

添付資料 - 4 質問票・回答

- (1) 質問票・回答 - 水文・地質／地下水開発計画
- (2) 質問票・回答 - 利水計画
- (3) 質問票・回答 - 建設機械計画
- (4) 質問票・回答 - 社会条件調査／住民参加調査

## (1) 質問票・回答 - 水文・地質／地下水開発計画

番号	訪問先	質問事項
#01	Irrigation and Power Department, GoB	Request for data collection, etc
#02	Water Resources Planning Development and Monitoring (WRPD & M) Directorate, Irrigation and Power Development, GoB	Request for data collection
#03	Techno-Consult International under WASA project	Request for Information
#04	Irrigation and Power Department, GoB	Confirmation of Request, etc
#05	Irrigation and Power Department, GoB	Discussion on the Briefing
#06	SAMPAK INTERNATIONAL (PVT) LTD, QUETTA	Soil Test Laboratory
#06-2	Irrigation and Power Department, GoB	Project Implementation of DAD
#07	Irrigation and Power Department, GoB	The present issues to be solved and approaches to be taken for the further construction of DADs.
#08	Department of Meteorological Services, Quetta, GoP	Request for Meteorological Information
#09	Geological Survey, Pakistan (GPS), Ministry of Petroleum and Natural Resources	Request for Geological Information
#10	Pakistan Council of Science and Industry Research Center (PCSIRC)	Request for Information on Water Quality Analysis
#11	Water Resources Planning, Development & Monitoring (WRPD&M)	Request for Information on Monitoring of Water Resources
#12	Communication and Works Department	Request for Information on Soil Testing and Equipment
#13	B-WASA (Balochistan Water And Sanitation Authority)	Request for Information on Groundwater monitoring
#14	United Nation Development Program	Request for Information
#15	Water Resources Planning, Development and Monitoring (WRPD&M) Directorate, I&P Dept.	Request for Information on Groundwater Monitoring
#16	Forest Department	Request Cooperation for his office
#17	Water Resources Planning, Development and Monitoring (WRPD&M) Directorate, I&P Dept.	Request for Information on Groundwater Monitoring
#18	Irrigation and Power Dept.	Discussion of the progress of Data Collection, and others
#19	Balochistan Water And Sanitation Authority (B-WASA)	Data collection and Discussion on GWL-monitoring
#20	Survey of Pakistan, under Federal Ministry of Defense	Availability of such Information as contour maps and etc.

番号	訪問先	質問事項
#21	Irrigation and Power Department, GoB	Up data information on “Flood Management of Hill Torrents of Pakistan” requested by Dr. Shimizu, the JICA expert to Ministry of Water & Power
#22	Drilling Division, WRPD&M Directorate, I &P Dept., GoB	Present status of library and laboratory of ex-WAPDA
#23	UNDP	Activities
#24	I&P Dept.,	DADs fixed with siphon pipe
#25	Forest Development	Water Shed Management
#26	Water Resources Planning, Development and Monitoring (WRPD&M) Directorate, I&P Dept.	Discussion on the Behavior of QA-4
#27	I&P Dept.,	Courtesy visit-Flood Dispersion
#28	World Bank, Islamabad, Pakistan	Collection of Documents and Information
#29	Asian Developments Bank, Islamabad, Pakistan	Collection of Documents and Information

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 06-Oct-2003(Mon)**

**Time:**

**Interviewer:**

**Name;** TAKAHASHI Shinya  
**Position;** Hydro-Geologist  
JICA Preparatory Study Team

**Interviewee:**

**Organization:** Irrigation and Power Department, GoB

**Address:** Siryad Road, Quetta

**Telephone** 081 9211602

**E-mail:** \_\_\_\_\_

**Answered by:** Mr. Ahsan Hidayat Khan

**Position:** Executive Engineer (Irrigation)

**Office:** Branch office, I&P

**Subject:** 1) Request for data collection  
2) Discussion of (a) Design Criteria, (b) Briefing Report, and (c) Other flood utilization options than DAD

**Answer:**

- **The following documents were requested.**
- 'Balochistan Groundwater Resources Re-assessment Study (ADB-1996)'
- Report on 'Ziargai Off-line Research Project (Balochistan Minor Irrigation Agriculture Development Program – BMIADP 1990)'
- 'Report of ADB assisted DADs such as Dargai DAD'
- Design Report of Recently constructed DAD such as TorkHazai DAD
- Hydro-Graph or flood record of 'Towiwar Flood Irrigation Scheme'. The record that we were told to be available in I&P dept., QUETTA

**The flowing discussions are made;**

- **Design criteria:**
- Written Design Criteria is yet to be prepared.
- Recommendations presented in the F/S are going to be referred to.
- The reason why the slope of D/S is with 'berm' embankment' gentler than that of U/S is that: (1) Only a toe drain is designed for a DAD whereas USBR recommends drain layer underneath the D/S embankment. (2) Therefore, seepage line in the DAD will

appear on the D/S embankment slope. (3) In order to keep the seepage line in the DAD, the downstream slope has to be kept gentle; explained.

- Dam height is kept below 50 ft (15 m approx). A dam with a height above 50 ft is categorized as 'large dam' that requires a careful design; explained.
  
  - **Discussions on 'the Briefing paper' prepared for the preparatory team.**
  - Descriptions of '2-ZIARGAI OFF-LINE RESEARCH PROJECT' is not so clear to the Team. In particular the last two paragraphs under the title have to be refined.
  
  - **Hill torrent or other flood water utilization other than DAD**
  - The I & P dept. does not stick on DAD only. Various types of methods for the utilization of flood water have to be considered to locations where DAD is not applicable.
- ==End of Document==

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 07-Oct-2003(Tue)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist  
JICA Preparatory Study Team

Interviewee:

**Organization: Water Resources Planning Development and Monitoring (WRPD&M) Directorate, Irrigation and Power Department, GoB**

**Address: Sirvad Road, Quetta**

**Telephone 081 9211190**

**E-mail:** \_\_\_\_\_

**Answered by:**

**Mr. Muhammad Bashir Khawaja, Director (Planning & Monitoring)**

**Mr. Amjad Ali Shah, Deputy Director (Water Resources Monitoring)**

**Position: (see above)**

**Office: (opposite side of the Chief Engineers office; next to the Branch office of I&P)**

**Subject: Request for data collection**

**Answer:**

- All the monitoring activities on water resources, including groundwater monitoring, run-off monitoring,; and rainfall and temperature monitoring that were then carried out by WAPDA, were handed over to the Bureau of Water Resources (now renamed to Water Resources Planning Development and Monitoring Directorate) in \*\*\*\*.
- As for groundwater monitoring, the table below the monitoring stations:

Groundwater Monitoring Network in Five Hydro-geological Sub-Basin Of Pishin Lora Basin

Sub-Basin	Number of AWLR	Piezometer Well	Open Well	Existing Network
Quetta North	8	1	12	21
Quetta South	0	0	3	3
Pishin	0	1	26	27
Mastung	3	1	18	22
Mangochar	1	1	1	3
Total Points	12	4	60	76

AWLR=Automatic Water Level Recorder

- All the information is being updated by the Directorate.

