available local medical resources in the incident areas as well as the additional resources should be mobilized under the overall charge of the one-site plan.

c) Training the Personnel

A Disaster Management Plan, no matter how carefully prepared, cannot be effective unless accompanied by training program that include periodic exercises and drills. The objectives of training in emergency preparedness are related to the following:

- Familiarize personnel with the content of the plan and its manner of
- implementation
- Train specific response personnel and new personnel in particular duties requiring special skills.
- Introduce personnel to new equipment, techniques, and concepts of
- operation
- Keep personnel to new equipment, techniques, and concepts of operation
- Test the preparedness of response personnel
- Test the validity, effectiveness, timing, and content of the plan and
- Implementing procedures
- Test emergency equipment
- Update and modify the plan on the basis of the experience acquired through exercises and drills



- Maintain cooperative capability within first response team and with other response/mutual aid and agencies
- Maintain good emergency response capability

d) *Training Schemes for first Response Team*

Every member of first response team needs initial training followed by periodic refresher courses. Members of emergency response organization would also benefit from this training, improve communication procedures, and provide an opportunity for adversely the public in downstream areas; he triggers the Emergency control centre and activates emergency response under on-site plan. He notifies accordingly with District Collector.

Thus in the process of notification, the concerned regulatory authorities are alerted and public are to be alerted by appropriate warning systems such as sirens, alarms and broadcasts.

Each type of emergency has to be given a code for easy identification of the type of emergency as also for notifying and seeking the support from various agencies. Suggested warning systems of sirens are as follows:

Disaster Warning: High pitched continuous wailing siren

All Clear: Long continuous note

These alarms/ sirens should be deployed such that the all hazard zones are covered. Radio, Walkie-talkie and paging system are very supportive and useful for communications during emergency, for which predetermined codes need to be developed.

e) *Emergency Communication System*

Besides developing alert and warning systems, emergency communication systems need to be established for effective communications within the identified hazard zones.

An up-to-date telephone directory of key personnel concerned with the emergency should be prepared and made available to all concerned. In order to coordinate efficiently various communications, a communication coordinator (skilled telephone operator or PA) may be appointed at the time of emergency for maintaining a log book for the message received

in/out and actions taken. Standby power arrangements and maintenance of communication equipment should be given utmost importance. As a backup to data processing and record keeping of communications, a personal computer may be employed.

f) Health and Medical Response System

Health personnel including doctors, surgeons; hospitals and ambulances have a vital part to play in the event of a major hazard. They form an integral part of medical and responders to become familiar with areas of hazards where they could be called to assist.

8.2.5.2 Mock Drills and Demonstration Exercises

Drills and exercise are vital to emergency preparedness. They involve enactment, under conditions of a mock scenario, of the implementation of the response actions performed during an emergency. Development and conduct of following two types of exercises are recommended for implementation according to the needs:

- Tabletop drills or exercises are useful for orientation purpose, while gathered around a table; the emergency response organization is presented with a situation to be resolved.
- Exercises are more comprehensive and test the entire response organization up to and including communication with all response functionaries.

All the above type of exercises is strongly recommended to be conducted at least once in a year, wherein member of first response team could actively involve. Deficiencies that may be discovered during an exercise of the plan and procedures should be corrected immediately.



8.2.5.3 Public Information System

During a crisis following an accident, the affected people, public and media representatives would like to know about the situation from time to time and the response of the emergency authority to the crisis. It is important to give timely information to the public in order to prevent panic and rumors. The emergency public information could be carried out in three phases.

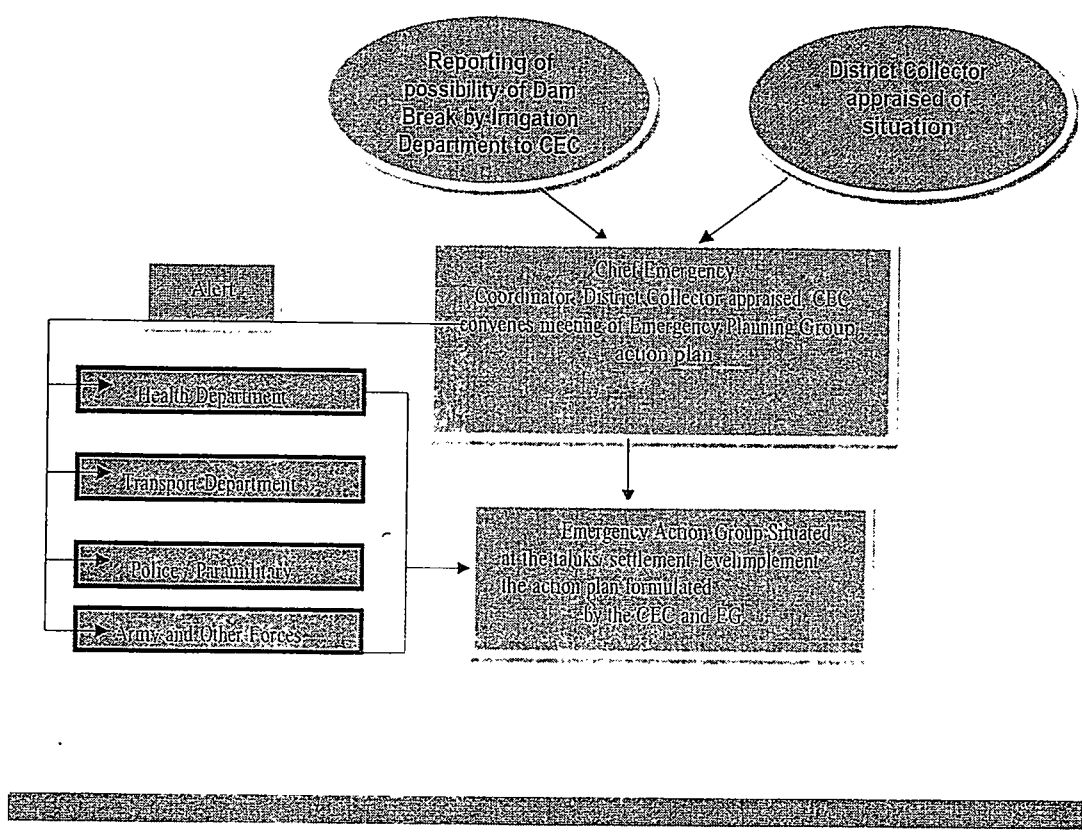
a) Before the Crisis

This will include the safety procedure to be followed during an emergency through posters, talks and mass media in local language. Leaflets containing do's/don'ts should be circulated to educate the affected population

b) During the Crisis

Dissemination of information about the nature of the incident, actions taken and instructions to the public about protective measures to be taken, evacuation, etc. are the important steps during this phase. A notification flow chart is a schematic representation of the hierarchy for notification in an emergency situation, including who is to be notified, by whom and in what priority. A suggestive notification flow chart had been prepared under the disaster management plan and the same is presented as Chart 7.1.

Notification Flowchart for DMP of Kopra Dam



c) *After the crisis*

Attention should be focused on information concerning restoration of essential services, movement/restrictions, etc. Various tasks of the public information system would include: Quick dissemination of emergency instructions to the personnel and public

- To receive all calls from medical public regarding emergency situations and response meticulously
- Obtain current information from the Central Control Room
- Prepare news release
- Brief visitors/ media
- Maintain contact with hospitals and get information about the casualties

8.2.5.4 *Dissemination of Public Information*

Any emergency preparedness plan, however efficiently it is outlined, cannot succeed if the participation of involved community is not planned. To make the local community an active participant, community awareness along with Emergency Preparedness has to be implemented, so that it can foster understanding in the people and help in controlling emergency situations.

The target audience of warning system is public and personnel who are not trained about hazards, warning signals and protective actions. People tend to seek confirmation of the hazard from neighborhood and the media, which takes time. For a public warning system, to be effective, it must serve only as a trigger to initiate preplanned protective action by the public. Through community awareness efforts conducted by local planning committees, the public must be made aware of protective options which include sheltering within their work places and evacuation.

The community should be made aware of the following evacuation.

- The likely hazards that can occur in their vicinity
- The type of warning system employed to alert them, in case of a disaster
- The protective action that should be adapted in different situations of emergency
- Knowledge of the escape routes and assembly points, in case of evacuation from disaster zones.

8.2.5 Other Risks and Management Plan

The power generation units under the project may have the following types risk factors;

- [Turbine Generator Explosion;
- [Fires in Cable Galleries;
- [Transformer Hazards;
- [Sub-station Hazards;
- [Fuel oil handling system Hazards;
- [Storage / Warehouses – hazards

The details of the hazards are explained in the following paragraphs.

Turbine Generator Explosion: H₂ gas explosion is a possible hazard in Generator. However, the Generator is designed to withstand explosion. Seal oil system is also provided for the Generator to prevent the leakage of H₂ gas. And also the H₂ purity is continuously monitored and maintained always above 98%. All the H₂ cylinders are checked for high purity.

Fires in Cable Galleries: The main hazard in cable galleries is fires. To control fires, heat sensors and smoke detectors are provided in the cable galleries to detect the fires at the inception stage itself. Also fire resistance barriers are provided at the cable intersections, intermittent places on cable trays, cable raisers and cable entry points.

Transformer Hazards: To take care of all the possible hazards an adequate protection system are available as per Engineering and in case of failure emulsifier system is provided to quench fires.



Sub-station Hazards: To take care of the problems relating to short circuits, supporting insulators, etc the following precautions are to be taken:

- Plugging of cable gland plates and breaker inspection plates against reptile entry and earthing to the cable gland.
- Periodical inspection / testing of switchgear equipment.
- Providing proper nomenclature of switchgear equipment with regards to voltage level, feeder description and panel numbering to avoid wrong identification.

Fuel oil handling system hazards: The main hazard in fuel oil section is fires and storage tank explosion. However, to contain the chances of fires / explosions due to spillover, dyke walls are provided all around the fuel oil storage tanks. Apart from this, foam flooding system and MV water spray systems are provided on all Fuel Oil tanks. The level gauges and temperature monitors are also provided on the fuel oil tanks.

Storage / Warehouses – hazards: The main hazard in stores/warehouses is fire and explosion due to stored gas cylinders. However to prevent the chances of fires and explosions, gas cylinders and flammable materials are to be stored safely with utmost care and precautions. Fire hydrant / portable fire extinguishers systems are to be made available all around the materials storage.

8.2.6 Fire Fighting

The above analysis indicates that fire is one of the major disasters in project area. The following measures will be included to constrain the fire accident. The plant shall be protected against fire hazards and shall be equipped with minimum fire protection systems. Main source of water supply for firefighting is raw water which is drawn through pumps from reservoir. The nearest fire station is situated at Khajuraho about 40 km from the project site. The fire station shall be made well equipped to meet any contingency. Minimum requirement of firefighting equipment such as CO₂, foam and DCP may be maintained at the project location.

Fixed Fire Detection and Protection systems: The systems for protection and detection shall be kept at the project site as given Table 8.4.

Table 8.4: Fixed Fire Detection and Protection System in Project Area

Sl. No.	Type & Nomenclature	Approximate capacity	Premises
1	Water sprinkler system and Emulsifier	5 kgs pressure	On all transformers
2	Foam pourer	5 kgs pressure	On all fuel oil tanks
3	Medium velocity water spraysystem	5 kgs pressure	At LDO tanks
4	Smoke detectors	5 kgs pressure	At all control rooms switch gear rooms, cablegalleries, etc.

Portable Fire Extinguishers: In addition to above fire fighting equipments, portable and mobile fire extinguishers have to be installed at all locations of the plant including Main Plants, Control rooms, Switch Gear rooms, Laboratories, Off sites, Administration building etc. Details are tabulated below:

Details of Portable Fire Extinguishers		
Sl. No.	Type of Extinguishers	Capacity
1	CO ₂ Type	6.8 kg
		22.5 kg
2	Foam type	9.0 Lts
		50 Lts
3	DCP type	5 kg
		75 kg
4	ABC Power Type	5 kg

Hospital Facility: Dispensary is proposed at the camp colony situated at village with fully equipped separate disaster ward and burns ward shall be made available. First Aid centre also be made available inside the project premises and manned round the clock. Ambulance facility may also be provided at the project dispensary.

8.2.7 Cost Estimates

The budget for different activities required to be carried out for mitigation and prevention of dam break hazard and other hazards are given in Table 8.4. Cost estimates for the implementation of disaster management plan, is as to be Rs. 12 lakh.

