

Environmental Impact Assessment

July 2017

PAK: Jalalpur Irrigation Project

Project No. 46528-002

Part 6 of 12 of the Appendices

Prepared by Irrigation Department, Government of Punjab for the Asian Development Bank (ADB).

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**Irrigation Department
Government of Punjab**

DETAILED DESIGN OF JALALPUR IRRIGATION PROJECT

Appendices

**ENVIRONMENTAL IMPACT ASSESSMENT
(EIA)**

MAY 2017



Detailed Design of Jalalpur Irrigation Project

APPENDICES

EIA

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Fig37: Ground Water Sampling



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Fig40: Ground Water Sampling

ANNEXURE – III
MAPS



Figure 1: Missri Mor Construction Camp # 1

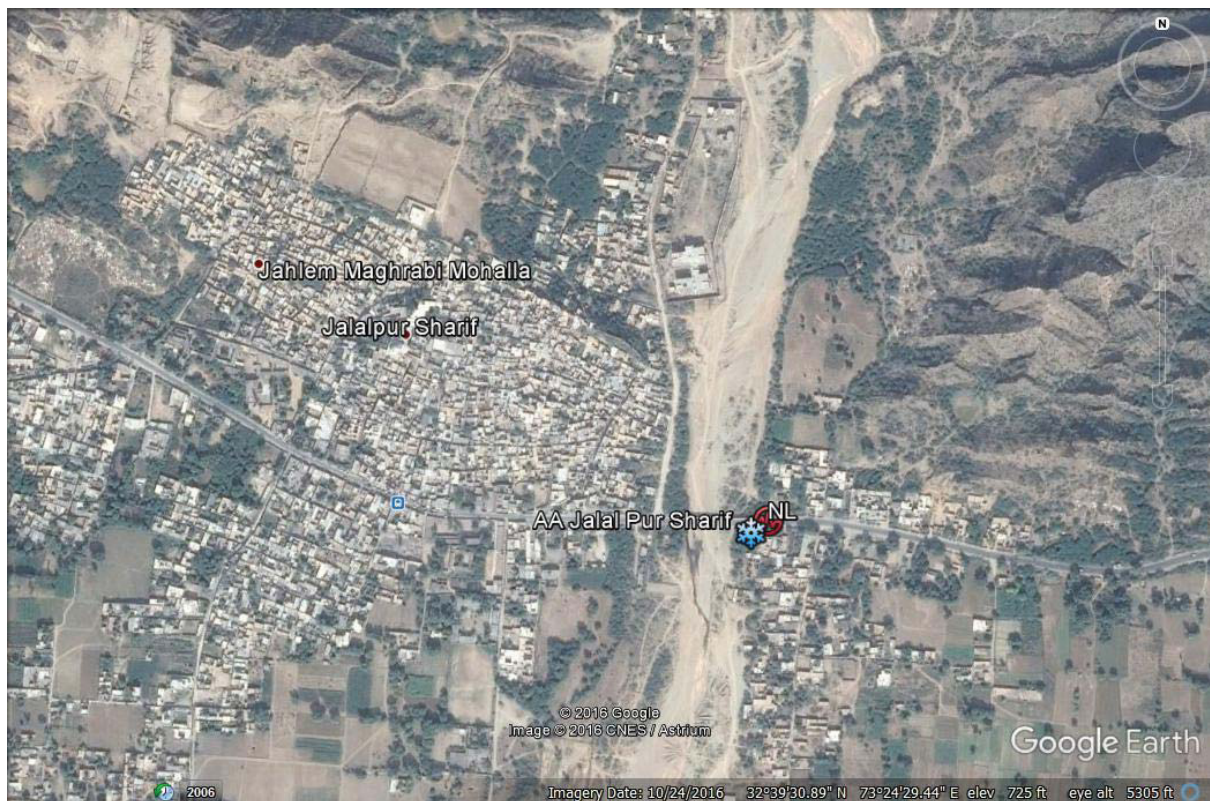


Figure 2: Jalal Pur Sharif Site

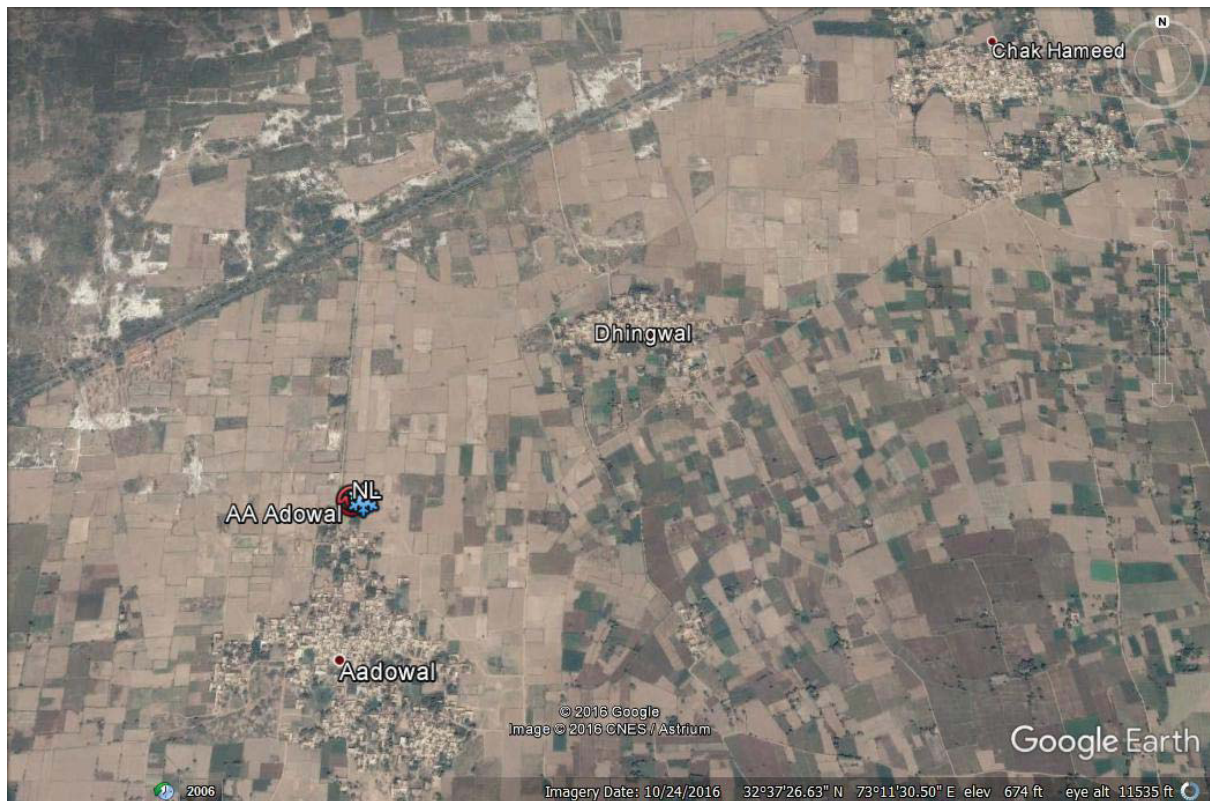


Figure 3: Adowal Village Site