**In response to our request:**

- “Balochistan Groundwater Availability and Future Planning of Quetta valley

(Southern part) Inventory of watering point, Basic Data Series-1; volume-1” and “Balochistan Groudwater Availability and Future Planning of Quetta valley (Nothern part) Inventory of watering point, Basic Data Series-1; volume-II” were provided.

- It is informed that Water And Sanitation Authority (WASA) is carried out “Quetta Water Supply and Environmental Improvement Project. WRPD&M supplies monitoring information to WASA for them to analyze. Dr. Muhammad Shafgat Eraz was introduced.

=== end of the document===

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

Date: 18-Oct.-2003 (Sat.)

Time: 9: 30

**Interviewer:**

Name; Koji KOGA

Position; Construction Equipment Planner  
JICA Preparatory Study Team

**Interviewee:**

Organization; Agriculture, Cooperative and Food Department, Balochistan Province

Address; Link Sariab Road, Quetta

Telephone; 081-9211318

E-mail; \_\_\_\_\_

Answered by; Mr. Syed Saadat Hussain Naqvi (Name of Interviewee)

Position; Director

Office; Directorate of Agricultural Engineering  
(Section, Department)

- Subject:**
- 1. Future Plan Proposed by Directorate of Agricultural Engineering (All Equipment should be integrated into an independent organization)**
  - 2. Evidence that the Equipment supplied by Japan's KR2 Program 1982-83, have been Distributed to the Other Department**

**Answer:**

**1. Future Plan Proposed by Directorate of Agricultural Engineering**

農業技術部が持っている将来構想（全ての機材を一括管理）は、現在 Additional Chief Secretary of P & D Dept.との審議の過程にある。当該審議の議事録等の入手を依頼した。（後日入手した）

**2. Evidence that the Equipment supplied by Japan's KR2 Program 1982-83, have been Distributed to the Other Department**

1982-83年に日本政府の食糧増産援助（KR2）で農業組合食糧局へ供与された機材の内、州政府の決定に基づき一部機材が新品に状態で他局へ分配された事実を確認した。証拠書類として当時州政府が決定した内容を確認できる1983年3月29日付けレターを入手した。引き続き、その他KR2案件並びに一般無償案件で供与された機材についても他局へ分配された事実があるか確認する予定。

尚、上記 KR2 で供与された機材の主な供与先である Communication & Works Dept. は、道路及び公共のビルディング工事を担当する局であり、主に道路工事用機材及びクエッタにある修理工場を所有している。

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 09-Oct-2003 (Thu)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization: Irrigation and Power Department, GoB**

**Address: Siryad Road, Quetta**

**Telephone 081 9211602**

**E-mail:**

**Answered by: Mr. Ahsan Hidyat Khan**

**Position: Executive Engineer (Irrigation)**

**Office: Branch office**

**Subject: 1) Confirmation of Requests**

**2) Discussion on Various Matters**

**Answer:**

- The flowing discussions and requests were made;

**DAD rehabilitation**

- It is informed that a number of DADs are considered to be rehabilitated. Rehabilitation works consist of de-siltation and discharging pipe installation.
- A list showing DAD that are considered to be rehabilitated will be prepared and be given to the Team.

**Site investigation and laboratory testing**

- Geological investigation is normally not carried out.
- Soil tests are performed for PC-I stage. One local labo (SAMPAK) and 3 govermental labo (Communication and works department, National Highway labo, Military electric service lobo) are in Quetta.
- Private contractors for geological survey is not available in Quetta.
- Governmental drilling works are under WRPD&M Directorate. A plenty number of private drilling company in Quetta.

**=== end of Document===**



No. I&P-SO(D)1-74/2003/ 2237  
GOVERNMENT OF BALOCHISTAN.  
IRRIGATION & POWER DEPARTMENT

Dated Quetta, the 9/10 2003.

**TO WHOM IT MAY CONCERN**

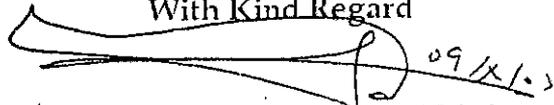
Subject: JICA PREPARATORY STUDY TEAM ON FLOOD WATER UTILIZATION DEVELOPMENT IN BALOCHISTAN PROVINCE.

A JICA (JAPAN INTERNATIONAL COOPERATION AGENCY) Team comprising of the following members are now conducting their survey on "Flood Water Utilization Development in Balochistan Province" from 16-September, 2003 towards the end of October, 2003.

S.No.	Name (s)	Nationality
1	Mr. Kuninobu NOD	Japanese
2	Mr. Koji KOGA	--do--
3	Mr. Shinya TAKAHASHI	--do--
4	Mr. Norifumi SHINMURA	--do--

In this connection, you are kindly requested to extend your cooperation to them as much as possible

With Kind Regard

  
✓ DEPUTY SECRETARY (TECH)  
Irrigation & power Department  
Quetta:

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 09-Oct-2003 (Thu)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization:** Irrigation and Power Department, GoB

**Address:** Siryad Road, Quetta

**Telephone** 081 9211602

**E-mail:**

**Answered by:** Mr. Mumtaz Khan

**Position:** Chief Engineer (North)

**Office:** Branch office

**Subject:** Discussion on the Briefing Report

**Answer/ Interview:**

- The team informed that some of contents in the Briefing Report given to us are not so clearly understood.
- It was also pointed out by the team that the table describing the present status of DADs, are not consistent with what we were informed on site; and not necessarily completed.
- The team informed that the team would request for the clarification of the team's questions on the Briefing Report in writing to convey the clear message of the team.
- The Chief Engineer agreed and expressed his comment that he would response the questions after review the Briefing Report.

**=== end of Document===**

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 11-Oct-2003(Sat)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization:** SAMPAK INTERNATIONAL (PVT) LTD, Quetta

**Address:** House No. 64-D, St. No.5, Sattelite town block 5, Quetta

**Telephone** 081 444189

**E-mail:**

**Answered by:** Mr. Rizwan Nensey, Resident Engineer,

Mr. Tahim Hahadani, Assistant Material Engineer

Palim Asim, Material Engineer

**Position:** (See above)

**Office:** office

**Subject:** Soil Test Laboratory

**Answer/ Interview:**

- Head office in Lahor G-568m Johar Town, Lahore-Pakistan
  - Tel:92-42-5300744 to 46, 5301274
  - Fax: 92-42-5300741, 5301286, 5831472
  - E-mail: sampak@brain.net.pk
- Established in Quetta , 1991
- An agreement with I & P since 1998,
- Undertaken Balochistan Community Irrigation Agriculture Project 1998-2001
- Basic tests such as sieve test, maximum dry density (compaction test), CBR, uni-axial compaction test for concrete and etc.
- Complicated tests are done in Lahor
- A sheet for the past experiences for DADs under I&P, Quetta was given on the following day as attached here to.

**=== End of Document===**

# SUMMARY OF TEST REPORT FOR DELAY ACTION DAM.

IRRIGATION DEPARTMENT BARUCHISTAN:

Sr. NO. PROJECT / SCHEME. NATURE OF TEST: ON DATED.