Budget for Different Activities for Disaster Management in Project Area

Sl. No	Particulars	Amount in Rs. Lakhs
1	Installation of alert systems, setting up control room etc	9.00
2	Setting up of communication system	3.00
3	Setting up of Emergency Response organization	3.00
4	Public Information System	2.00
5	Installation of Fire Fighting Equipment	4.50
6	Training & Miscellaneous	2.50
	Total	24.00
Source: Estimated by AEC team		

8-2-9 Cost/Limit

The budget for required to be purchases and installation of Trap Camera carried out for mitigation and prevention/monitoring of Wildlife

Budget for purchases and installation in Project Area

1	Purchasing & Installation of Trap Camera Each cost Rs 40000/- (100 Units)	40.00

8-2-10

The budget for required to be purchases Vehicle for tracking mitigation and monitoring of Wildlife

Budget for purchases Vehicle

1	Purchasing Vehicle	15.00

18 Cost estimation for Mitigation Measures comes under Catchment Area
 Name of The Forest Division- Virangna Durgawati Tiger Reserve Sagar Dist.Sagar
 Daily Wage Rate- Rs. 425/- (Year 2024-25)
 (Estimate is prepared on basis of approved estimate of Kopra Medium Irrigation)
 Cost Abstract for Mitigation
 Measure estimate of Kopra Medium Irrigation project

Sr. No.	Description of Work	Unit	Qty.	Rate in Rs Mandays per unit	Total Amount (Rs. In Lakh)
1	Installation of alert systems, setting up control room etc	-	1	LS	9.00
2	Setting up of communication system	-	1	LS	6.00
3	Setting up of Emergency Response organization	-	1	LS	3.00
4	Public Information System	-	1	LS	2.00
5	Installation of Fire Fighting Equipment	-	1	LS	4.50
6	Installation of alert systems, setting up control room etc	-	1	LS	2.50
7	Purchasing Installation of Trap cameras	-	100.00	40000.00	40.00
8	Purchasing of vehicle	-	1.00	1500000.00	15.00
9	Culvert as per design sanction by PWD for Passing wild life	-	5.00	800000.00	40.00
10	Collection of grass seeds from forest	4kgs./Hact	150.00	800/- per Kg.	4.80
11	construction of water tank /reservoir/stopdam	-	2.00	1500000.00	30.00
12	Petrolling camp/Watch tower	-	1	LS	15.00
13	Water Monitoring & Cleaning	-	LS	LS	10.00
14	Motor boat	-	1	LS	6.00
15	Other Miscellaneous Exp.	-	LS	LS	5.00
16	Miscellaneous Administration and Monitoring Expenses		Total	2% of Total cost	192.80
17	Escalation cost unforeseen expenditure			20% of Total cost	38.6
			Grand Total		235.22

Total Expenditure for required for Mitigation Measure- 235.22 lakhs

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Rs 235.22 lakhs

(व्ही. एन. अम्बाड़े) भा.व.से.
 प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं
 मुख्य वन्यजीव अभिरक्षक, मध्यप्रदेश

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 (अ. ए. मुर्ते)
 कार्यपालन सचिव
 जल संयोजन, मं. त. व. 1

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 वीरगंगा दुर्गावती टाईगर रिजर्व
 सागर (म.प्र.)

10 years - yearly based expenditure planning of budget

Sr. No.	Description of Work	Total Amount (Rs. in Lakhs)	Years									
			1	2	3	4	5	6	7	8	9	10
1	Installation of alert systems, setting up control room etc	9.00	9.00	-	-	-	-	-	-	-	-	-
2	Setting up of communication system	6.00	3.00	2.00	1.00	-	-	-	-	-	-	-
3	Setting up of Emergency Response organization	3.00	3.00	-	-	-	-	-	-	-	-	-
4	Public Information System	2.00	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
5	Installation of Fire Fighting Equipment	4.50	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
6	Installation of alert systems, setting up control room etc	2.50	2.50	-	-	-	-	-	-	-	-	-
7	Purchasing Installation of Trap cameras	40.00	8.00	8.00	8.00	8.00	8.00	-	-	-	-	-
8	Purchasing of vehicle	15.00	15.00	-	-	-	-	-	-	-	-	-
9	Culvert as per design sanction by PWD for Passing wild life	40.00	16.00	16.00	8.00	-	-	-	-	-	-	-
10	Collection of grass seeds from forest	4.80	1.00	1.00	1.00	1.00	0.80	-	-	-	-	-
11	construction of water tank /reservoir/stopdam	30.00	15.00	15.00	-	-	-	-	-	-	-	-
12	Petroling camp/Watch tower	15.00	15.00	-	-	-	-	-	-	-	-	-
13	Water Monitoring & Cleaning	10.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
14	Motor Boat	6.00	6.00	-	-	-	-	-	-	-	-	-
15	Other Miscellaneous Exp.	5.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Total Expenditure for required for Mitigation Measure- 235.22 lakhs

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(व्ही. एन. अम्बाडे) भा.व.से.
प्रधान मुख्य वन संरक्षक (वन्यजीव) एवं
मुख्य वन्यजीव अभिरक्षक, मध्यप्रदेश

निवेश मोरारजी
अभियन्ता वन्यजीव
वन संरक्षण का चीफ डी. ३
नगरादेहा, विना कान (म.प्र.)

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OFFICE OF THE EXECUTIVE ENGINEER,**WATER RESOURCES DIVISION NO. 1 SAGAR (M.P.)**Near Civil Court Sagar Ph. 07582-223809 E-mail: ee.wrdno1sgr@gmail.com**UNDERTAKING**

User agency undertakes to comply with the mitigation measures as mentioned in "Environment Impact Assessment of Flora, Fauna & Socio Economic Status of local Communities and action to be taken to mitigate impact of Kopra Medium Project in Nauradehi Wildlife Sanctuary, Sagar District (M.P.) Report, Chapter-8 titled **PROPOSED MITIGATION MEASURES ON VARIOUS IMPACTS**" submitted to user agency by the office of the Director State Forest Research Institute Jabalpur (M.P.) via letter no. क/ईको/1922 dated 04.08.2023.

User agency also undertakes that the cost of implementing the aforementioned mitigation measures shall be borne out of the funds of Kopra Medium Project.

निदेश मोरवानी
जुनिअर ज्युनियर अधिकारी
पुनः संसाधन एवं संरक्षण क्र. 3
क/ईको/1922 अगस्त (०४.०८.२३)

(R.S. Dharve)
Executive Engineer
Water Resources Division No. 1
Sagar (M.P.)



सागर, दिनांक - ७/१२/२०२४

विषय - जिला सागर के अंतर्गत कोपरा मध्यम सिंचाई परियोजना के निर्माण हेतु 272.00 हेक्टेयर वनभूमि जल ससाधन विभाग को उपयोग पर देने बाबत।

संदर्भ - 1. आपका पत्र क्र. 4094 दिनांक 12.09.2023.
2. कार्यालयीन पत्र क्र./551 दिनांक 31.01.2023.
3. गैम परिक्षेत्र अधिकारी, सिंगपुर पत्र क्र./219 दिनांक 07.02.2024.

-0

1. उपरोक्त कोपरा मध्यम सिंचाई परियोजना के अंतर्गत निर्माण किये जाने वाले बांध की जल संसाधन विभाग द्वारा मौका स्थल पर गाड़ी गई एफ.टी.एल. की मुढ़ियां पाई गई।
2. एफ.टी.एल. की मुढ़ियां के अनुसार डूब में वनग्राम घुघरी के ग्रामीणों से पूछताछ के दौरान उनके द्वारा बताया गया कि उक्त कोपरा मध्यम परियोजना के निर्माण में वनग्राम घुघरी के 16 वन अधिकार पत्र धारकों की भूमि एवं 19 व्यक्तियों की राजस्व भूमि डूब क्षेत्र में प्रभावित हो रही है।
3. इसी प्रकार उपरोक्त कोपरा मध्यम सिंचाई परियोजना के अंतर्गत राजस्व विभाग की जमीन पर लगभग 1 से 1.5 हे. भूमि पर आवला एवं सागौन प्रजाति का वृक्षारोपण होना पया गया, जिसकी रोपणी की अवधि करीब 16 से 18 वर्ष पूर्व का होना प्रतीत होती है। ग्राम घुघरी के ग्रामीणों एवं बाबूलाल पिता दलसींग गौड़, से.नि. उ.व.क्षे. द्वारा बताया कि उक्त वृक्षारोपण श्री चक्रश.पिता बाबूलाल जैन, निवासी ग्राम छिरारी के द्वारा राजस्व भूमि पर किया गया है।

प्रतिवेदन सूचनार्थ एवं आवश्यक कार्यवाही हेतु सम्प्रेषित है।

वनमंडल अधिकारी
नौरादेही (व.प्रा.) वनमंडल
सागर (म.प्र.)

सागर, दिनांक - ७/12/2024

2. मुख्य वन संरक्षक, सागर वृत्त, सागर की ओर सूचनार्थ सम्प्रेषित।

वनमंडल अधिकारी
नौरादेही (व.प्रा.) वनमंडल
सागर (म.प्र.)

प्रमाण-पत्र

उक्त भूमि का अतिक्रमण मुक्त होने बाबत सक्षम राजस्व अधिकारी का प्रमाण-पत्र

नौरादेही (व.प्रा.) वनमंडल सागर, जिला सागर के अंतर्गत विस्थापित ग्राम रमपुरा मड़ाज की निजी भूमि 31.240 है एवं राजस्व भूमि 176.220 है, तहसील देवरी के अंतर्गत :-

1. ग्राम रमपुरा (मड़ाज) तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 31.240 हेक्टेयर निजी भूमि है।
2. ग्राम रमपुरा (मड़ाज) तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 176.220 हेक्टेयर राजस्व भूमि है।

उक्त ग्राम की कुल निजी भूमि 31.240 हेक्टेयर एवं राजस्व भूमि 176.220 हेक्टेयर भूमि दी

गई है।

प्रमाणित किया जाता है कि विस्थापित ग्रामों की उक्त भूमि अतिक्रमण से मुक्त है।

गेम परिक्षेत्र अधिकारी
सिंगपुर

उप वनमंडल अधिकारी
(व.प्रा.) रहली

तहसीलदार
राजस्व सागर

अनुविभागीय अधिकारी
(राजस्व) देवरी

15.4.17

प्रमाण-पत्र


उक्त भूमि का अतिक्रमण मुक्त होने बाबत ससम राजस्व अधिकारी का प्रमाण-पत्र


नौरादेही (व.प्रा.) वनमंडल सागर, जिला सागर के अंतर्गत विस्थापित ग्राम पीपला की निजी भूमि 98.210 है एवं राजस्व भूमि 96.290 है, तहसील देवरी के अंतर्गत


1. ग्राम पीपला तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 98.210 हेक्टेयर निजी भूमि है।
2. ग्राम पीपला तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 96.290 हेक्टेयर राजस्व भूमि है।

उक्त ग्राम की कुल निजी भूमि 98.210 हेक्टेयर एवं राजस्व भूमि 96.290 हेक्टेयर भूमि दी गई है।

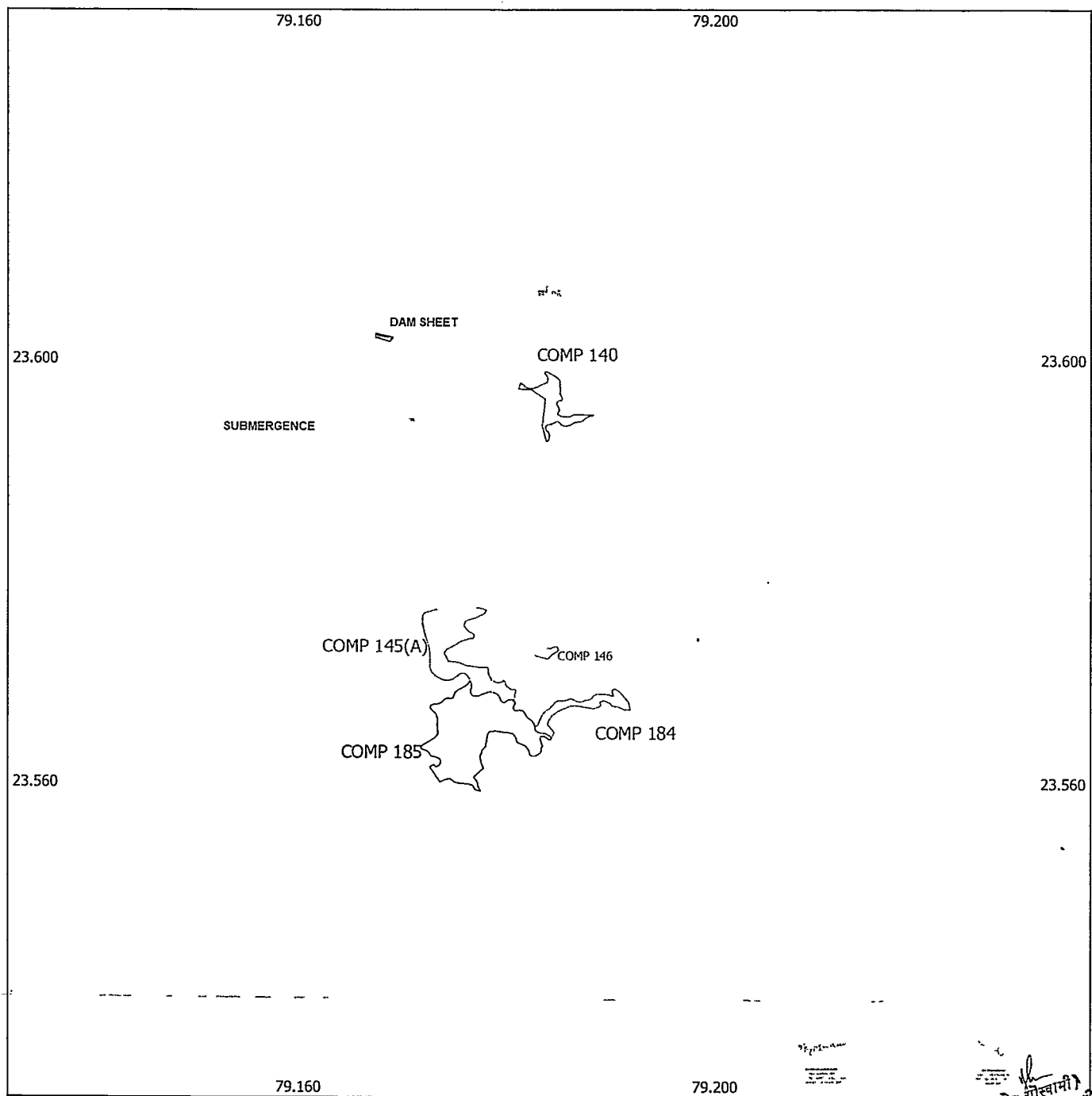
प्रमाणित किया जाता है कि विस्थापित ग्रामों की उक्त भूमि अतिक्रमण से मुक्त है।


गेम परिक्षेत्र अधिकारी
सिंगपुर


उप वनमंडल अधिकारी तहसीलदार
(व.प्रा.) रहली देवरी जिला सागर


अनुविनियोजित अधिकारी
(राजस्व) देवरी

KOPRA MEDIUM PROJECT FOREST SUBMERGENCE



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S.E.