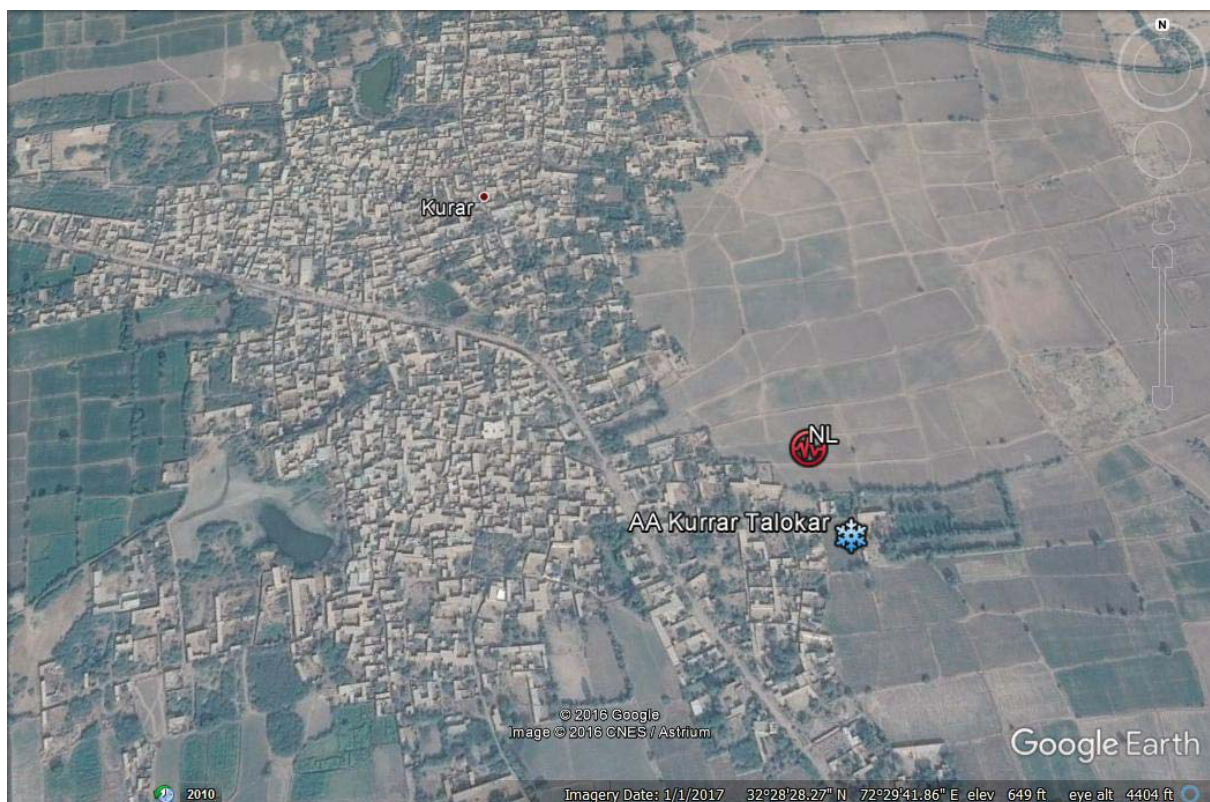


Figure 4: Kurrar Talokar Village Site

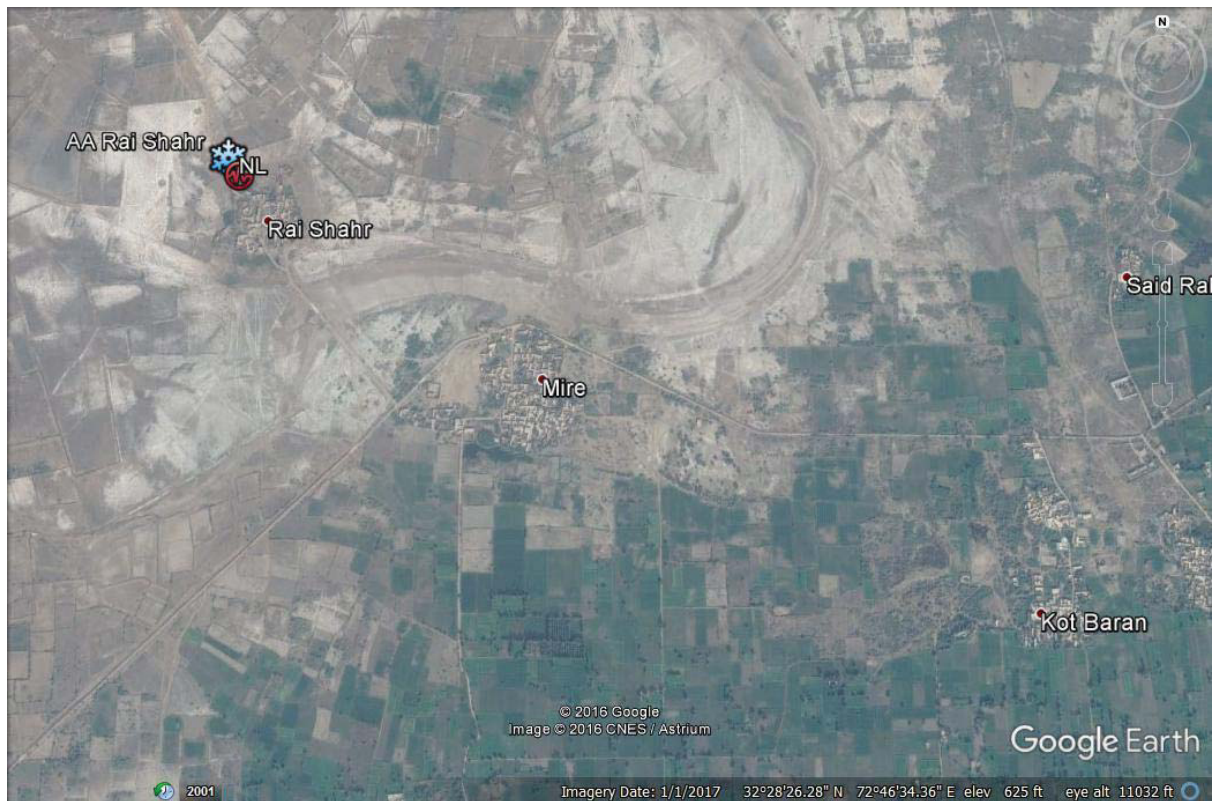


Figure 5: Rai Shahr Village Site

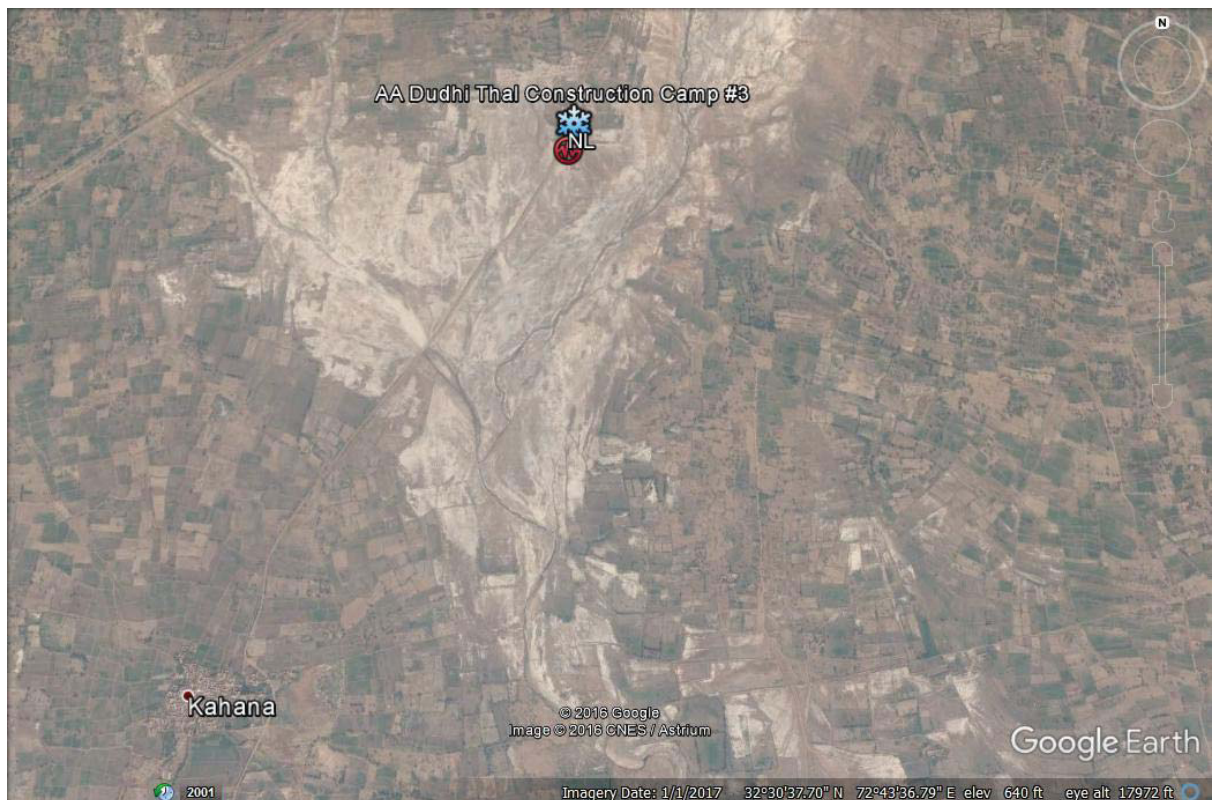


Figure 6: Dudhi Thal Construction Camp # 3

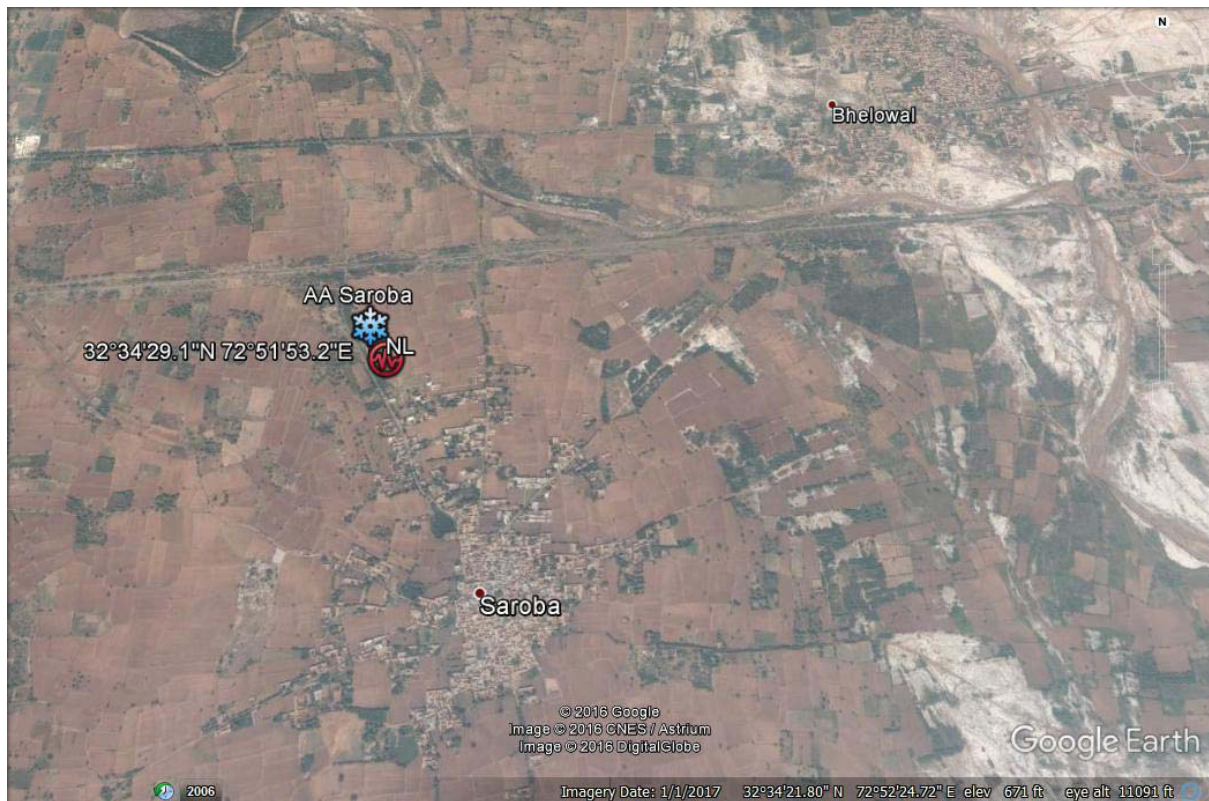


Figure 7: Saroba Construction Camp # 4