Sr. NO.	PROJECT / SCHEME.	NATURE OF TEST:	ON DATED.
1	GUN SHERO Delay Action Dam	CLASSIFICATION TEST	16-8-02
2	GHAROL DAD	FDT & Compaction (M.D.D)	16-8-02
3	GHAROL DAD	Compaction TEST.	16-8-02
4	MURGAI KOTAL DAD	PROCTOR & F.D.T.	07-9-02
5	GUN SHERO DAD	Proctor & Compaction	20-10-02
6	RINDAK DAD	Field Density TEST.	20-12-02
7	VOLTAI DAD	M.D.D & Compaction	01-01-03
8	PALYAN DAD.	Proctor & FDT.	12-01-03
9	DARWAZI DAD.	FDT & Maximum Dry Density.	24-01-03
10	NARI KACH DAD.	Compaction Test.	01-02-03
11	SPERA RAQHA :DAD:	Proctor & Compaction	28-3-03
12	CHINJAN DAD.	FDT & Proctor.	30-03-03
13	AGHOGHARA DAD.	Compaction & M.D.D.	01-4-03
14	GALANGUR DAD.	FDT & Proctor.	02-4-03
15	NARAI AGHBERG DAD.	Proctor & Compaction	04-4-03
16	DARGAI DAD.	M.D.D & F.D.T.	25-6-03
17	WALI DAD. DAD.	Sieve Analysis	20-7-03
18	PESHAWAR. DAD (Zhub)	Proctor & Compaction	29-7-03
19	BAGAK DAD:	M.D.D & FDT.	16-8-03.
20	MACHKA DAD.	Proctor & Compaction	29-8-03
21	FAIZA ABAD DAD.	Classification	24-9-03
22	PASTA DAD.	S/A & Compaction	30-9-03.
23	TRIKH TANGI DAD:	Proctor & F.D.T.	02-10-03.

11-10-03

Material Engineer  
Sampak Material Testing  
Laboratory Quetta P.O. Box 162

13-02-2003

**SAMPAK INTERNATIONAL (PVT) LTD.**  
**MANAGEMENT CONSULTANTS**

**3574**

Central Testing Laboratory  
 B-Block, Johar Town,  
 Lahore. (Beer Pind)  
 Phone : 5301871



**HEAD OFFICE:**  
 G-568 Johar Town Lahore-Pakistan.  
 Ph : 5300744 to 46, 5301274  
 Fax: 042 - 5300747, 5301286, 5831472  
 E.Mali: sampak@brain.net.pk  
 Cable : Samcoint

**FIELD DENSITY TEST**  
**(AASHTO DESIGNATION T-191-61)**

CLIENT \_\_\_\_\_  
 CONSULTANT \_\_\_\_\_  
 CONTRACTOR \_\_\_\_\_  
 PROJECT \_\_\_\_\_  
 DESCRIPTION \_\_\_\_\_  
 LOCATION \_\_\_\_\_

CLIENT NO. \_\_\_\_\_  
 C.T.L. NO. \_\_\_\_\_  
 DATE OF TEST \_\_\_\_\_

FIELD SAMPLE NO					
Sta & Ref. to Centre					
Sta. to Sta. Represented					
Depth Hole/Layer cm.					
<b>a MOISTURE CONTENT</b>					
Can No.					
Can + Wet Soil	gms				
Can + Dry Soil	gms				
Wt. of Water	gms				
Wt. of Can	gms				
Wt. of Dry Soil	gms				
Moisture Content	%				
Avg. M/c	%				
<b>b FIELD DENSITY</b>					
Total Soil From Hole	gms				
Sand Before Pouring	gms				
Sand After Pouring	gms				
Sand to fill cone + Hole	gms				
Sand to fill Cone	gms				
Sand to Fill Hole	gms				
Unit Wt. of Sand	gms/c.c.				
Gross Vol. of Hole	c.c				
Wt. Ret <sup>3</sup> / <sub>4</sub> from Hole	gms				
Wet. Unit Wt.	gms/c.c				
Dry Unit Wt.	gms/c.c				
Max. dry Density	gms/c.c				
Optimum M/c	%				
Proctor Ref. NO.					
% Compaction					

REMARKS \_\_\_\_\_

TESTED BY \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 13-Oct-2003(Mon)**

**Time:**

**Interviewer:**

**Name; TAKAHASHI Shinya**

**Position; Hydro-Geologist  
JICA Preparatory Study Team**

**Interviewee:**

**Organization: Irrigation and Power Department, GoB**

**Address: Siryad Road, Quetta**

**Telephone 081 9211602**

**E-mail:**

**Answered by: Mr. Ahsan Hidayat Khan**

**Position: Executive Engineer (Irrigation)**

**Office: Branch office, I&P**

**Subject: Project Implementation of DAD**

**Information on Procedures for Project Implementation are explained as attached.**

**==End of Document==**

**JICA Preparatory Study Team**  
**On**  
**Flood Water Utilization Development in Balochistan Province**

**Flow / Procedure of Constructing DAD**

Procedure	Acting cast:
(1) Project identification	Beneficiaries, PMA, Field officers
(2) Is Site investigation done for the preparation of PC-I ?	Yes, for topo-survey, material testing No, for geological investigation
(3) If yes for (2)	By I&P with provincial fund
(4) Preparation of PC-I (F/S);	<ul style="list-style-type: none"> <li>• Prepared by an Executive Engineer</li> <li>• Checked by a Superintending Engineer</li> <li>• Recommended by Chief Engineer</li> <li>• Approved by:               <ol style="list-style-type: none"> <li>(1) Department Sub-committee (DSC) headed by the Secretary of the department with a member from P&amp;D, a member from financial dept., if the E/C less than Rp.5.0 million,</li> <li>(2) Provincial Development Working Party (PDWP), headed by Additional Chief Secretary (development), P&amp;D and a member/Secretary of concerned dept., and Secretary of financial dept., if E/C more than Rp. 5.0 million up to Rp. 200 million.</li> </ol> </li> </ul>
(5) Is fund made available after the approval?	Yes,
(6) Is site Investigation done for Detail Design?	No
(7) If yes for (6)	-
(8) Is the detail design done?	Yes, detail cost estimation together with detail design are performed.
(9) If yes for (8)	I &P, provincial fund
(10) Tender call by:	Executive engineer
(11) Tender evaluation by:	Executive engineer
(12) Tender approval by:	<ol style="list-style-type: none"> <li>(1) Executive Engineer, if cost less than Rp.0.2 million,</li> <li>(2) Superintending Engineer, if Rp.0.2 – 1.0 million,</li> <li>(3) Chief Engineer, if Rp. 1.0 – 10.0 million,</li> <li>(4) Bid evaluation committee headed by Chief Engineer, Deputy Secretary (tech) I&amp;P, a member of P&amp;D, and a member of Financial dept.</li> </ol>
(13) Construction and Supervision by;	I & P
(14) Certification issue by;	I & P
(15) Handing over:	-
(16) O&M by:	I & P
(17) Monitoring by:	By WRPD&M directorate with their own fund
(18) Rehabilitation by:	I & P