Am
5/12

(निशेष गोस्वामी)
अनुविभागीय अधिकारी
संसाधन उपसंचालक

COMP 142 DAM SHEET

S.No.	Latitude	Longitude
1	23.60243	79.16734
2	23.60215	79.16909
3	23.60165	79.16875
4	23.60204	79.16738
5	23.60243	79.16734

COMP 142 SUBMERGENCE AREA

S.No.	Latitude	Longitude	S.No.	Latitude	Longitude	S.No.	Latitude	Longitude
1	23.60165	79.16875	20	23.59156	79.16103	39	23.59736	79.16632
2	23.60132	79.16853	21	23.59193	79.16131	40	23.59777	79.16634
3	23.60051	79.16806	22	23.59213	79.16164	41	23.59802	79.16627
4	23.59922	79.16789	23	23.59244	79.1618	42	23.59838	79.16597
5	23.59767	79.16738	24	23.5929	79.16197	43	23.59857	79.16612
6	23.59592	79.16613	25	23.59328	79.16221	44	23.59858	79.16634
7	23.59472	79.16472	26	23.59361	79.16228	45	23.59874	79.16681
8	23.59276	79.16269	27	23.59433	79.16228	46	23.59938	79.167
9	23.59086	79.16391	28	23.59467	79.16283	47	23.59969	79.16714
10	23.58926	79.16461	29	23.59544	79.16374	48	23.59982	79.16726
11	23.5878	79.16021	30	23.59555	79.16403	49	23.6	79.16738
12	23.58814	79.15977	31	23.59561	79.16434	50	23.60026	79.16744
13	23.58844	79.15986	32	23.59603	79.16478	51	23.60045	79.16746
14	23.58871	79.16011	33	23.59616	79.16506	52	23.60064	79.16757
15	23.58901	79.1603	34	23.59624	79.16581	53	23.60075	79.16752
16	23.58923	79.16044	35	23.59667	79.1659	54	23.601	79.16748
17	23.58979	79.16065	36	23.59677	79.16605	55	23.60159	79.16743
18	23.59064	79.16068	37	23.59694	79.16627	56	23.60204	79.16738
19	23.5913	79.16095	38	23.59712	79.16633	57	23.60165	79.16875

(नियंत्रण गोस्वामी)
 अनुविभागीय अधिकारी
 जल संसाधन उपसंचालन
 ए. नं. २६ कोटा (रा.पं.)

[Handwritten signatures and initials]

तकनीकी स्वीकृति आदेश

क्रमांक/एफ-3/100/2021/10-11/12/12

भोपाल, दिनांक 15/01/25

वनमण्डलाधिकारी, नौरादेही (व.प्रा.) वनमंडल सागर द्वारा उनके पत्र क्रमांक/मा.चि./2025/35, दिनांक 06.01.2025 से कोपरा मध्यम सिंचाई परियोजना के जल ग्रहण क्षेत्र अंतर्गत किए जाने वाले उपचार कार्यों की योजना तैयार की जाकर इस कार्यालय को प्रस्तुत की गयी है।

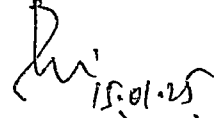
वन (संरक्षण एवं संवर्धन) अधिनियम, 1980 के तहत भारत सरकार के परिपत्र दिनांक 08.03.2019 से जारी गाईड लाईन एवं प्रधान मुख्य वन संरक्षक एवं वन बल प्रमुख म0प्र0 भोपाल के आदेश क्रमांक/एफ-3/2019/10-11/03, दिनांक 31.05.2019 से प्रदत्त अधिकारों के अन्तर्गत गठित समिति के अनुक्रम में कोपरा मध्यम सिंचाई परियोजना के जल ग्रहण क्षेत्र उपचार योजना अंतर्गत प्राप्त प्राक्कलन पर तकनीकी स्वीकृति प्रदान की जाती है:-

वनमण्डल का नाम	योजना का नाम	उपचार भूमि का रकबा	राशि (रूपये लाख में)
नौरादेही (व.प्रा.)/ दक्षिण सागर	कोपरा मध्यम सिंचाई परियोजना	200.08 वर्ग कि.मी.	373.08

उक्त तकनीकी स्वीकृति निम्नलिखित शर्तों के अधीन रहेंगी :-

1. वनमण्डलाधिकारी, नौरादेही (व.प्रा.) वनमंडल सागर द्वारा तैयार प्राक्कलन के प्रस्ताव पर दी जाती है। यदि प्रस्ताव में कोई परिवर्तन स्थानीय परिस्थितियों को दृष्टिगत रखते हुए आवश्यक हो तो अनुमोदन उपरांत कराएं।
2. समस्त कार्य स्वीकृत जॉब दरों, निर्धारित नार्म्स एवं बजट प्रावधानों के अन्तर्गत ही कराये जावें। यदि किसी कार्य की जॉब दर/श्रमिक दर में कोई परिवर्तन की आवश्यकता हो तो अनुमोदन उपरांत कराएं, कार्य की गुणवत्ता उत्तम हों।
3. वनमण्डलाधिकारी, नौरादेही (व.प्रा.) वनमंडल सागर इस स्वीकृति के अधीन केचमेन्ट एरिया ट्रीटमेन्ट प्लान कार्य हेतु प्रशासकीय स्वीकृति प्राप्त होने पर प्राप्त राशि के अंतर्गत ही व्यय करेंगे, केवल तकनीकी स्वीकृति के आधार पर कार्य प्रारंभ न किया जावें। कैम्पा कक्ष द्वारा दिये आवंटन के अनुसार ही कार्य कराया जावें।
4. इस कार्य की उपयोगिता प्राप्त प्राक्कलन अनुसार कार्य के लिये है।
5. कार्य का संपादन तकनीकी स्वीकृति के साथ संलग्न प्राक्कलन में दर्शित तकनीकी मापदण्डों के अनुसार कराया जावें। कार्य के दौरान स्थल की भौगोलिक स्थिति के अनुसार किसी प्रकार के परिवर्तन/संशोधन की आवश्यकता होने पर सक्षम अधिकारी से पूर्व अनुमति लेना अनिवार्य होगा।
6. केचमेन्ट एरिया ट्रीटमेन्ट प्लान अंतर्गत कार्य हेतु स्थल उपयुक्तता प्रमाण-पत्र प्राप्त कर ही कार्य किया जावें।

7. कार्य स्थल के फोटोग्राफ अनिवार्य रूप से लिए जाएं तथा अभिलेखों में समाहित किया जाए। प्राक्कलन में दर्शित कार्य से संबंधित अभिलेखों (यथा माप पुस्तिका आदि) का नियमानुसार संधारण किया जाए।
8. केचमेन्ट एरिया ट्रीटमेन्ट प्लान कार्य की गुणवत्ता पर सतत निगरानी रखी जाए।
9. कोई भी सामग्री क्रय करते समय म0प्र0 भण्डार क्रय नियमों का पालन किया जाए।
10. कार्य प्रारंभ के पूर्व विस्तृत कार्यवार स्थल अनुरूप डी.पी.आर. तैयार कर कार्य प्रारंभ करावें।

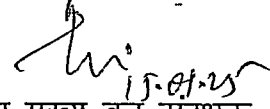


(एच.एस. मोहन्ता)

अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध)
मध्यप्रदेश, भोपाल

पृ. क्रमांक/एफ-3/100/2021/10-11/12/
प्रतिलिपि:-

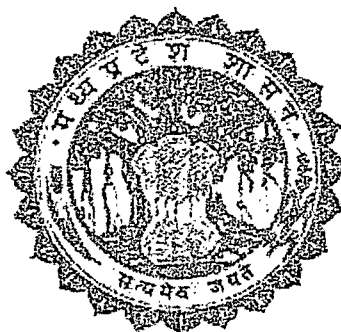
1. प्रधान मुख्य वनसंरक्षक एवं मुख्य कार्यपालन अधिकारी (कैम्पा), म0प्र0, भोपाल।
 2. मुख्य वन संरक्षक, (क्षेत्रीय) सागर वृत्त सागर, मध्यप्रदेश।
 3. वनमण्डलाधिकारी, नौरादेही (व.प्रा.) वनमंडल सागर, मध्यप्रदेश।
 4. वनमण्डलाधिकारी, सा0 वनमंडल दक्षिण सागर, मध्यप्रदेश।
- की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।



अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध)
मध्यप्रदेश, भोपाल



GOVERNMENT OF MADHYA PRADESH



Water Resources Department

Kopra Medium Irrigation Project

Catchment Area Treatment Plan Amount Rs. 373.08 Lakhs

Distt. Sagar

Block Rehli



Contents

CATCHMENT AREA TREATMENT PLAN

- 1.1 Introduction
- 1.2 Objectives
- 1.3 Catchment Area
- 1.4 Free Draining Catchment
- 1.5 Topography
- 1.6 Soil
- 1.7 Land use
 - 1.7.1 *Land use-Land Cover Classification*
 - 1.7.2 *Land use Categories and Erosion*
 - 1.7.3 *Slope*
- 1.8 Methodology Used for the Study
 - 1.8.1 *Soil Loss Using Silt Yield Index (SYI) Method*
- 1.9 Catchment Area Treatment Plan
- 1.10 Treatment of Individual Sub-Watershed
 - 1.10.1 *Activities to be Undertaken*
- 1.11 Cost Estimation for Cat Plan



CATCHMENT AREA TREATMENT PLAN

1.1 Introduction

It is a well-established fact that reservoirs formed by dams on rivers area subjected to sedimentation. The process of sedimentation embodies the sequential processes of erosion, entrainment, transportation, deposition and compaction of sediment. The study of erosion and sediment yield from catchment is of utmost importance as the deposition of sediment in reservoir reduces its capacity, thus affecting the water available for the designated use. The eroded sediment from catchment when deposited on streambeds and banks causes braiding of river reach. The removal of top fertile soil from catchment also adversely affects the agricultural production and growth of plants another crucial factor that adds to the sediment load and which contributes to soil degradation is grazing pressure.

The lack of proper vegetal cover is a factor to cause degradation and thereby results in severe run off/soil erosion, and subsequently premature siltation of the reservoir. Thus; a well-designed Catchment Area Treatment (CAT) Plan is essential to ameliorate the above-mentioned adverse cause and process of soil erosion. The catchment area treatment involves the understanding of the erosion characteristics of the terrain and suggesting remedial measures to reduce the erosion rate. For this reason, the catchment of the directly draining rivers, streams, tributaries, etc. are treated and the cost is included in the project cost.

The pre-requisite for a watershed management is the collection of multipronged data e.g., geology, geomorphology, topography, soil, land use/land cover, climate, hydrology, drainage pattern, etc. The multi-pronged data generated from various published sources and actual data collected from these watersheds on the above-mentioned parameters forms the basis of the Action Plan for Catchment Area Treatment is presented here.

Catchment Area Treatment (CAT) plans for the free draining catchment area of the proposed project has been prepared for areas with high soil erosion intensity. The CAT Plan targets towards overall improvement in the environmental conditions of the region. All the activities are aimed at treating the degraded and potential areas with severe soil erosion. The plan provides benefits due to biological and engineering measures and its utility in maintaining the ecosystem health. The plan with objectives addresses issues such as prevention of gully erosion, enhancing the forest cover for increasing soil holding capacity; and arresting total sediment flow in the reservoir and flowing waters.

1.2 Objectives

Integrated watershed management plan minimizes the sedimentation of reservoir. The main aim of the Catchment Area Treatment Plan is to rejuvenate various potential and degraded ecosystems in the catchment area for longevity of the reservoir storage capacity. For this purpose, the action plan has been prepared with the following objectives:

- 1 To facilitate the hydrological functioning of the catchment and to augment the quality of water of the river and its tributaries.
- 2 Conservation of soil cover and to arrest the soil erosion, floods and siltation of the river along with its tributaries and consequent reduction of siltation in the reservoir of the project.
- 3 Rehabilitation of degraded forest areas through afforestation and facilitating natural regeneration of plants.



- 4 Mitigation of landslide, landslip and rock falls.
- 5 Soil conservation through biological and engineering measures to reduce sediment load in river and tributaries, incidentally improving the quality of water.
- 6 Ecosystem conservation resulting from increased vegetal cover and water retaining properties of soil.