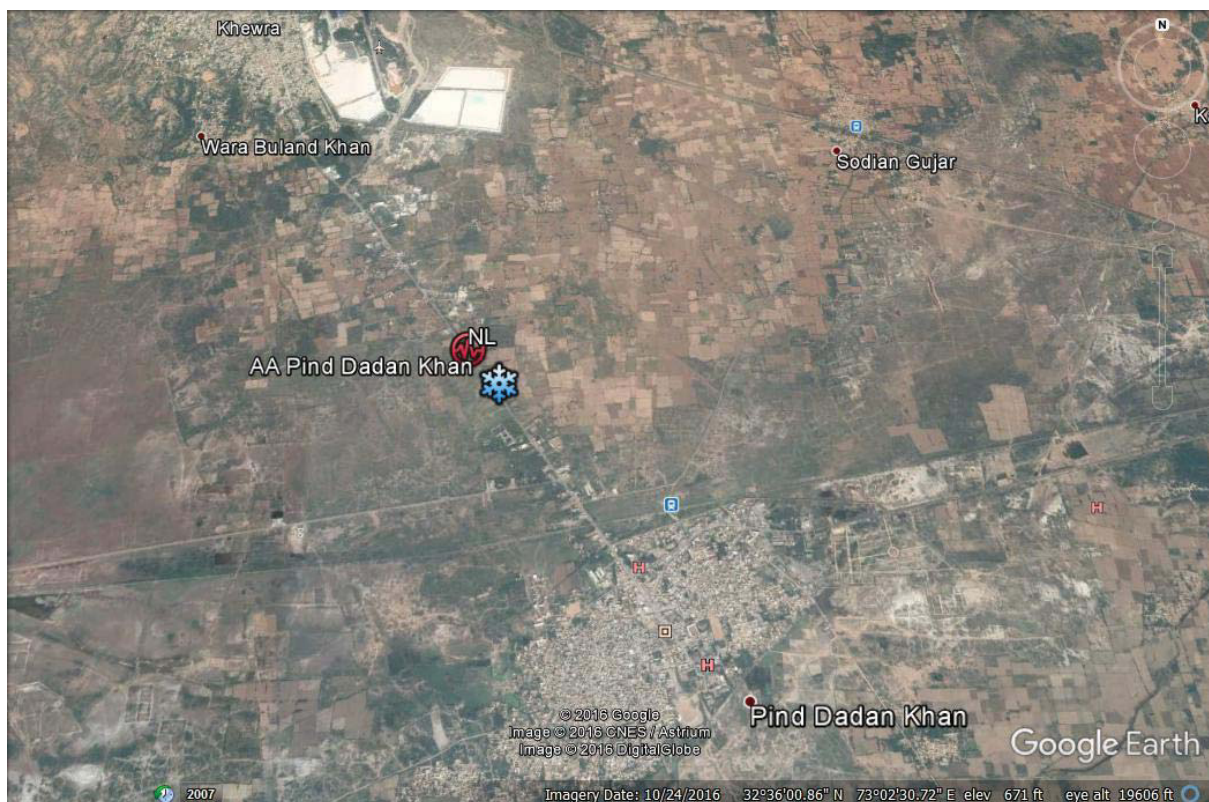


Figure 8: Pind Dadan Khan Site

Appendix V: A list of Secondary Sources used in Compiling (Biological and Natural Environment) Segment of EIA

Appendix V: A List of Secondary Sources Used in Compiling (Biological and Natural Environment)