**JICA Preparatory Study Team**  
**On**  
**Flood Water Utilization Development in Balochistan Province**

**Flow / Procedure of Constructing DAD**

Procedure	Acting cast
(1) Project identification	Beneficiaries, PMA, Field officers
(2) Is Site investigation done for the preparation of PC-I ?	Yes, for topo-survey, material testing No, for geological investigation
(3) If yes for (2)	By I&P with provincial fund
(4) Preparation of PC-I (F/S);	<ul style="list-style-type: none"> <li>• Prepared by an Executive Engineer</li> <li>• Checked by a Superintending Engineer</li> <li>• Recommended by Chief Engineer</li> <li>• Approved by:               <ol style="list-style-type: none"> <li>(1) Department Sub-committee (DSC) headed by the Secretary of the department with a member from P&amp;D, a member from financial dept., if the E/C less than Rp.5.0 million,</li> <li>(2) Provincial Development Working Party (PDWP), headed by Additional Chief Secretary (development), P&amp;D and a member/Secretary of concerned dept., and Secretary of financial dept., if E/C more than Rp. 5.0 million up to Rp. 200 million.</li> </ol> </li> </ul>
(5) Is fund made available after the approval?	Yes,
(6) Is site Investigation done for Detail Design?	No
(7) If yes for (6)	
(8) Is the detail design done?	Yes, detail cost estimation together with detail design are performed.
(9) If yes for (8)	I & P, provincial fund
(10) Tender call by:	Executive engineer
(11) Tender evaluation by:	Executive engineer
(12) Tender approval by:	<ol style="list-style-type: none"> <li>(1) Executive Engineer, if cost less than Rp.0.2 million,</li> <li>(2) Superintending Engineer, if Rp.0.2 - 1.0 million,</li> <li>(3) Chief Engineer, if Rp. 1.0 - 10.0 million,</li> <li>(4) Bid evaluation committee headed by Chief Engineer, Deputy Secretary (tech) I&amp;P, a member of P&amp;D, and a member of Financial dept.</li> </ol>
(13) Construction and Supervision by:	I & P
(14) Certification issue by:	I & P
(15) Handing over:	
(16) O&M by:	I & P
(17) Monitoring by:	By WRPD&M directorate with their own fund
(18) Rehabilitation by:	I & P

#07 Answer Sheet for Questionnaire  
On Preparatory Study on the Project  
For Development of Flood Outflow Water in Balochistan Province  
In the Islamic Republic of Pakistan

Date: 13-Oct-2003

Time:14:00

Interviewer:

Name: NODA Kuninoby  
TAKAHASHI Shinya

Position: Water Utilization Planner,  
Hydro-geologist,  
JICA Preparatory Study Team:

Interviewee:

Organization: I&P, GoB

Address:

Phone No.

E-mail:

Answered by(name of Interviewee):

Mr. Muuawar Khan Mondokhail, Secretary;

Attended by:

Position:

Office (section, Department):

Subject: The present issues to be solved and approaches to be taken for the further construction of DADs.

Answer:

添付資料に沿ってバロチスタン州農業局次官（Secretary, Irrigation and Power Department, Government of Balochistan）の見解を聴取した。以下、添付資料の順にそって記録する。

- (A) I&Pは今後ともDADの建設を積極的に進める方針である。Flood Irrigation や Hill Torrent、水路方式などの方法は、恩恵を受けない隣接地域が出る場合が多く、政府に対する不平が絶えない。その点、DADを建設して地下水を涵養することにより、地域全体が恩恵を受けているので、不平は少ない。
- (B) 地下水涵養をしていないDADは無いと認識している。シルテーションをしているDADでも、アバット部や堤体そのものから地下水が涵養されている。灌漑水路や洪水対策、道路建設などに対しては反対する農民も多いが、DADの建設に関しては反対されたことがない。また、思いがけない地域に効果が出たりするケースもあり、農民から全幅の支持を得ている。（これに関して、技術的側面から判断してほとんど涵養効果がないDADもある、と具体的なDADの名前をあげて意見を求めたが、次官は、農民から恩恵を受けているとの報告が多いのでDADは地下水涵養に貢献している、と主張し続けた。議論が平行線をたどったので話題を次の(C)に移した。）
- (C) シルテーションが涵養効果を減少させているとの理解はしていない。ただし、貯水量を減少させるという意味で重大なインパクトを与えていると考えている。貯水池がシルテーションしても、斜面部や堤体からの涵養がある。
- (D) 堤体の下にパイプを入れ出したのはここ3-4年のことである。地下水涵養をダム下

流側でも行い、涵養を促進させようとする目的である。農民の中には、ダムの水を2-3 か月間貯水しておきたいとの希望もあるが、蒸発散での損失を考慮すれば地下水涵養は1 か月以内に行うべきと考えるので、パイプを敷設して貯留水放流している。ただし、5km も 10km も流す意図はなく、あくまでも地下水涵養を目的としている。過去の DAD はパイプが敷設されていないが、この点不都合 (past mistakes と表現された) があったので、新しい DAD にはパイプ放流設備を敷設することにしている。(同席したチーフ・エンジニア (北部地区) からは、ダムアバット部がハードロックの場合は、浸透が望めないので、パイプが有用だとの見解がなされた。)

- (E) 技術は日々改良されるべきものである。貯水池側のパイプの周りに設置する石積みについていえば、当初は砂(SPWAL)―粗粒砂―石積という組み合わせで作っていたが、放流する流量が不足したり目詰まりしたりして、2-3 か月も貯留されていることもある。このため、最近では SPWAL を使わないようにし、貯留水が速やかに下流に放流できるようなく工夫もしている。パイプの材質についても、ダム基礎地盤が alluvial の場合は MS や GI に代えて、フレキシブルで錆びずかつ廉価な PVC パイプの導入を始めている。シルテーションの軽減については、上流に detention dam や leaky dam, small sand trap などをつくり、また植生の導入を図り始めている。若い Engineer の中には DAD の効果や現況の設計に関して疑問を持っているとの (JICA ティームの) 指摘であるが、そのような疑問は (次官の) 長い経験から先刻承知であり、それに対する工夫も行っている。
- (F) これまでの設計にこだわることなく、かつ画一な設計でもなく、建設地区の特性に合わせて、工夫しながら設計を行っている。Toe Drain も適切に設計している。ピエゾメーターの設置については、いくつかの DAD で開始している。ただし、DAD の建設地が遠隔地である場合が多いことと、地下水位が低いことから、自記録計を設置しなければならない。これは高価なので、予算の関係で積極的な設置はできない。今後 200 以上の DAD に建設を予定しているが、このうちの一部についても、水位計設置についてぜひ JICA にアシストしてもらい、今後の DAD 設計の改善に資したい。
- (G) DAD の設計が地方ごとに差が出ることはない。設計書は、担当-> Executive Eng.->Superintending Eng. ->Chief Engineer ->Secretary と段階を踏んで承認されている。その点、現在でも地方任せにはなっていない。ただし、以前の地方分権の時期には District レベルの予算で独自に DAD を建設したこともあり、そのような時期には Quetta からの技術管理ができなかった。しかし現在はそのようなことはない。むしろ現在の問題は、NGO が適切な設計や施工管理もせず勝手に作ってしまうケースである。コンパクションが適切でなく、また洪水吐の容量が不足している場合もあり、その撤去に多大な経費を余儀なくされた場合もある (建設後その NGO の行方は知れない)。こちらのほうが問題である。
- (H) 今後とも技術管理・指導を行う。
- (I) リハビリは必要である。ただし、de-siltation は大きな工事なので予算の問題もある。さらに、De-siltation を行っても、放流パイプが設置されていない昔の DAD に関しては、そのままの形式にならざるを得ない。ダム基礎地盤にトンネルを掘って放流パイプを設置しようとする案には反対である。既存ダムにサイホンパイプを設置して、放流を促進しているダム (Pichi DAD, Ziarat) もあり、ひとつの手法である (ただしパイプが盗まれた他の DAD もある)。Pichi DAD では、農民が貯水池にたまったシルトを果樹園に運搬して使用しているので、シルテーションは最小限となっている。