1.3 Catchment Area

Kopra Medium Irrigation Scheme is a irrigation rises on Kopra River in the Block Rehli Forest area of South Sagar Division and Nouradehi (WL) Sagar Division in the Sagar district, of Madhya pardesh at Bagaspura village block Rehli elevation on 390 m. Geographical coordinate's origination are at north latitude 23°36'22"N and East longitude 79°10'13"E. The side can be located on the Topo Sheet No 55M2. Kopra River originates near village Gopalpura of Tehsil Deori District Sagar. Kopra River flows in a generally north flowing direction is tributary of river Sonar ultimate part of KEN Sub Basin. The forest area boundary in the catchment as per the forest proposal is about 200.08 Sq.KM & about 2.72 Sq. K.M is in the submergence.

1.4 Free Draining Catchment

CAT Plan has been formulated for free draining catchment i.e. up to the proposed Kopra Medium Irrigation Project on Kopra River block Rehli District Sagar. Free draining catchment area for this CAT Plan is 200.08 sq km. As per nomenclature contained in water atlas of india , edition 1993, the free draining catchment under the study area lies in water resources Region- (Dhasan-Ken) Basin Catchment 5D4. River basin of Yamuna

The basin characteristics watershed are illustrated in Table 1.1 the satellite imagery of the free daring catchment is presented in Figure 1.1 The intercepted catchment area is 200.08 Sq.Km. Net Catchment area of project is 200.08 Sq.Km. Also illustrated in Table 1.1

The basin characteristics of different sub-watersheds are illustrated in Table 1.1 and the mosaic map of watershed location is shown in Figure 1.2.

Table – 1.1: Kopra Medium Irrigation Project Area Details

S.No	Particulars	Value
1	Gross catchment Area	200.08 Sq.km
3	Designed flood (Estimated SPF)	1597.69 Cumecs
4	Net 75% dependable yield	42.989 MCM
5	Full reservoir level (FRL)	406.80 M
5	Tank Bund level (TBL)	397.00 M



Table 1.2: Basin Characteristics of Different Sub-watersheds

S.No.	watersheds	Total catchment area (Sq KM)
1	5D4	200.08
	Total	200.08

Catchment Area of Kopra Medium Irrigation Project

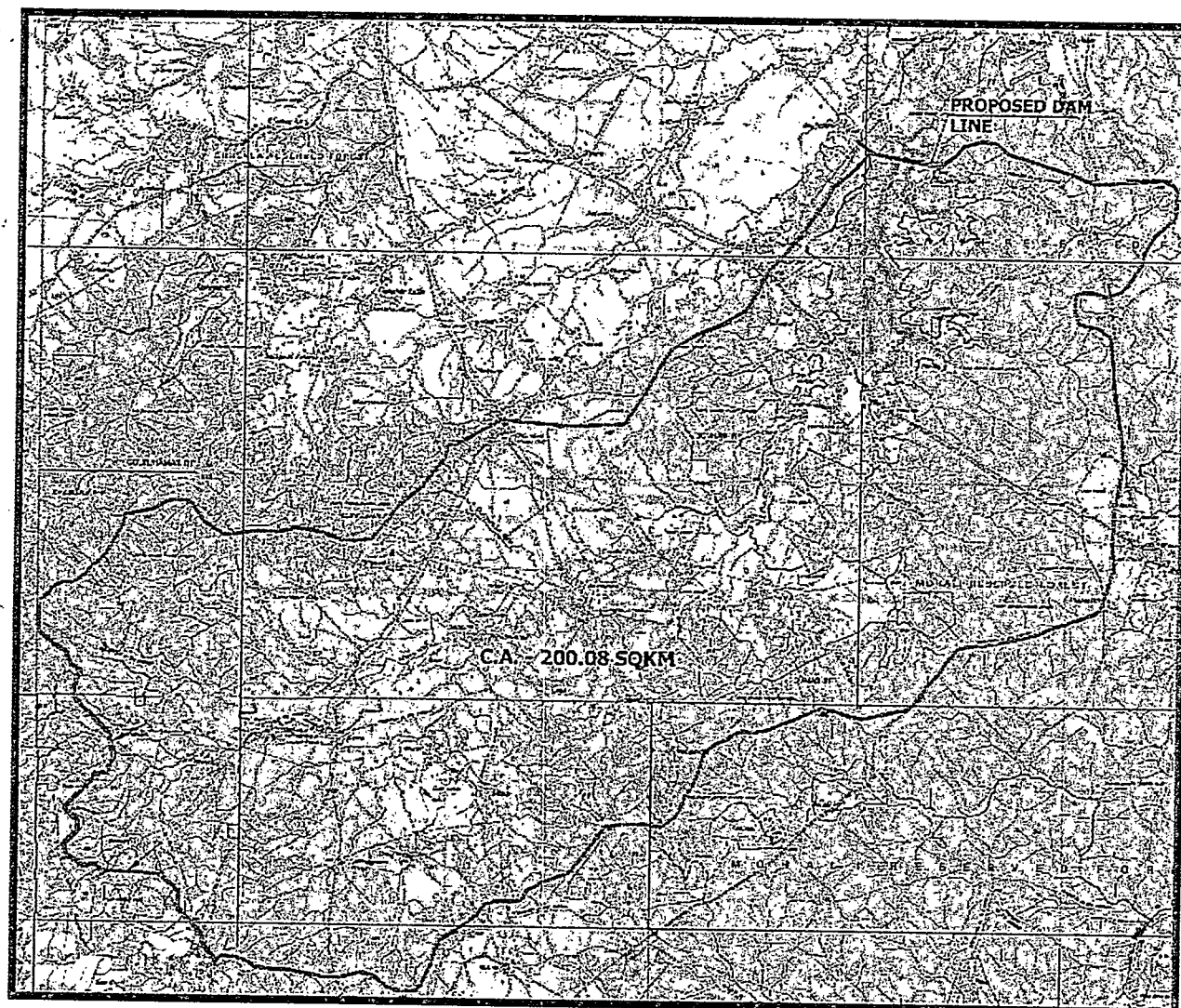


Figure 1.1: FCC Map of Catchment Area



Catchment Area of Kopra Medium Irrigation Project

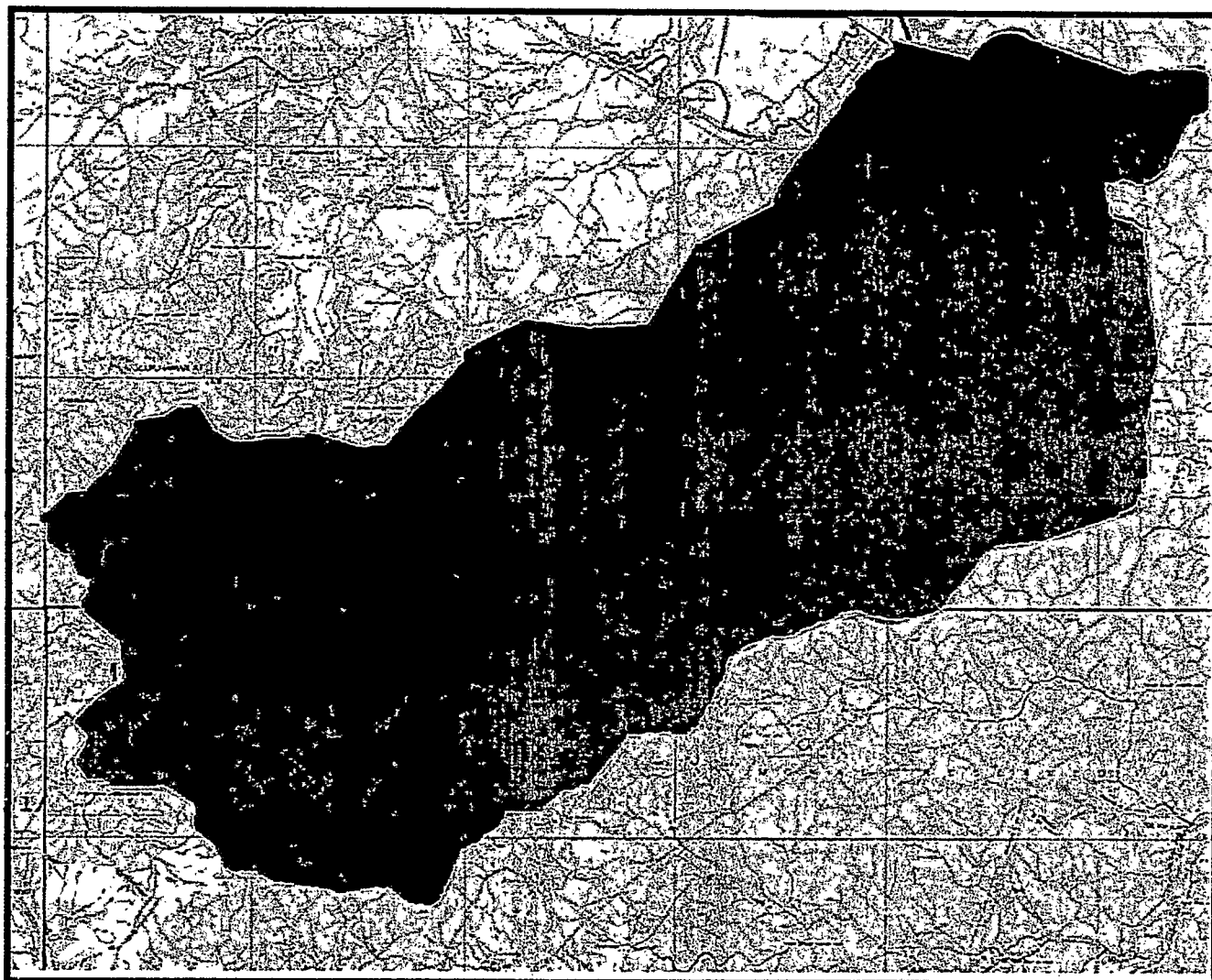


Figure 1.2: Mosaic Map Showing Location of Sub-watersheds



1.5 Topography

The project catchment area is hilly and nearby 46 % of catchment is covered by forest of deciduous dry type with Teak and Mixed type. And about 54 % area plain agriculture area.

Total Catchment area of project is 200.08 Sq. Km and there are 1 proposed Medium Irrigation scheme on this project. The drainage map of the catchment is shown in Figure 1.3.

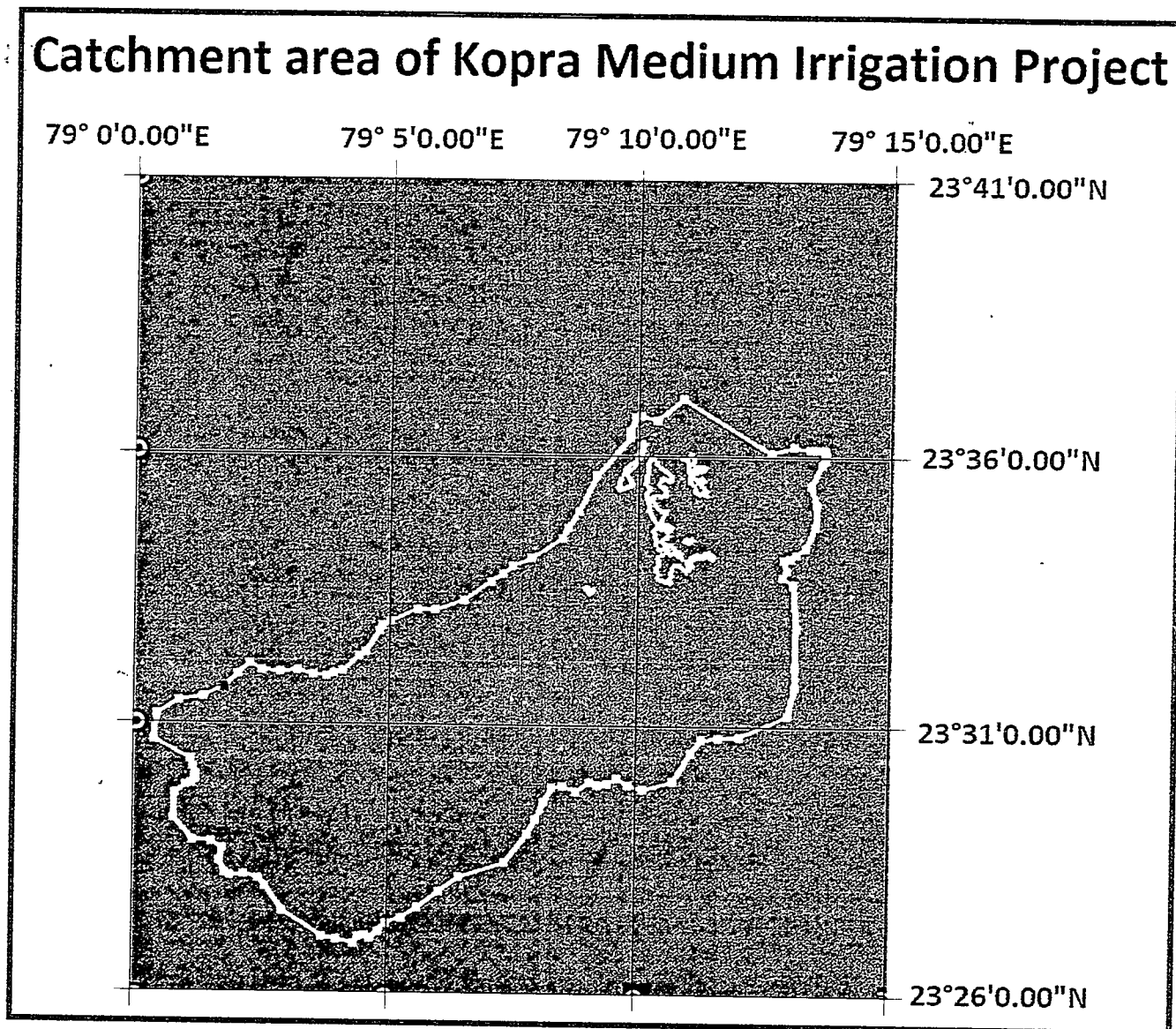


Figure 1.3: Drainage map of the catchment.