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Appendix VI: A Detailed List of Flora and Fauna Prevalent in the Project Area

Appendix VI: Detailed List of Flora and Fauna Prevalent in the Area

List of Flora

#	Taxon	Family	Vernacular Name	Life form	Local Occurrence	Flowering Period
1	<i>abutilon indicum</i> (Linn.)	Malvaceae	Kanghi buti	Shrub	Common	
2	<i>Acacia nilotica</i> (Linn.) Delice	Mimosaceae	Babul.	Tree	Very Common	
3	<i>Achyrathus aspera</i> Linn	Amarantaceae	Charchita	Herb	Common	
4	<i>Adhatoda vasica</i> Nees	Acanthaceae	Arusa, vasaca		Common	
5	<i>Adiantum capillus-veneris</i> Linn.	Polypodiaceae	Sumbul, hansraj			
6	<i>Ageratum houstonianum</i> Mill.	Astraceae			Less common	
7	<i>Alhagi maurorum</i> Medic.	Papilionaceae	Khar shutar	Herb	Very Common	March-May
8	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Baskhapra		Less common	Aug- Dec
9	<i>Calotropis gigantea</i> R. Br.	Asclepiadaceae	Akh	Shrub	Very Common	Year round
10	<i>Calotropis procera</i> (Wild.) R. Br.	Asclepiadaceae	Wild Akh	Shrub	Very Common	
11	<i>Cannabis sativa</i> Linn.	Cannabinaceae	Bhang.	Herb	Common	Aug to Oct
12	<i>Capparis decidua</i> (Forssk.) Edgew	Capparidaceae	Karir.	Shrub	Very Common	Jan to Apr
13	<i>Centella asiatica</i> (Linn.)	Apiaceae	Brami.		Less common	Mar to Jun
14	<i>Chrozophora tinctoria</i> (Linn.)	Euphorbiaceae	Subali.		Less common	May to July
15	<i>Citrullus colocynthis</i> Linn. Schrad.	Cucurbitaceae	Indrayan, Hunzal.	Twiner	Less common	Nov to Jan
16	<i>Convolvulus arvensis</i> Linn	Convolvulaceae	Hiran khari		Very Common	Dec to Jan
17	<i>Corchorus depressus</i> (Linn.) Stocks	Tiliaceae	Bhonphali.	Herb	Very rare	

#	Taxon	Family	Vernacular Name	Life form	Local Occurrence	Flowering Period
18	<i>Croton tiglium</i> Linn.	Euphorbiaceae	Jamal ghota.	Herb	Very Common	
19	<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	Akash-bel.	Herb	Rare	Jan to Feb
20	<i>Datura stramonium</i> Linn.	Solanaceae	Dhatoora.	Herb	Common	Mar to Jun
21	<i>Digera muricata</i> (Linn.) Mart	Amaranthaceae	Tartara.	Herb	Common	Aug to Dec
22	<i>Echinops echinatus</i> Roxb	Astraceae	Astrakhar	Shrub	Common	Aug to Jan
23	<i>Eclipta prostrata</i> Linn.	Astraceae	Bhaingra	Shrub	Very Common	May to Oct
24	<i>Embelia robusta</i> Roxb.	Myrsinaceae	Baobreng.		Common	July to Sept
25	<i>Euphorbia helioscopia</i> Linn.	Euphorbiaceae	Dodhi Kalan		Less Common	Feb to Mar
26	<i>Euphorbia prostrata</i> Ait	Euphorbiaceae	Dodhi Khurd		Very Common	Apr to Aug
27	<i>Fagonia cretica</i> Linn.	Zygophyllaceae	Damaso		Common	Apr to July
28	<i>Foeniculum vulgare</i> (Linn.) Mill.	Umbellifeae	Saunf	Herb	Cultivated	Mar to Apr
29	<i>Haloxylon recurvum</i> Bunge ex Boiss.	Chenopodiaceae	Ushnan.	Shrub	Less Common	Nov to Dec
30	<i>Launaea procumbens</i> (Roxb.) Ram. and Raj	Asteraceae	Dudglak.	Herb	Common	Oct to Dec
31	<i>Lawsonia inermis</i> Linn.	Linaceae	Alsi	Shrub	Less Common	Feb to Apr
32	<i>Malva parviflora</i> Linn.	Malvaceae	Panirak.	Shrub	Less Common	Jan to Mar
33	<i>Melia azedarach</i> Linn.	Meliaceae	Bakain	Tree	Common	
34	<i>Otostegia limbata</i> (Benth.) Boiss.	Labiatae	Bui	Shrub	Very Common	May to Jun
35	<i>Oxalis corniculata</i> Linn.	Oxalidaceae	Khatti buti,	Herb	Common	Mar to Dec
36	<i>Papaver hybridum</i> Linn.	Papaveraceae	Post	Herb	Less Common	Feb to Apr
37	<i>Peganum harmala</i> Linn.	Zygophyllaceae	Aspand.	Herb	Very Common	Oct to Dec
38	<i>Phyla nodiflora</i> (Linn.)	Verbenaceae	Bukkum		Very Common	Sept to Nov