(次官) バロチスタンでは、タルベラダムの貯水量に匹敵する水が、毎年洪水として無効

流失している。現在 200 以上の DAD が計画にあがっているが、まだ identify されていない DAD 適地が多数存在していると考ええる。I&P は、洪水水の有効利用のために、更なる DAD の建設を促進する方針である。JICA に提出しているアプリケーションのうち、建設重機の調達は、この DAD 建設促進のためにぜひ必要なので、JICA にメッセージを伝えていただきたい。

調査団の理解：

- P&I は、シルテーションは地下水涵養効果にさほど影響を与えないとの公式見解を変えていない（過去の DAD のジャスティフィケーションの問題）。
- しかし、今回行った事情聴取の内容からうけた印象では、シルテーションは涵養効果に影響を与えていることを I&P も理解しており、そのために様々な工夫をして、DAD 効果の促進・維持を図っている、と推量することができる。
- DAD の効果確認のためのピエゾメーター設置についても、必ずしも否定的ではなく、予算が許せば設置したいとの見解である。
- ただし、他の洪水利用方法については、否定的見解である

以上

*JICA Preparatory Study Team*  
*On*  
*Flood Water Utilization Development in Balochistan Province*

13-Oct-2003

Dr. Shimizu, JICA expert, wishes to know the understandings of the Secretary I&P, on the present issues to be solved and approaches to be taken for the further construction of DADs. The Team summarized hereunder their technical observations as a material for discussions.

Our observations
A. It is our understanding that I&P dept. has a decisive intention to construct DADs.
B. It is also our understanding from our survey and hearing that some DADs are thought to be recharging groundwater; some others are not; although conclusive information has not been available.
C. It is generally accepted by Engineers of I&P that siltation/sedimentation in the reservoir has an adverse impact on the groundwater recharging function of DAD.
D. It is our observation that installation of (a) discharging pipe(s) underneath the dam body are increasingly adopted to most of, no to say, all of the recently constructed DADs, aiming at recharging groundwater through the riverbed downstream of the dam. This application is though to be adopted due to the siltation problem being noted by the Engineers.
E. It has come up to our knowledge that some other improvements are being tried to prolong the life time of DAD by providing 'filter material around the strainer inlet pipe; and to accelerate infiltration rate by providing infiltration ponds downstream and etc.
F. It has also become to be clear to us that effort has started to improve the prevailing present DAD design; and to obtain monitoring records by installing piezometer.
G. It is our observation that such efforts have been left to individual Engineers in charge; therefore approach to improve the function of DAD varies person to person in charge or district to district where DADs are to be constructed.
H. It is our opinion that DADs have to be constructed with continuous efforts for improvement being backed up by monitoring activity under the vital instruction and guidance from GoB to the Engineers concerned; to get the maximum benefits from the DADs for the maximum benefit to the people in Balochistan.
I. In addition, it is also considered to be essential to re-vitalize / rehabilitate the existing DADs , the reservoirs of which have been silted up to spill level.

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 14-Oct-2003(Tue)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist  
JICA Preparatory Study Team

**Interviewee:**

**Organization: Department of Meteorological Services, Quetta, GoP**

**Address: Brewery Road, Quetta**

**Telephone 081 853030**

**E-mail:**

**Answered by: Mr. Zia-ud-Din Khan, Director, Geophysical Centre, Quetta (853032)**

**Mr. Saifullah Shami, Deputy Director, G.C Quetta**

**Mr. Zahid Rahi, Seismologist**

**Mr. M. Anees Siddiqui, Meteorologist, Atmospheric Physics Section**

**Position: (See above)**

**Office: office**

**Subject: Request for Meteorological information**

**Answer/ Interview:**

- the organization; for Federal Government
- Metrological information monitored in major city only.
- Meteorological information in rural areas may be available in WRPD&M Directorate of I&P, Quetta
- A letter of request for information as attached was given to the Center.

\*\*\*\*\*

21-Oct-2003

The following information was given.

- Observing Station Network of Pakistan Meteorological Department
- Information on observation points in Balochistan was given as below (as attached).

	Rain Gauge Station	Established in	Latitude (N) Deg. - Min.	Longitude (E) Deg. - Min.
1	Barkhan	1963	29-53	69-43
2	Dalbandin	1911	28-53	64-24
3	Jiwani	1938	25-04	61-48
4	Kalat	1896	29-02	66-35
5	Khuzdar	1965	27-50	66-38
6	Lasrela	1927	26-14	66-19
7	Nokkundi	1932	28-49	62-45
8	Ormara	1928	25-13	64-32

9	Oanigur	1911	26-58	64-06
10	Pasni	1911	25-16	63-29
11	Quetta	1944	30-15	66-53
12	Sibi	1925	29-33	67-53
13	Zhob	1938	31-21	69-28

- The requested rainfall data in Quetta would be provided in 23-Oct-2003

===End of the Document===





Email [metq@qta.paknet.com.pk](mailto:metq@qta.paknet.com.pk)  
Phone 853032  
Fax 854218  
Gram GEOPHYSICS

NO.Ag-2(1)/2000/  
GOVERNMENT OF PAKISTAN  
(MINISTRY OF DEFENCE)  
PAKISTAN METEOROLOGICAL DEPARTMENT  
GEOPHYSICAL CENTRE  
BREWERY ROAD, P.O.BOX No 2  
QUETTA (PAKISTAN)

From:-

The Director,  
Geophysical Centre,  
Quetta.

To:-

Mr. Kuninobu Noda,  
Team Leader,  
A [2604@n-koei.co.jp](mailto:2604@n-koei.co.jp),  
J.I.C.A., Camp,  
Quetta.

Quetta, the 23<sup>rd</sup> Oct., 2003.

Subject:- **PAYMENT OF RS.20,700/= AS THE COST OF REQUESTED METEOROLOGICAL DATA.**

Dear Sir,

I have the honour to invite a reference to your letter No.BLJP-07 dated 15-10-2003 regarding supply of Meteorological data.