1.6 Soil

Soil Erosion and Forest Area Coverage:

Soil erosion in the Vindhyan plateau region is a not problem, as the catchment area is bounded dense forest area, which results has no loss of soil fertility and no such increased sediment load in the rivers. During ground survey the soil is pronominally loam clay and deep brown in color i.e. hard soil and moorum.

Therefore, it is not required to e proper maintenance of soil functions and its health. So this project not proposing additional measures for management interventions in the relevant watershed. The slope and the satellite maps are attached for the reference of slope and soil erosion.

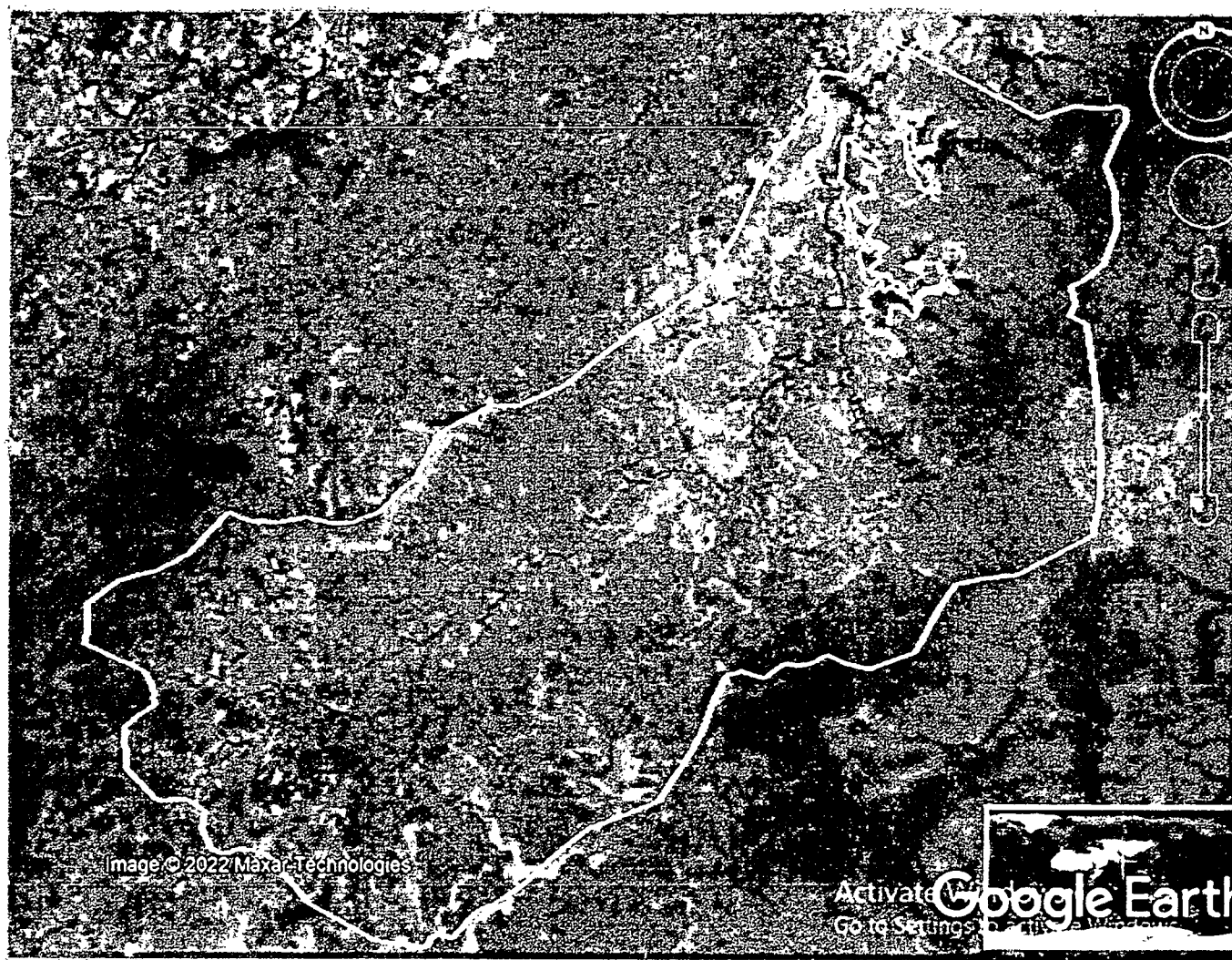


Figure – 1.4: Catchment Area Forest Cover Map



1.7 Land use

Land use-Land Cover Classification

Based on satellite data and topo-sheets, a land-use map has been prepared and verified in detail during ground surveys i.e. crosschecked with ground truths. The Land use/ Land-cover map of the catchment area is presented in Figure 1.5 and its details are presented in Table 1.3.

Land use Categories and Erosion

The erosion acts differently in different land-use types. It is important to understand the nature of erosion in a land-use class to further plan for treatment.

Agricultural Land

Around 107.187 sq. km area of the catchment constituting 53.572 % of the total catchment comes under this category. Plain to Well-planned and developed terraces were seen at some places. In general, at places the sheet and rill type of soil erosion predominates with few gullies in early stage of its development. Very few or no measures are taken to conserve soil and tendency exists to interrupt the natural drainage due to faulty agricultural practices. Runoff often exceeds the safe velocity on long slope lengths. It is suggested to repair and better design the agricultural terraces, which follows the faulty agricultural practices.

Temporary and semi-permanent soil conservation structures like brushing dams, wiring woven and gabion check dams etc. shall be made for effective adaptive management.

Open/ Degraded Forest Land

Under open/Degraded forest category about 13.173 sq. km constituting 6.584 % of the total catchment, is present. Forest crown density ranges from 0-40% or on average 20% crown density can be assumed present in the area. Soils have relatively good water holding capacity, humus, nutrient content and moderate to slight erosion rates on steeper slopes. Therefore, rill erosion predominates which in due course leads to scrub land formation with gullies. Afforestation is suggested so as increase the crown density by 20% in whole of the area to reduce erosion.

Dense Forest

Dense forest covers about 78.818 sq. km area constituting 39.393 % of the catchment with the forest crown density above 40%. Soils are very good in water holding capacity, humus and nutrients with no erosion but due to steeper slopes, some area requires soil conservation measures.

River/ Water body

Around 0.898 Sq.km area constituting 0.449 % of the catchment area is classified under water bodies. The category needs no treatment except that the unstable bank shall be provided stream bank stabilization through protection measures whenever required.

Scrub

Under shrub category about 0.004 sq. km area of catchment constituting 0.002 % of the total catchment is present.



Table 1.3: Land use classification for free draining catchment at Project Site

Land use/Land cover	Area%	Area (ha)
River/Water Bodies	0.449 %	89.83 Hact.
Agricultural Areas	53.572 %	10718.65 Hact.
Dense Forest	39.393 %	7881.845 Hact.
Open/Degraded Forest	6.584 %	1317.30 Hact.
Scrubs/Bushes/Grasses	0.002 %	0.3748 Hact.
Total	100.0%	20008.00 HACT.

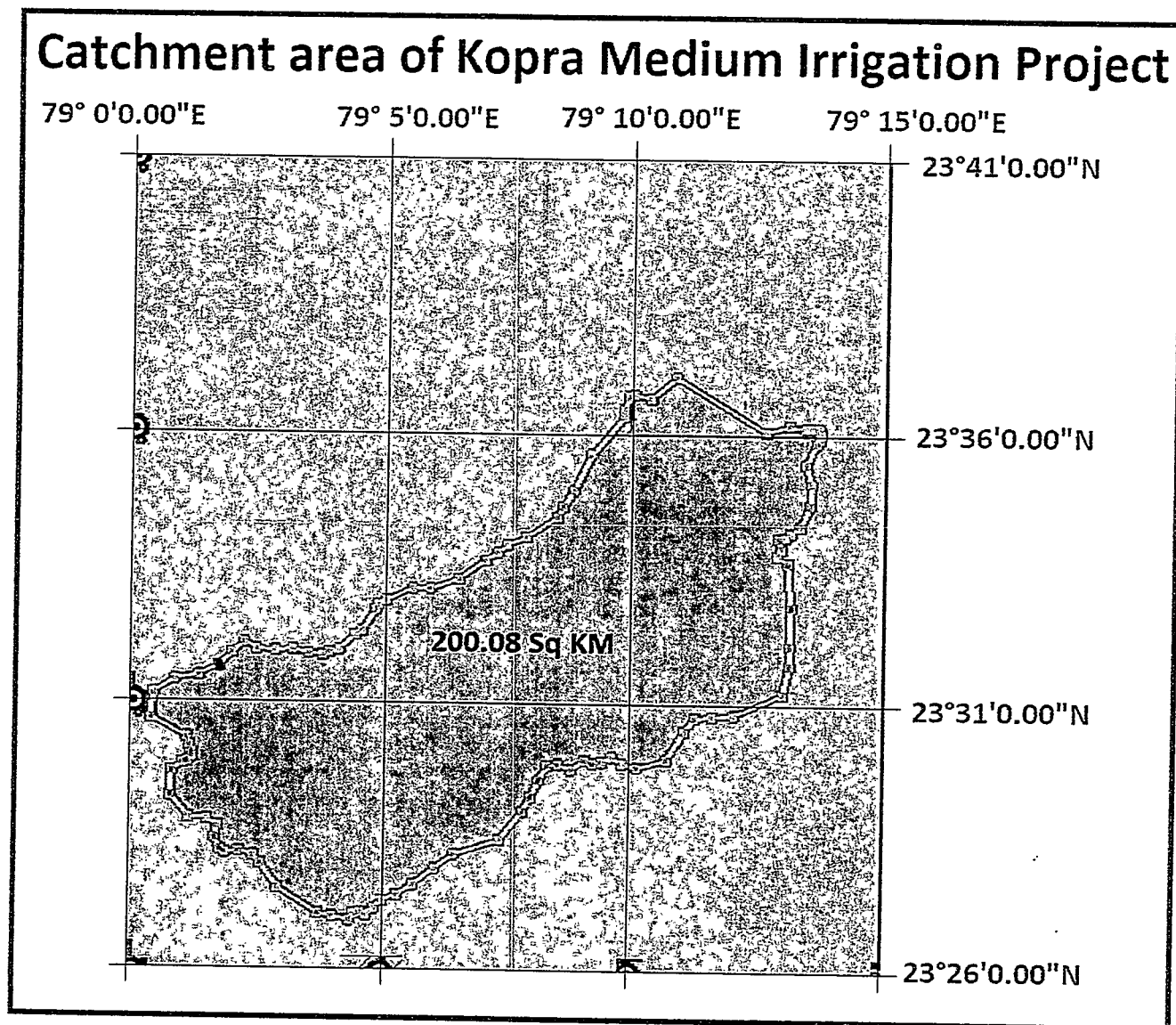


Figure 1.4: Land use Map of Catchment Area



Slope

The slope of a watershed plays a key role in controlling the soil and water retention thereby affecting the land-use capability. The percentage of the slope in a watershed determines the soil erosion susceptibility and forms the basis for classifying different of the watershed into suitable classes for formulating effective soil erosion conservation measures. Broadly, the following slope classes and ranges (Table 1.4) as per norms of All India Soil & Land Use Survey were adopted to classify the slopes for the present study.

Table 1.4: Slope Ranges showing the intensity of catchment area

Sr. No.	Slope Range (Degrees)	Description
1	0-5	Very Gentle Slope
2	5-10	Gentle Slope
3	10-15	Moderate Slope
4	15-25	Moderately Steep Slope
5	25-35	Steep Slope

The Slope map of the free draining catchment is presented under Table 1.5.

Table 1.5: Area falling under different slope categories

Slope category (%)	Area (%)	Area (sq km)
0-10	53.65	107.343
10-20	25.18	50.380
20-30	14.8	29.612
30-40	6.37	12.745
Total	100	200.08

Figure 1.5: Slope Map of Catchment

1.8 Methodology Used for the Study

Superimposing topography, slope, soil and land use data/maps, a tentative estimation of erosion prone areas and landslides area in the catchment were made. The vulnerable and problematic areas were identified in different physiographic zones.

These data sets were used for preparation of the thematic maps, calculation of sediment yield index and Erosion Intensity Units.