#	Taxon	Family	Vernacular Name	Life form	Local Occurrence	Flowering Period
39	<i>Polygonum plebejum</i> R. Br.	Polygonaceae	Raniphal		Common	Feb to Apr
40	<i>Portulaca oleracea</i> Linn.	Portulacaceae	Khurfa	Herb	Very Common	Jul to Oct
41	<i>Prosopis cineraria</i> (Linn.) Druce	Mimosaceae	Jhand	Tree	Common	May to Aug
42	<i>Ranunculus muricatus</i> Linn.	Ranunculaceae	Latokari		Less Common	Feb to Apr
43	<i>Ricinus communis</i> Linn.	Euphorbiaceae	Arund	Shrub	Common	All Seasons
44	<i>Rosa damascena</i> Mill.	Rosaceae	Gulab	Shrub	Cultivated	Apr to Jun
45	<i>Salvadora oleoides</i> Dence.	Salvadoraceae	Peelu	Shrub	Less Common	Dec to Feb
46	<i>Sisymbrium irio</i> Linn.	Cruciferae	Khaksi.		Rare	Feb to Apr
47	<i>Solanum miniatum</i> Beruh. ex Willd.	Solanaceae	Mako	Herb	Very Common	Year round
48	<i>Solanum surratensis</i> Burm.F	Solanaceae	Katai khurd		Very Common	Jun to Nov
49	<i>Sonchus asper.</i> (Linn.) Hill.	Astraceae	Dodhak bastani		Very Common	Dec to Apr
50	<i>Sueda fruticosa</i> Forsk.	Chenopodiaceae	Khar.	Shrub	Common	Apr to Oct
51	<i>Swertia chirata</i> Buch. Ham.	Gentianaceae	Chiretta	Herb	Common	Sept to Nov
52	<i>Tamarix aphylla</i> (Linn.) Karst.	Tamaricaceae	Farash.	Tree	Rare	Aug to Mar
53	<i>Tephrosea purpurea</i> (Linn.) Pers.	Papilionaceae	Sarphonka.		Less Common	Aug to Oct
54	<i>Terminalia belerica</i> Roxb.	Combretaceae	Bahera.		Less Common	Apr to Jun
55	<i>Tinospora cordifolia</i> Miers ex Hook. F	Menispermaceae	Gilo		Common	Jun to Sept
56	<i>Trianthema govindia</i> Ham.	Aizoaceae	Buskhapra.		Common	Oct to Dec
57	<i>Tribulus longipetalus</i> Viv.	Zygophyllaceae	Gokhru kalan		Common	Oct to Dec
58	<i>Tribulus terrestris</i> Linn.	Zygophyllaceae	Chota Gokhru		Common	Aug to Nov
59	<i>Trichosanthes cucumerinus</i> Linn.	Cucurbitaceae	Chichinda		Less Common	Feb to Apr

#	Taxon	Family	Vernacular Name	Life form	Local Occurrence	Flowering Period
60	<i>Trachyspermum ammi</i> (Linn.) Sprague	Umbelliferae	Ajwain.	Herb	Cultivated	Mar to Apr
61	<i>Withania somnifera</i> Dunal	Solanaceae	Asgand		Very Common	Year round
62	<i>Zizyphus mauritiana</i> Lamk.	Rhamnaceae	Ber	Tree	Common	Mar to Jun
63	<i>Zizyphus nummularia</i> (Burm. f) Whight and Arn.	Rhamnaceae	Kokan Ber	Shrub	Common	Mar to Jun
64	<i>Zygophyllum simplex</i> Linn	Zygophyllaceae	Alethi	Herb	Very Common	Nov to Jan

List of Fauna

Common Name	Scientific Name
Mammals	
Punjab Urial	<i>Ovis vignei punjabiansis</i>
Mediterranean pygme shrew	<i>Suncus etruscus</i>
Lesser house bat	<i>Scotophilus kuhlii</i>
Northern palm squirrel	<i>Funnambuluspennantii</i>
House rat	<i>Rattus rattus</i>
House mouse	<i>Mus musculus</i>
Birds	
Lapwing	<i>Vanellinae</i>
Chukor (National Bird of Pakistan)	<i>Alectoris Chukar</i>
Green Backed Tit Redstart	<i>Parus Monticolus</i>
White-capped	<i>Chaimarrornis Leucocephalus</i>
Plumbeous redstart	<i>Rhyacornis fuliginosa</i>
Scaly-bellied Woodpecker	<i>Picus squamatus</i>
Fish	
Calbans	<i>Labeo calbasa</i>
Grass Carp	<i>Ctenopharyngodon idella</i>
Gulfam	<i>Cyprinus carpio</i>
Mahaseer	<i>Tor putitora</i>
Mori or Mirgal	<i>Cirrhinus mriaeala</i>
Mulee	<i>Wallago attu</i>
Paree	<i>Notopterus notopterus</i>
Rohu	<i>Labeo rohita</i>
Silver Carp	<i>Hypophthalmichthys molitrix</i>
Thaila	<i>Catla catla</i>
Tilapia	<i>Oreochromis sp.</i>