It is informed that Pakistan Meteorological Department is charging for the Meteorological data provided to various end users. The charges are levied to cover the man-hours and other inputs required for the preparation of data.

According to the rates, approved by Director-General, Meteorological Services, your office is required to deposit the cost of monthly rainfall data as detailed below:-

i.	Monthly rainfall data Geophysical Centre, from Jan, 2001 to July, 2003.....	Rs.3000/=
ii.	Monthly rainfall data of R.A.M.C., Sariab From Jan, 1989 to Sept., 2003.....	Rs.17,700/=
	Total.....	<u>Rs.20,700/=</u>

The payment may kindly be made through Bank Challan under the head 38700-Meteorology 11000-Total Receipt (Non Taxable) 13000-Misc. Receipts" in any branch of State Bank of Pakistan or National Bank of Pakistan etc.

Thanks.

(SAIFULLAH SHAMI)  
DEPUTY DIRECTOR  
For Director

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

Date: 14-Oct-2003(Tue)

Interviewer:

Name; TAKAHASHI Shinya  
Position; Hydro-Geologist  
JICA Preparatory Study Team

Interviewee:

**Organization:** Geological Survey, Pakistan (GSP), Ministry of Petroleum and Natural Resources

**Address:** Sariab, Quetta

**Telephone:** 081 9211041

**Fax:** 081 9211361

**E-mail:**

**Answered by:** Dr. Muhammad Ishaq Ghaznavi, Director (Planning and Information)

Mr. Mehtab Ur Rahman, Geophysicist, GSP

Mr. Muhammad Iqbalsh, Hydrogeologist, GSP

**Position:** (See above)

**Office:** office

**Subject:** Request for Geological Information

**Answer/ Interview:**

It was explained about hydrogeology that:

- General organization was explained as attached in the organization chart.
- GSP intended to start hydro geological survey. But the function of hydrogeology was included in WAPDA. GSP has not have nation wide function on hydrogeology.
- Recently, WASA Quetta initiated 'Quetta water supply and environmental improvement project' for enhance the water supply capacity to Quetta City. In connection with the project, GSP has undertaken hydro geological survey using electric resistibility survey and electro magnetic (EM) survey. Drilling works are undertaken by WRPD&M of I&P. The investigation is being carried out with Techno-Consult International. Summary of the investigation was presented as shown in the attached 3 sheets.
- Three booklets of publication catalogue are purchased.
  - ◇ Publication Catalogue of Geological Survey of Pakistan (1985 to 1994), issued in 1994 (Rp.500)
  - ◇ Catalogue of GSP Publications, issued in Sep. 1999 (Rp500as against Rp50-described in the same catalogue)
  - ◇ Publication catalogue of the geological survey of Pakistan, issued in 1985 (Rp.500)
- **=== End of Document===**

14 OCT 03 G7SP



STATUS OF GROUNDWATER IN THE QUETTA CITY &  
CANTONMENT AREA AFTER THE HARDROCK AQUIFER

DISCOVERY

<u>CITY REQUIREMENT</u>	= 20 MGD
Available Valley Aquifer	= 9 MGD
Hard Rock Aquifer	= 11 MGD
Total	= 20 MGD
Short-fall	= Nil
<u>CANTONMENT REQUIREMENT</u>	= 4.2 MGD
Available Valley Aquifer	= 1.0 MGD
Urak H/W	= 0.6 MGD
Hard Rock Aquifer	= 2.6 MGD
Total	= 4.2 MGD
Short-fall	= Nil

Recent discoveries in the Dara Dam area (year 2002) has further improved the water situation in the valley

707 (75)

STATUS OF GROUNDWATER IN THE QUETTA CITY AND  
CANTONMENT BEFORE THE HARDROCK DISCOVERY

<u>CITY</u>	
Population	= 1.2 Million
Water Requirement	= 20 MGD
Available Valley Aquifer	= 9 MGD
Short-fall	= 11 MGD

<u>CANTONMENT</u>	
Population	= 0.12 Million
Water Requirement	= 4.2 MGD
Available Valley Aquifer	= 1.6 MGD
Short-fall	= 2.6 MGD

The shortfall figures are based on the available test well data (B-WASA)

# Identified Hard Rock Aquifers Through Spot Investigations

FORMATION	LOCALITY	YEAR	YIELD
■ Dungan Limestone (Palaeocene age)	Ziarat Sanjawi (Two localities in Sanjawi and one in Ziarat)	2002	1 cusec
■ Kirthar Limestone (Eocene age)	Kalat	2002	>2 cusecs
■ Limestone Rocks (Eocene age)	Saindak	1976	Not determined Water (brackish)
■ <b>Volcanics</b> (Cretaceous age)	<b>Mashki Chah</b>	<b>1976</b>	Artesian condition
■ Uzdapasha Sandstone (Miocene age)	Kach	1968	Artesian condition

361104

Advisory Council

DIRECTOR GENERAL

Project Director

Administration & Accounts Section

Coordination & Collaboration Section

Data Applications Division

Data Management Division

**Technical Services Branch**

- ☆ [Illegible]

**Research & Development Branch**

- ☆ [Illegible]

**Data Processing Branch**

- ☆ [Illegible]

**Data Acquisition Branch**

- ☆ [Illegible]