Soil Loss Using Silt Yield Index (SYI) Method

- The Silt Yield Index Model (SYI), considering sedimentation as product of erosivity, erodibility and aerial extent was conceptualized in the All India Soil and Land Use Survey (AISLUS) as early as 1969 and has been in operational use since then to meet the requirements of prioritization of smaller hydrologic units within river valley project catchment areas.
- Methodology for the calculation of sediment yield index developed by All India Soil & Land Use Survey (Development of Agriculture, Govt. of India) was followed in this study.

Erosion Intensity and Delivery Ratio

- Determination of erosion intensity unit is primarily based upon the integrated information on soil characters, physiographic, slope, land-use/land-cover, litho logy and structure. This is achieved through super-imposition of different thematic map overlays. Based upon the field data collected during the field survey and published data, weightage value and delivery ration were assigned to each erosion intensity unit. The composite map for delineating different erosion intensity units was prepared through superimposition of the maps showing soil types, slope and land-use/land-cover. This thematic mapping of erosion intensity for entire catchment was done using the overlay and union techniques. Based on ground truth verification conducted during fieldwork and published data, weightage and delivery ratio was assigned to each erosion intensity units. The composite erosion intensity map was then superimposed on the drainage map with sub-watershed boundaries to evolve CEIU for individual sub-watershed.
- Each element of erosion intensity unit is assigned a weightage value. The cumulative weightage values of the erosion intensity units represent approximately the relative comparative erosion intensity within the watersheds. A basic factor of $K=10$ was used in determining the cumulative weightage values. The value of 10 indicated an equilibrium condition between erosion and deposition. Any value of $K (10+X)$ is suggestive of erosion intensity in an ascending order whereas the value of $K (10-X)$ is suggestive of deposition intensity in descending order.
- The delivery ratios were calculated for each composite erosion intensity unit. The delivery ration suggests the percentage of eroded material that finally finds entry into the reservoir or river/stream. Total area of different erosion intensity classes (composite erosion intensity unit) in each watershed was then calculated.



- The delivery ratio is generally governed by the type of material, soil erosion, relief length ratio, cover conditions, distance from the nearest stream, etc. However, in the present study the delivery ratios to the erosion intensity units were assigned upon their distance from the nearest stream (being the most crucial factor responsible for delivery of the sediments) per the following scheme. The delivery ratio criteria adopted for the study is presented in Table 1.6.

Table 1.6: Delivery Ratio (DR) Criteria

Nearest Stream	Delivery Ratio (DR)
0-0.9 km	1.00
1.0-2.0 km	0.90
2.1-5.0 km	0.80
5.1-15.0 km	0.70
15.1-30.0 km	0.50

(ii) Sediment Yield Index & Prioritization of Sub-Watersheds

- The erosivity determinates are the climatic factors and soil and land attributes that have direct or reciprocal bearing on the units of the detached soil material. The relationship can be expressed as:

$$\text{Soil erosivity} = f(\text{Climate, physiography, slope, soil parameters land use/land cover, soil management})$$

- The Silt Yield Index (SYI) is defined as the Yield per unit area and SYI value for hydrologic unit is obtained by taking the weightage arithmetic mean of the products of the weightage value and delivery ratio over the entire area of the hydrologic unit by using suitable empirical equation.
- Prioritization of smaller hydrological units within the vast catchments is based on the SYI of the smaller units. The boundary values of range of SYI values for different priority categories are arrived at by studying the frequency distribution of SYI values and locating the suitable breaking point. The watersheds/sub-watersheds are subsequently rated into various categories corresponding to their respective SYI values.
- The application of SYI model for prioritization of sub-watersheds in the catchment areas involves the evaluation of:
 - Climatic factors comprising total precipitation, its frequency and intensity



- Geomorphic factors comprising land forms, physiography, slope and drainage characteristics
 - Surface cover factors governing the flow hydraulics
 - Management factors.
-
- The data on climatic factors can be obtained for various locations in the catchment area from the meteorological stations whereas the field investigations are required for estimating the other attributes.
 - The various steps involved in the application of model are:
 - Preparation of a framework of sub-watershed through systematic delineation
 - Rapid reconnaissance surveys on 1:50,000 scale leading to the generation of a map indicating erosion-intensity mapping units.
 - Assignment of weight age values to various mapping units based on relative silt-yield potential.
 - Computing Silt Yield Index for individual watersheds/sub watersheds.
 - Grading of watersheds/sub-watersheds into very high, high medium, low and very low priority categories.
 - The area of each of the mapping units is computed and silt yield indices of individual sub-watersheds are calculated using the following equations:



Silt Yield Index

$$SYI = (A_i \times W_i \times D_i) \times 100 / A_w; \text{ where } i = 1 \text{ to } n$$

Where

- A_i = Area of ith (EIMU)
 W_i = Weight age value of ith mapping unit
 D_i = Delivery ratio
 n = No. of mapping units
 A_w = Total area of sub-watershed

The SYI values for classification of various categories of erosion intensity rates were taken for the present study as:

	<u>Priority Category</u>	<u>SYI Values</u>
1.	Very High	>1300
2.	High	1200-1299
3.	Medium	1100-1199
4.	Low	1000-1099
5.	Very low	<1000

Accordingly, the sediment Yield Index has been calculated for sub-watersheds. The computation of SYI for each SWS is presented in Table 1.7.

Table 1.7: SYI and Priority Rating as per Erosion Intensity

Watershed code	Erosion intensity	Area (Ha)	Weightage	Area X Weightage	Delivery Ratio	Sediment Yeild	Sediment Yeild index	Priority
5D4	V.Severe	27.75	18	499.5	0.9	410.238	14898.842	Medium
5D4	Severe	39.55	16	632.8	0.9	770.456		
5D4	Moderate	589.25	14	8249.5	0.9	20267.120		
5D4	Slight	8392.15	12	100705.8	0.9	22425.157		
5D4	Negligible	10959.3	10	109593	0.8	30621.240		
	Total	2000.8	-	-	-	74494.210		



1.9 Catchment Area Treatment Plan

There are mainly four categories of Land uses for which a proper treatment plan should be developed. First is the Agricultural Land, as this activity can never be eliminated, because the faulty practice results in heavy loss of fertile soil. Second, being open forestland for obvious conservation reasons. Third is scrub or degraded land, which contributes heavily to the silt load and possibilities exist to bring this area under pastures and other plantation to meet the local demand of fuel and fodder and thus decreasing the biotic pressure on the forests and leading to environment friendly approach of sustainable development. The fourth and most important category is Barren land because with practically no vegetal cover, the area produces huge amount of silt load. where in a few places soil conservation measures are required. For treatment of catchment area, the areas that require treatment have been delineated from the Composite Erosion Intensity Unit Map. The sum of weightages was reclassified as per the Table 1.8 below to further subdivide the area as per the erosion intensity classes. The weightages for Land use, Slope & Soil were summed to get the Erosion Intensity Classes. Table 1.8: Erosion Intensity & Weightages

Erosion Intensity Class	Sum of weightages
Very severe (E5)	12 to 14
Severe (E4)	9 to 11
Moderate (E3)	6 to 8
Slight (E2)	4 to 5
Negligible (E1)	0 to 3

After exclusion of rocks and inaccessible terrain, only those areas which fall under very severe and severe erosion intensity category would be taken up for conservation treatment measures in very high priority category micro-watersheds, whereas in the rest of micro-watersheds belonging to other priority categories, the area falling under very severe erosion intensity class shall be taken for treatment with biological and engineering measures under the CAT Plan.

Considering the topographic factors, soil type, climate, land-use/land-cover in the catchment area following engineering and biological measures have been proposed to be undertaken with the aim to check the soil erosion, prevent/check siltation of reservoir and to maintain its storage capacity in the long run. The Aulliya Watershed Area Treatment Map is presented in Figure 1.7 and the statistics are presented in Table 1.9,

Table – 1.9: Area of Low Sediment Index Watershed Wise

S. No.	Watershed	Very Severe	Severe	Moderate	Slight	Negligible	Water bodies	Total (in SqKm)
1	5D4	0.2775	0.39555	5.8925	83.9215	109.593	-----	200.08

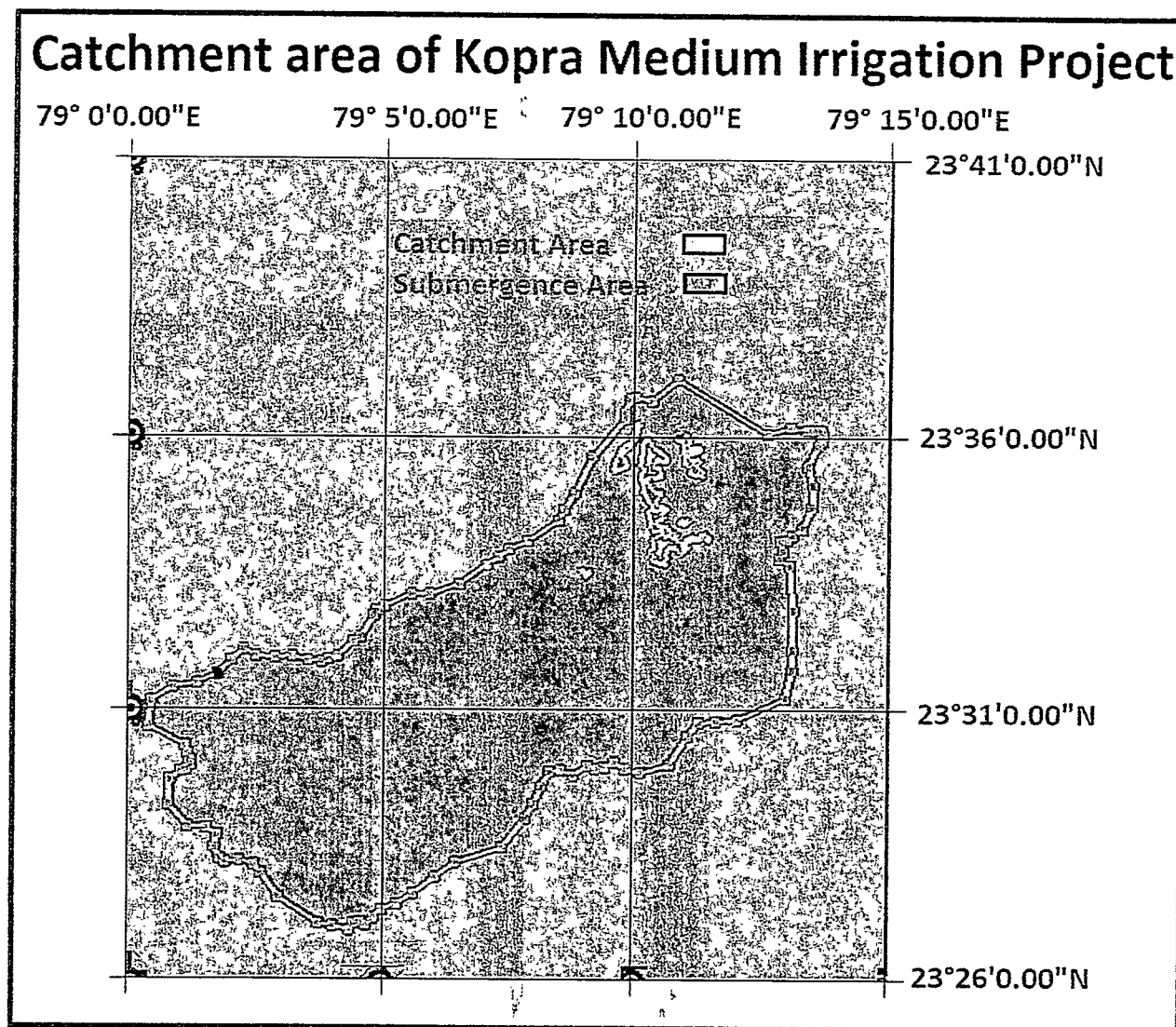


Figure – 1.7 (i) & (ii): Compartment wise Map for Kopra Medium Watershed Area Treatment



1.10 Treatment of Individual Sub-Watershed

There are mainly five categories of land uses for which a proper treatment plan should be developed. First is the agricultural land as this activity can never be eliminated. And, agriculture activities, if faulty, result in heavy loss of fertile soil. Second, is open forest land for conservation reasons. Third is scrub or degraded land, which contributes heavily to silt load. Possibilities exist to bring this area under pastures and plantation to meet local demand of fuel and fodder and thus decreasing the biotic pressure on the forests leading to environment friendly approach of sustainable development. The fourth and most important category is barren land because with practically no vegetal cover the area produces huge amount of silt load. The fifth is dense forest land where a few places soil conservation measures are required.

In the present case, An area of 66755 ha falling under forest case would be taken up for conservation under the CAT plan within free draining catchment.

Considering the topographic factors, soil type, climate, land-use/land-cover in the catchment area following measures have been proposed to be undertaken with aim to check soil erosion, prevent/check siltation of reservoir and to maintain its storage capacity in the long run.

1.10.1 Activities to be

Undertaken Enrichment

Plantation

There are a few locations within forest in the catchment area where the crown density is poor and Plantation can be done to increase the patch density of crop.