Appendix VII: PID's Letter to Wildlife Department



PROJECT MANAGEMENT UNIT (PMU)
L.B.D.C IMPROVEMENT PROJECT
CANAL BANK MUSTAFABAD,
LAHORE, PAKISTAN

Ph:# 0092 42 9250364

Fax#: 0092 42 9250362

No. PMU/LBDCIP/IPD/7777

DATED. 28-10-2016

To,

The Director General,
Punjab Wildlife and Parks Department,
2-Sanda Road,
Lahore.

SUBJECT: DETAILED DESIGN OF JALALPUR IRRIGATION PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY

Dear Sir,

Irrigation Department, Govt. of Punjab is undertaking detailed design of Jalalpur Irrigation Project for providing irrigation supplies to irrigate about 160,000 acres of land in Pind Dadan Khan and District Khushab area. The project is financed by Asian Development Bank (ADB) and NESPAK is providing consultancy services for Detailed Design, updating EIA & LARP and Preparation of Construction drawings.

Under the project, a new irrigation system will be constructed to irrigate areas of Tehsil Pind Dadan Khan of District Jhelum and District Khushab on right bank of the River Jhelum. The proposed main canal off-taking from right bank of Rasul Barrage is about 110km long with design discharge of 1,350 cusecs. The distribution system of 200km length comprises 18 distributary canals and three minor canals. More than 780 hydraulic structures of various kinds are anticipated across the main canal and distribution system.

Our Jalalpur Main Canal traverses along the narrow strip between the road on right side and River Jhelum on left side for its initial reach from RD 0+000 to RD 35+000 upto Jalalpur Sharif. After Jalalpur Sharif, the main canal turns toward northern side and runs in the foot hills passing through villages namely Dhok Bagh, Thill Sharif, Pindi Kukar, Rawal to Khewra and then after crossing under the Motorway at its RD 260+000 near Lila Interchange enters in Khushab district. A map showing the proposed main canal alignment is attached.

In this regard, you are requested to kindly provide the details (status, location, extent, boundary coordinates) of Wildlife Sensitive/ Reserved/ Protected/ Community Based Organizations Protected areas in the vicinity of the proposed Alignment of Canal for impact assessment in our EIA study as per ADB guidelines.

Our Consultant's team from NESPAK will coordinate with your office to collect the relevant information. Your early facilitation in providing the required information will be appreciated.


Khalid Hussain Qureshi,
Project Director

Encl: As above

Copy to: ✓ Team Leader, Jalalpur Irrigation Project Consultants

Appendix VIII: Response Letters from Wildlife Department

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OFFICE OF THE DEPUTY DIRECTOR WILDLIFE
SALT RANGE, CHAKWAL

No. 5076 /DDW-SR/2016

Dated: 23-11-2016

To,

Director General
Wildlife & Parks Punjab,
2 Sanda Road Lahore.

SUBJECT: DETAILED DESIGN OF JALALPUR IRRIGATION PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY

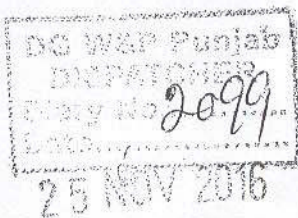
Reference: No. 3082/DG (W&P)/Mgt-3(34)/2016 dated 11-11-2016

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Please refer to the letter stated under reference. It is stated that the letter and the maps provided along with the reference letter considered and examined by this Office. It revealed that following protected areas occur in the vicinity of Jalalpur irrigation project.

- i) Rakh Kandal Wildlife Sanctuary
- ii) Rakh Jalalpur Wildlife Sanctuary
- iii) Western Jhelum Community Based Organization (CBO)
- iv) Proposed National Safari Park

It is further informed that according to the proposed alignment of Jalalpur irrigation project the proposed canal do not passes through any Wildlife Sanctuary or CBO area. It only passes in the vicinity of Rakh Kandal and Rakh Jalalpur Shareef. National Safari Park is also proposed about 08 Kilometer North of proposed alignment of the said irrigated project. Notification of protected area and CBO is attached.




(RIAZ AHMAD)
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28/11/2016
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