REPORTS ON ADOPTION OF THE USE OF DATA

14-Oct-2003 GSI

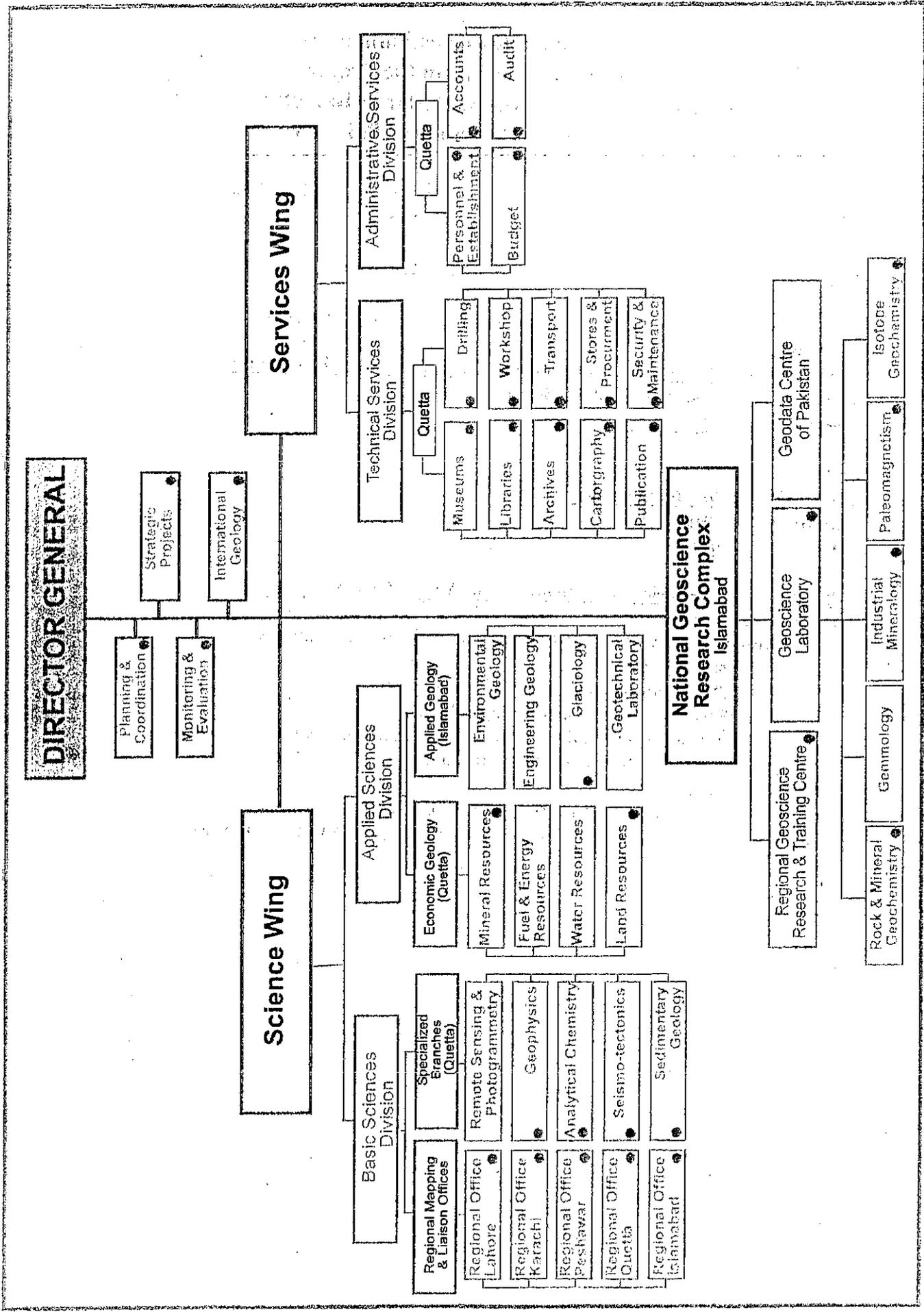


Fig. 1. PROPOSED ORGANIZATIONAL STRUCTURE OF GEOLOGICAL SURVEY OF PAKISTAN

● Functional  
 ● Partly Functional  
 ● Proposed

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date:** 14-Oct-2003(Tue)

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization:** Pakistan Council of Science and Industry Research Center (PCSIRC)

**Address:** Quetta – Nastung Road

**Telephone:** 081 460161

**Fax:**

**E-mail:**

**Answered by:** Dr. Kameen Khan

**Position:** Director

**Office:** office

**Subject:** Request for Information on Water Quality Analysis

**Answer/ Interview:**

- The following lists were ready to handover to the Team (as attached)
    - ◇ List of Equipment
    - ◇ PCSIR Laboratories, Quetta; Tests for water quality
    - ◇ WHO Guidelines; Bacteriological Quality
    - ◇ Drinking Water Quality Standards (Pakistan Standard Institution)
  - In response to a question from the Team on water quality for irrigation, the Director responded that:
    - ◇ Water suitable for drinking should be suitable to Irrigation.
  - The Team inspected the laboratory, it was well organized well maintained, observed.
- ===the end of the document===

## LIST OF EQUIPMENTS

1. Analytical Balance
2. Atomic Absorption Sepctrophotometer
3. Autoclave
4. Biological Fermenter BIOFLO III
5. Biological Microscope with video attachment
6. Colony Counter
7. Dissolved Oxygen meter
8. Electrical Conductivity meter
9. Fat Analyser
10. Fiber Analyser
11. Flame Photometer
12. Freeze Dryer
13. Heating Oven
14. High Speed Centrifuge
15. HPLC
16. Incubator
17. Incubator shaker
18. Laminar Flow
19. Melting point Apparatus
20. Microwave Oven
21. Muffle Furnace
22. Nitrogen distillation unit
23. Oil distillation Unit
24. pH meter
25. Refractometer
26. Rotatory Shaker
27. Scanning Electron Microscope
28. Tintometer
29. UV-Vis Double Beam Spectrophotometer
30. Water Bath Shaker
31. Water Distillation Unit (All Glass)
32. Conductivity meter
33. Dissolved oxygen meter
34. Total soluble solids meter
35. Tintometer

PC SIRE

# PCSIR LABORATORIES, QUETTA

## TESTS FOR WATER QUALITY

1. Alkalinity
2. Ammonia
3. Anionic Detergents (MBAS)
4. Arsenic
5. Bi-carbonates
6. BOD
7. Cadmium
8. Calcium
9. Carbonates
10. Chloride
11. Chromium
12. COD
13. Coliform Bacteria
14. Copper
15. Cyanide
16. Dissolved Oxygen
17. E.coli
18. Electrical conductivity
19. Fecal coliform
20. Iron
21. Lead
22. Magnesium
23. Nickel
24. Nitrate
25. Nitrite
26. pH
27. Phenols
28. Phosphate
29. Potassium
30. Salmonella
31. Shigella
32. Sodium
33. Sulphates
34. Sulphide
35. Total Hardness
36. Total Mold & Yeast
37. Total suspended solids
38. Total Viable Bacterial Count
39. Zinc

# WHO GUIDELINES

## Bacteriological Quality

<i>Organisms</i>	<i>Guideline Value</i>
a. All water intended for drinking E. Coli or thermo tolerant coliform bacteria	Must not be detectable in any 100 ml sample
b. Treated water entering the distribution system E. Coli or thermo tolerant coliform bacteria Total coliform bacteria	Must not be detectable in any 100 ml sample Must not be detectable in any 100 ml sample
c. Treated water in the distribution system E. Coli or thermo tolerant coliform bacteria Total coliform bacteria	Must not be detectable in any 100 ml sample Must not be detectable in any 100 ml sample. in the case of large supplies, where sufficient samples are examined, must not be present in 95% of samples taken throughout any 12-month period.