Treatment of Pasture

The restoration and management of degraded pasture is a vital objective, both to provide sufficient habitat for spatial movement of the spillover species outside and within catchment area and to provide biological resources to the local populace. The pastures have their own unique significance in the geophysical, environmental and socio-economic set-up of the region. They are the prime and continual source of herbage for the wild herbivores which are prey base for carnivores, cattle, sheep and goats. These pastures are extensively grazed by the live stocks of the local people. The large scale and indiscriminate grazing of these pasture over a prolong time has left these pastures ominously degraded. The palatable grasses are no more than a few inches tall and the other related pasture species have also started showing signs of stress. Because of continuous and heavy pressure of grazing, barren patches have developed over vast areas and soil erosion is rampant in these pastures. There is an imperative need to address this abysmal and alarming situation immediately before these pastures are brought to such a condition, where, their rejuvenation becomes impossible. Owing to traditional rights of the grazers, it is difficult to restrict the number of animals grazing there. Thus, the only alternative left is to increase the



productivity of these pastures to cope with the grazing pressures. The situation warrants for a realistic survey and allied research in context of entire grazing issues and formulation of an action plan for corrective measures within the gambit of the state policy on the subject matter. Till such time the following recommendations are made for the management of pastures.

- Assessment of the carrying capacity of the pastures through surveys to ascertain allowable size of live stocks.
- Periodical field checking of the size of the herds mentioned in the permits to avoid misuse by some permit holders.
- Public awareness.
- Periodical closure of areas in pastures for the proliferation of seeds of desirable grass species.
- Implementation of rotational deferred grazing system to derive the advantage of early nutritive growth and rest period during the growing season.
- Interaction with the local people and so that a sort of social fencing could be achieved.

Nursery Support

In order to meet the huge requirement of saplings required under biological / bio-engineering measures and reservoir rim treatment new nursery has to be developed along with support to the existing nurseries which shall also augment the supply of saplings for the works proposed.

Table – 1.14: Basis for selection of catchment area treatment measures

Treatment measure	Basis for selection
Social forestry, fuel wood and fodder grass development	Near settlements to control tree felling
Contour Bunding	Control of soil erosion from agricultural fields.
Pasture Development	Open canopy, barren land, degraded surface
Afforestation	Open canopy, degraded surface, high soil erosion, gentle to moderate slope
Barbed wire fencing	In the vicinity of afforestation work to protect it from grazing etc.
Step drain	To check soil erosion in small streams, steps with concrete base are prepared in sloppy area where silt erosion in the stream and bank erosion is high due to turbidity of current.
Nursery	Centrally located points for better supervision of proposed afforestation, minimize cost of transportation of seedling and ensure better Survival.



➤ **Stream bank Protection**

Stream bank erosion is caused by variety of reasons such as destruction of vegetative cover, mass movement on unstable bank slopes, undermining of top portion of lower bank by turbulent flow and sliding of slopes when saturated with water. The Stream Bank Protection would include wire crate boulder spurs in two to three tiers depending upon the high flood level of the streams.

➤ **Contour Staggered Trenches**

Contour staggered trenches are mainly provided to trap the silt and runoff. This is also done to prepare a fertile base for plantation, in moderately steep to very, very steep slopes.

➤ **Landslide Control**

Rainfall pattern of the area and water seepage coupled with geological formation results in landslides. Water plays an important role in triggering of landslides and mass wasting processes along with other factors such as slope and nature of soil/land-cover/land-use. However, most of the landslides are caused by human negligence. Road construction, overgrazing of hill slopes, felling of trees for timber, fuel, and fodder and upslope extension of cultivation are some of main causes of landslides. Gabion structures shall be provided at the base of the land slide zones to control the toe erosion by water.

➤ **Provision for Forest Protection**

The need for rigorous watch and ward of the forest covered under the catchment area becomes more imperative in view of proposed new plantation under the CAT plan and due to increased human activity in the form of labour, who shall be engaged for forestry works. Thus, fire protection measures including construction and maintenance of fire lines, construction of check-posts, watch towers have to be undertaken. Besides these construction / repair of forest boundary pillars shall also be carried out. The forest staff shall have to be properly equipped with modern utility gadgets like walky-talky, GPS and fire-fighting equipment's.

प्रस्ताव

क्र.	कार्य का नाम	मात्रा	दर प्रति हेक्टर	आवश्यक राशि लाख में	अधिव्य
1	Construction of checkdam by collection of loose boulders spread over surface of forest area	500 हेक्टर	LS	25.00	भू-क्षरण (Soil Erosion) रोकने तथा जलस्तर को बढ़ाने के लिए प्रस्तावित राशि आवश्यक है।
2	Creation of Water Body	05 नग	2000000	100.00	वीरगंगा दुर्गावती टाईगर रिजर्व के अंतर्गत समस्त परिक्षेत्रों में वन एवं वन्यप्राणी सुरक्षा एवं रहवास को दृष्टिगत रखते हुये जलस्त्रोत विकास हेतु प्रस्तावित राशि आवश्यक है।
3	चारागाह विकास कार्य प्रथम वर्ष	500 हेक्टर	9500	47.50	टाईगर रिजर्व के अंतर्गत वन्यप्राणीयों को सुलग रहवास के साथ साथ भोजन व्यवस्था के प्रबंधन हेतु प्रस्तावित चारागाह विकास कार्य किया जाना आवश्यक है। जिसमें भू-क्षरण (Soil Erosion) को रोका जायेगा एवं Invasive प्रजातियों को हटाया जायेगा।
	चारागाह विकास कार्य द्वितीय वर्ष	500 हेक्टर	5000	25.00	
	चारागाह विकास कार्य तृतीय वर्ष	500 हेक्टर	3000	15.00	
	कुल योग	500 हेक्टर	4716	87.50	
4	खरपतवार उन्मूलन कार्य प्रथम वर्ष	1000 हेक्टर	4716	47.16	टाईगर रिजर्व के अंतर्गत वृक्षारोपण कार्य अंतर्गत नदी में जलमग्न व क्षमता बढ़ेगी तथा नदी का कटाव को रोकने में सहायक होगी साथ ही वन्यप्राणीयों को लाभकारी सिद्ध होगी इस लिये प्रस्तावित राशि आवश्यक है।
	खरपतवार उन्मूलन कार्य द्वितीय वर्ष	1000 हेक्टर	3930	39.30	
	खरपतवार उन्मूलन कार्य तृतीय वर्ष	1000 हेक्टर	1965	19.65	
	कुल योग	1000 हेक्टर	9825	106.11	
5	वृक्षारोपण कार्य प्रथम वर्ष	300 हेक्टर	5000	29.47	
	वृक्षारोपण कार्य द्वितीय वर्ष	300 हेक्टर	3000	15.00	
	वृक्षारोपण कार्य तृतीय वर्ष	300 हेक्टर	3000	9.00	
	कुल योग	300 हेक्टर	9825	53.47	
6	Collection of Seed/ Purchase (घोट. खैर बीज) & Seed/Sowing	LS	LS	1.00	
	कुल योग			373.08	

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D.D.O.

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D.D.O.

कायपालन देना
जल संसाधन संभाग क्र०।
महारा (च० प्र०)

[Signature]
प्रमोदल अधिकारी,
वीरगंगा दुर्गावती टाईगर रिजर्व,
सागर (म.प्र.)

**Cost Benefit Analysis for
KOPRA MEDIUM IRRIGATION PROJECT**

On the basis of Guidelines for forest land diversion 2018

**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 hill	Not applicable	
2	Proposal for defense installation purposes and oil prospection (prospecting only)	Not applicable	
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction	Not applicable	
4	All other proposals involving forest land more than 20 hectares in plains and more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation project's mining activity railway lines, location specific installations like microwave station, auto repeater centres, 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 of overall public interest. The Kopra Medium Irrigation Project falls under this category.

Table-B Estimation of cost of forest diversion

No.	Nature of proposal	Remark
1	Ecosystem services losses due to proposed forest diversion	Ecosystem services due to diversion of forest land suggested by the Central Powered Committee as per the forest classification report of proposed Kopra Medium Irrigation Project is Rs. 9.58 Lakh/Ha Cost of Land : $= 272.00 \times 9.58 = \text{Rs.}2605.76 \text{ Lakh.}$
2	Loss of animal husbandry productivity, including cost of fodder.	As per the cost benefit guideline i.e 10% of N.P.V. 0.958 Lakh per Ha. $= 272.00 \times 0.958 = \text{Rs.} 260.58 \text{ Lakh}$
3	Cost of human resettlement	There is no human resettlement in forest submergence region due to the proposed Kopra Medium Irrigation Project. Hence the cost of human resettlement is 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 the project.	There is no loss of public facilities and administrative infrastructures of forest land due to construction of Kopra Medium Irrigation Project, no cost has been added on this account.
5	Possession value of forest land diverted.	The possession value of forestland diverted is taken 30% of the N.P.V. due to loss of forest i.e 2.87 Lakh / Ha. $= 272.00 \times 2.87 = \text{Rs} 780.64 \text{ Lakh}$
6	Cost of suffering to oustees	Not applicable
7	Habitat Fragmentation Cost	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. Hence, 50% of N.P.V.= 4.79 Lakh per Ha. $= 272.00 \times 4.79 = \text{Rs.} 1302.88 \text{ Lakh}$
8	Compensatory afforestation and soil & moisture conservation cost	The cost @ Rs 4.00 Lakh per Ha. is taken compensatory afforestation and soil moisture conservation Hence amount will be : $= 272.00 \times 4.00 = \text{Rs.}1088.00 \text{ Lakh}$
9	Total cost due to forest land diversion.	Total cost due to forest land diversion for Kopra Medium Irrigation Project in lakhs will be: $= 2605.76 + 260.58 + 780.64 + 1302.88 + 1088.00 = 6037.86 \text{ Lakh}$

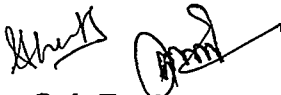
KOPRA MEDIUM IRRIGATION PROJECT


COST BENEFIT ANALYSIS


Total Cost due to forest land : 6037.86 Lakhs

Total Benefit due to Project : 10514.10 Lakhs

Benefit Cost Ratio of the Project : 1.741


Sub Engineer


(Nishesh Goswami)
SDO
WR Sub Dn. No.3
Garhakota


(Akhil Bithare)
EE
WR Dn. No. 1
Sagar Dist. Sagar(MP)

कार्यालय वनमंडल अधिकारी, नौरादेही (व.प्रा.) वनमंडल, सागर (म.प्र.)



कार्यालय का पता - पोद्दार कॉलोनी के सामने, तिली रोड, फॉरेस्ट केम्पस,
सागर (म.प्र.) फोन/फैक्स नं. - 07582-236867
e-mail - dfowlndehi@mp.gov.in



क्रमांक/मा.चि./2023/234
प्रति,

सागर, दिनांक -27/2/2023

अपर प्रधान मुख्य वन संरक्षक,
(कक्ष - भू-प्रबंध),
म.प्र. भोपाल।

विषय :- कोपरा मध्यम परियोजना अंतर्गत एफ.टी.एल.-2 एवं एफ.टी.एल.-4 की गणना सर्वे रिपोर्ट प्रेषित करने बावत्।

संदर्भ :- आपके कार्यालय से दूरभाष पर प्राप्त निर्देश दिनांक 31.01.2023.

—0—

विषयांकित में निवेदन है कि आपके कार्यालय से दिनांक 31.01.2023 को दूरभाष पर कोपरा मध्यम परियोजना अंतर्गत एफ.टी.एल.-2 एवं एफ.टी.एल.-4 की गणना सर्वे रिपोर्ट प्रेषित करने बावत् निर्देश प्राप्त हुए हैं। तत्संबंध में आपके निर्देशानुसार गेम परिक्षेत्रों से कोपरा मध्यम परियोजना अंतर्गत कक्षवार प्राप्त एफ.टी.एल.-2 एवं एफ.टी.एल.-4 की गणना सर्वे रिपोर्ट निम्नानुसार एकजाई कर अवलोकनार्थ एवं आवश्यक कार्यवाही हेतु सम्प्रेषित है :-

क्र. प्रजाति का प्रकार		गोलाई वर्ग (सेमी.)						
		0-30	31-60	61-90	91-120	121-150	151 से अधिक	योग
FTL/FRL-2								
1	सागौन	1001	1527	319	19	1	0	2871
2	सतकठा	1883	1474	605	485	318	207	4972
	योग —	2884	3001	924	504	319	207	7843
FTL/FRL-4								
1	सागौन	488	781	176	17	0	0	1462
2	सतकठा	856	822	315	191	123	70	2377
	योग —	1344	1603	491	208	123	70	3839
FTL/FRL-0								
1	सागौन	6219	9606	2094	275	31	05	18230
2	सतकठा	10881	7994	3096	1975	1333	1073	26352
	योग —	17100	17600	5190	2250	1364	1078	44582

वनमंडल अधिकारी
नौरादेही (व.प्रा.) वनमंडल
सागर (म.प्र.)

न्यायालय कलेक्टर जिला सागर (म0प्र0)

कमांक/8637/री.कले./17

:: संशोधित आदेश ::

सागर दिनांक 22.07.17

इस न्यायालय के आदेश कमांक-8495/री.कले./17 सागर दिनांक 10.07.17 के अनुसार :-

क्र.	ग्राम का नाम	प.ह.नं.	तहसील	विस्थापित ग्राम की निजी भूमि का रकवा (हे.मे)	विस्थापित ग्राम की राजस्व भूमि का रकवा (हे.मे.)
01	02	03	04	05	06
01	पीपला	71	देवरी	98.210	96.290
02	रामपुरा(मंडाज)	71	देवरी	31.240	176.220
03	कुशवासी	72	देवरी	70.070	94.370
04	नौरादेही	73	देवरी	45.980	70.695
कुल योग-				437.575	

उक्त ग्रामों की भूमि का अधिपत्य राजस्व विभाग द्वारा वन विभाग को सौंपे जाने से उक्त भूमि को वन विभाग के पक्ष में नामांतरित किए जाने की स्वीकृति एतद द्वारा दी गयी थी।

कार्यपालन यंत्री जल संसाधन संभाग कमांक-एक सागर द्वारा पत्र कमांक-2107/कार्य/कोपरा/मध्यम परि./2017-18 सागर दिनांक 20.07.17 के द्वारा प्रस्तावित किया गया कि आदेश दिनांक 10.07.17 द्वारा नौरादेही अभ्यारण्य के मध्य विस्थापित राजस्व ग्रामों की 437.575 हे. भूमि को वन विभाग को सौंपा गया है।

विस्थापन के परिणाम स्वरूप वन विभाग के अधिपत्य में सौंपी गई, उक्तानुसार 437.575 हे. शासकीय राजस्व भूमि का प्रयोजन कोपरा मध्यम सिंचाई परियोजना के वैकल्पिक वृक्षारोपण हेतु अभिलेखित करने का संशोधित आदेश जारी करने का अनुरोध किया गया है। जिससे कोपरा मध्यम परियोजना के निर्माणार्थ आवश्यक नौरादेही अभ्यारण्य की भूमि का उपयोग हेतु जल संसाधन की पूर्तानुमति का मार्ग प्रशस्त हो सके।

अतः इस न्यायालय के आदेश कमांक-8495/री.कले./17 सागर दिनांक 10.07.17 में उक्त करते हुए ऊपर वर्णित 437.575 हे. भूमि वन विभाग के पक्ष में नामांतरित करने की आज्ञा दी जाती है यह भूमि कोपरा मध्यम सिंचाई परियोजना के वैकल्पिक वृक्षारोपण हेतु योग में लायी जाने हेतु आदेशित की जाती है।

(आलोक कुमार सिंह)
कलेक्टर
जिला-सागर
सागर दिनांक 22.07.17

कमांक/8637/री.कले./17
लेखिका :-

- मुख्य वन संरक्षक सागर वृत्त सागर
- मुख्य अभियंता वन केंद्र कछार जल संसाधन विभाग सागर
- वन मंडल अधिकारी नौरादेही (व.प्रा.) वन मंडल सागर
- अधीक्षक यंत्री जल संसाधन मण्डल सागर
- कार्यपालन यंत्री जल संसाधन संभाग कमांक-एक सागर
- अनुविभागीय अधिकारी (राजस्व) देवरी जिला सागर को आदेशानुसार आवश्यक कार्यवाही हेतु।
- तहसीलदार देवरी जिला सागर को आदेशानुसार आवश्यक कार्यवाही हेतु।

(आलोक कुमार सिंह)
कलेक्टर
जिला-सागर

प्रमाण-पत्रउक्त भूमि का अतिक्रमण मुक्त होने बावत् सक्षम राजस्व अधिकारी का प्रमाण-पत्र

नौरादेही (व.प्रा.) वनमंडल सागर, जिला सागर के अंतर्गत विस्थापित ग्राम रमपुरा मड़ाज की निजी भूमि 31.240 है एवं राजस्व भूमि 176.220 है, तहसील देवरी के अंतर्गत :-

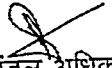

1. ग्राम रमपुरा (मड़ाज) तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 31.240 हेक्टेयर निजी भूमि है।
2. ग्राम रमपुरा (मड़ाज) तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 176.220 हेक्टेयर राजस्व भूमि है।

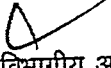
उक्त ग्राम की कुल निजी भूमि 31.240 हेक्टेयर एवं राजस्व भूमि 176.220 हेक्टेयर भूमि दी

गई है।

प्रमाणित किया जाता है कि विस्थापित ग्रामों की उक्त भूमि अतिक्रमण से मुक्त है।


गेम परिक्षेत्र अधिकारी
सिंगपुर


उप वनमंडल अधिकारी
(व.प्रा.) रहली

तहसीलदार
जिला सागर
18.4.17


अनुविभागीय अधिकारी
(राजस्व) देवरी

प्रमाण-पत्र


उक्त भूमि का अतिक्रमण मुक्त होने बावत सक्षम राजस्व अधिकारी का प्रमाण-पत्र


नौरादेही (व.प्रा.) वनमंडल सागर, जिला सागर के अंतर्गत विस्थापित ग्राम पीपला की निजी भूमि 98.210 है एवं राजस्व भूमि 96.290 है, तहसील देवरी के अंतर्गत :-


1. ग्राम पीपला तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 98.210 हेक्टेयर निजी भूमि है।
2. ग्राम पीपला तहसील देवरी पटवारी हल्का नं. 71 खसरा नं. (सूची संलग्न) रकबा 96.290 हेक्टेयर राजस्व भूमि है।

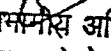
उक्त ग्राम की कुल निजी भूमि 98.210 हेक्टेयर एवं राजस्व भूमि 96.290 हेक्टेयर भूमि दी गई है।

प्रमाणित किया जाता है कि विस्थापित ग्रामों की उक्त भूमि अतिक्रमण से मुक्त है।


गेम परिक्षेत्र अधिकारी
सिंगपुर


उप वनमंडल अधिकारी
(व.प्रा.) रहली


तहसीलदार
देवरी जि. सागर


अनुविमर्श अधिकारी
(राजस्व) देवरी

प्रमाण-पत्र

उक्त भूमि का अतिक्रमण मुक्त होने बावत सक्षम राजस्व अधिकारी का प्रमाण-पत्र

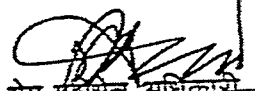
नौरादेही (व.प्रा.) वनमंडल सागर जिला सागर के अन्तर्गत वित्तीय ग्राम नौरादेही की भूमि 45.980 हेक्टेयर है एवं राजस्व भूमि 70.695 हेक्टेयर है। तहसील देवरी के अंतर्गत :-


1. ग्राम नौरादेही तहसील देवरी पटवारी हत्का नं 73 खसरा नं (चुकी संतान) खसरा 45.980 हेक्टेयर निजी भूमि है।
2. ग्राम नौरादेही तहसील देवरी पटवारी हत्का नं 73 खसरा नं (चुकी संतान) खसरा 70.695 हेक्टेयर राजस्व भूमि है।


उक्त ग्राम की कुल निजी भूमि 45.980 हेक्टेयर एवं राजस्व भूमि 70.695 हेक्टेयर मुनि के

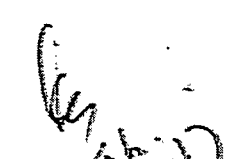
हैं।

प्रमाणित किया जाता है कि वित्तीय ग्रामों की उक्त भूमि अतिक्रमण से मुक्त है।


गेम परिक्षेत्र अधिकारी
नौरादेही


उप वनमंडल अधिकारी
(व.प्रा.) बलान


अनुविभागीय अधिकारी
(राजस्व) देवरी


18/12/2017

प्रमाण-पत्र

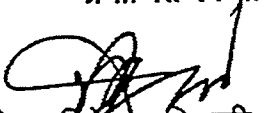
उक्त भूमि का अतिक्रमण मुक्त होने बावत सक्षम राजस्व अधिकारी का प्रमाण-पत्र


नौरादेही (व.प्रा.) वनमंडल सागर, जिला सागर के अंतर्गत विस्थापित ग्राम कुशयारी की निजी भूमि 70.070 है एवं राजस्व भूमि 94.370 है, तहसील देवरी के अंतर्गत :-

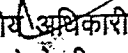
1. ग्राम कुशयारी तहसील देवरी पटवारी हल्का नं. 72 खसरा नं. (सूची संलग्न) रकबा 70.070 हेक्टेयर निजी भूमि है।
2. ग्राम कुशयारी तहसील देवरी पटवारी हल्का नं. 72 खसरा नं. (सूची संलग्न) रकबा 94.370 हेक्टेयर राजस्व भूमि है।

उक्त ग्राम की कुल निजी भूमि 70.070 हेक्टेयर एवं राजस्व भूमि 94.370 हेक्टेयर भूमि दी गई है।

प्रमाणित किया जाता है कि विस्थापित ग्रामों की उक्त भूमि अतिक्रमण से मुक्त है।


गेम पटवारी अधिकारी
नौरादेही


उप वनमंडल अधिकारी
(व.प्रा.) बरमान


अनुविभागीय अधिकारी
(राजस्व) देवरी


Tahsildar
Deori

न्यायालय कलेक्टर सागर जिला सागर

प्रकरण क्र. 101अ/10(3) वर्ष 2019-20
ग्राम मझाज प.ह.नं. 53
तहसील देवरी जिला सागर (म.प्र.)

कार्यपालन यंत्री
जल संसाधन संभाग क्रमांक-01 सागर
जिला सागर (म.प्र.)
विकल्प
म.प्र.शासन

आवेदक
अनावेदक

आदेश :-

(पारित दिनांक 12/3/2020)

प्रकरण का संक्षिप्त विवरण इस प्रकार है कि तहसील देवरी जिला सागर का प्रकरण क्रमांक-1742 भी/121 वर्ष 2019-20 मीजा मझाज प.ह.नं. 53 तहसील देवरी, वन विभाग को वैकल्पिक वृक्षारोपण हेतु भूमि आवंटित किये जाने के संबंध में अनुविभागीय अधिकारी देवरी के माध्यम से प्राप्त हुआ।

प्रकरण का अपलोकन किया गया। तहसीलदार देवरी द्वारा यह प्रकरण न्यायालय के पत्र क्रमांक-896/री.कले./2019 सागर दिनांक 07.11.19 के संबंध में दर्ज कर प्रकरण में इस्तहार जारी कर आपत्तियां आमंत्रित की गई। ग्राम पंचायत से प्रस्ताव लिया गया पटवारी से रिपोर्ट मंगाई गई। तहसीलदार देवरी द्वारा प्रकरण में उपरोक्तानुसार कार्यवाही पूर्ण कर प्रतिवेदन दिनांक 28.02.2020 को तैयार कर ग्राम मझाज प.ह.नं. 53 सानिम देवरी की शासकीय भूमि खनं 2 रकबा 28.33 है, में से 19.73 है एवं खनं 3 रकबा 107.84 है कुल रकबा 127.57 है भूमि आपचंद मध्यम परियोजना के वैकल्पिक वृक्षारोपण हेतु आवंटित की जाना सधित होना एवं आदेश दिनांक 22.07.2017 के द्वारा आरक्षित कुल भूमि 437.575 है, में से शेष भूमि रकबा 310.00 है कोपरा मध्यम सिंचाई परियोजना के लिए वैकल्पिक वृक्षारोपण हेतु शेष रहेगी प्रस्तावित कर प्रकरण अनुविभागीय अधिकारी देवरी को भेजा गया। अनुविभागीय अधिकारी देवरी द्वारा तहसीलदार के प्रतिवेदन दिनांक 28.02.2020 से सहमत होकर खनं 02 रकबा 28.33 है, में से 19.73 है एवं खसरा नंबर 03 रकबा 107.84 है कुल रकबा 127.57 है भूमि आपचंद मध्यम परियोजना के वैकल्पिक वृक्षारोपण हेतु आवंटित किए जाने एवं आदेश दिनांक 22.07.17 के द्वारा आरक्षित कुल भूमि रकबा 437.57 है, में से शेष रहे रकबा 310.00 है भूमि को कोपरा मध्यम सिंचाई परियोजना के वैकल्पिक वृक्षारोपण हेतु शेष रखे जाना प्रस्तावित कर प्रकरण इस न्यायालय को भेजा गया।

अतः तहसीलदार/अनुविभागीय अधिकारी देवरी के प्राप्त प्रस्ताव पर ग्राम मझाज प.ह.नं. 53 तहसील देवरी की निम्नानुसार भूमि :-

क्र.	ग्राम का नाम	प.ह.नं.	खनं	कुल रकबा (ह.मै)	आरक्षित रकबा (ह.मै)	मद
01	मझाज	53	2	28.33	19.73	चारगाह शासकीय
			3	107.84	107.84	पहाड़ शासकीय
				कुल रकबा	127.57	

का म.प्र.भू.संहिता 1959 (यथा संशोधित 2018) की धारा 237(3) के तहत मद परिवर्तन करते हुए कुल 127.57 है भूमि आपचंद मध्यम परियोजना के वैकल्पिक वृक्षारोपण हेतु आरक्षित की जाती है एवं प्रस्ताव अनुसार आदेश दिनांक 22.07.17 के द्वारा आरक्षित कुल भूमि रकबा 437.57 है, में से 310.00 है भूमि कोपरा मध्यम सिंचाई परियोजना के वैकल्पिक वृक्षारोपण हेतु शेष रहेगी। उक्त भूमि के आरक्षण से ग्राम का आम निस्तार का रकबा अप्रभावित रहेगा। आरक्षित भूमि का नियत प्रयोजन में उपयोग न होने पर पूर्ण अथवा आंशिक भूमि वापिस ली जा सकती।

कलेक्टर
जिला-सागर

P.T.O.