## Chemicals of Health Significance

<i>Inorganic</i>	<i>GV, mg/l</i>
Antimony	0.005
Arsenic	0.01
Barium	0.7
Boron	0.3
Cadmium	0.003
Chromium	0.05
Copper	2
Cyanide	0.07
Fluoride	1.5
Lead	0.01
Manganese	0.5
Mercury	0.001
Molybdenum	0.07
Nickel	0.02
Nitrate	50
Nitrite	3
Selenium	0.01

## Other Parameters

Parameters	Levels
<b>A. Physical parameters</b>	
• Color	15 TCU
• Taste & odor	-
• Temperature	-
• Turbidity	5 NTU
<b>B. Inorganic</b>	
• Aluminum	0.2 mg/l
• Ammonia	1.5 mg/l
• Chloride	250 mg/l
• Copper	1 mg/l
• Hardness	-
• Hydrogen sulfide	0.05 mg/l
• Iron	0.3 mg/l
• Manganese	0.1 mg/l
• Dissolved oxygen	-
• Ph	-
• Sodium	200 mg/l
• Sulfate	250 mg/l
• TDS	1000 mg/l
• Zinc	3 mg/l
<b>C. Organics</b>	
• Toluene	24-170
• Xylenes	20-1800
• Ethyl benzene	2.4-200
• Styrene	4-2600
• Monochlorobenzene	10-120
• 1,2 dichlorobenzene	1-10
• 1,4-dichlorobenzene	0.3-30
• Trichlorobenzenes	5-50
• Synthetic detergents	-
<b>D. Disinfectants &amp; disinfectant by-products</b>	
• Chlorine chlorophenols	600-1000
• 2-chlorophenol	0.1-10
• 2,4-dichlorophenol	0.3-40
• 2,4,6 trichlorophenol	2-300

151 drinking purps  
PC SIRC  
14-Oct-03

**DRINKING WATER QUALITY STANDARDS**  
(Pakistan Standard Institution)

Sr. No.	Characteristics	Unit	Max. Acceptable Concentratio n	Max. Allowable Concentratio n
<b>A. Physical Requirements</b>				
1.	Turbidity (NTU)	NTU	5	25
2.	Colour (PCU)	-	5	50
3.	Taste	-		Unobjectionable
4.	Odour	-		Unobjectionable
5.	pH	-	7.0-8.5	≥ 6.5- ≤ 9.2
<b>B. Chemical Requirements</b>				
1.	Total Dissolved Solids	mg/l	1000	1500
2.	Chloride (Cl)	mg/l	200	600
3.	Sulfate (SO <sub>4</sub> )	mg/l	200	400
4.	Nitrate (NO <sub>3</sub> )	mg/l	-	45
5.	Total Hardness (CaCO <sub>3</sub> )	mg/l	20	500
6.	Nitrite (NO <sub>2</sub> )	mg/l	Nil	Nil
7.	Magnesium (Mg)	mg/l	500	1000
8.	Total Ammonia	mg/l	0.1	0.5
9.	Hydrogen Sulfide	mg/l		Undetectable odour
10.	Fluoride (F)	mg/l	-	1.5
11.	Iron (Fe)	mg/l	0.3	1.0
12.	Zinc (Zn)	mg/l	5.0	15.0
13.	Manganese (Mn)	mg/l	0.1	0.5
14.	Copper (Cu)	mg/l	1.0	1.5
15.	Calcium (Ca)	mg/l	75	200
16.	Magnesium (Mg)	mg/l	50	150
17.	Phenolic Substances	mg/l	0.001	0.002
18.	Alkyl Benzyl Sulfates	mg/l	0.5	1.0
19.	Carbon Chloroform Extract	mg/l	0.2	0.5
<b>C. Limits of Toxic Substances</b>				
1.	Arsenic (As.)		mg/l	0.05
2.	Cadmium (Cd)		mg/l	0.01
3.	Chromium (Cr.)		mg/l	0.05
4.	Cyanide (Cn)		mg/l	0.20
5.	Lead (Pb)		mg/l	0.05
6.	Selenium (Se)		mg/l	0.20
7.	Radionaclider		Uo/l	1000
<b>D. Biological Requirements (Chemical Indicators of Pollution)</b>				
1.	Chemical Oxygen Demand (COD)		mg/l	10
2.	Biochemical Oxygen Demand (BOD)		mg/l	6
3.	Ammonia (NH <sub>3</sub> )		mg/l	0.5
4.	Grease		mg/l	1
<b>E. Limits for Bacteriological Contaminants</b>				

PC SIRC



Acceptable bacterial standards for potable water supplies are as follows:

- i) Standard plate count (SPC)/mls. = No more than 100
- ii) Presumptive test for coliform = Negative
- iii) Most probable number (MPN) = < 101 subject to the frequency of opportunity for water analysis.

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 16-Oct-2003(Thu)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization: Water Resources Planning, Development & Monitoring (WRPD&M)  
Directorate**

**Address: Quetta**

**Telephone: 081 9211190**

**Fax:**

**E-mail:**

**Answered by: Mr. Amjad Ali Shah, Deputy Director (Monitoring)**

**Mr. Jamil Ahmad Badini, Assistant Director (Planning)**

**Position: (see above)**

**Office: office**

**Subject: Request for Information on Monitoring of Water Resources**

**Answer/ Interview:**

- **General information on monitoring activity of water resources, Balochistan**
- Surface water data collection commenced in 1961 by WAPDA at 10 stream gauging stations.
- (The systematic hydrogeological investigations were started by the Hydrogeology Directorate, WAPDA During 1969.)
- A PC-II proforma was prepared and approved in 1985 setting out the terms of reference, organization and budget to achieve these standards (standards of World Meteorological Organization). Responsibility for implementation remained with the Surface Water Hydrology Project of WAPDA with provincial funding rather than federal funding.
- In July 1993, the Balochistan Bureau of Water Resources was set up within the Irrigation and Power Department of GoB, with broader functions covering both groundwater and surface water. The Hydrology Division, Hydrological Cell, Water Sector Investment Planning Cell of the Irrigation and Power Department; and hydrometrological and groundwater monitoring activities performed by WAPDA were transferred to the Bureau.
- In 1998, Water Resources Planning, Development & Monitoring Directorate was set up, and the Directorate has succeeded the function of the Bureau of Water Resources to-date.
- **Monitoring for DADs**
- Although WRPD&M Directorate recognizes that the Directorate is in charge of monitoring groundwater of piezometer to be installed for DADs, additional funding for such monitoring should be made separately form the funding for routine monitoring activities.

- (According to the Team's hearing to I&P, WRPD&M is responsible for arranging budget for such monitoring for DAD.)
  - PC-II for "Impact Evaluation Study of DAD in Conserving Water Resources in Balochistan" submitted in 2000, was not approved.
  - A proposal for project concept clearance "Strengthening & Modernization of Groundwater Network in the selected basins of Balochistan" prepared in Dec. 2002 expecting funds from JICA was submitted. PC-II for the above project is about to be submitted to GoB shortly.
  - **Water Quality Monitoring**
    - Responsibility and laboratory for water quality monitoring have been handed over from WAPD.
    - Due to lack of funds and proper equipment, monitoring activities are dormant to-date.
  - **Information collection- the following information were given to the Team**
    - Hydrological Yearbook 2001 – River and Climatological data of Balochistan
    - Proposal for project concept clearance (Strengthening and Modernization of Groundwater Network in the selected basin of Balochistan).
    - A location map of monitoring points and automatic water level recorders in Quetta North sub-basin (showing MNWs and monitoring points too).
    - == do == (showing MNWs only)
    - A sheet titled as "Groundwater monitoring studies in Manguchar (sub-basin), Pishin Lora Basin, (Balochistan)"
    - A sheet showing groundwater monitoring points in Mastung sub-basin (MAP-2)
    - A sheet titled as "Tentative Programme of WLR's chart replacement" (WLR for Water Level Recorder)
    - A sheet titled as "AWLR data processing", (AWLR for Automatic Water Level Recorder).
    - A sheet titled as "Monitoring Wells" ; a sheet for water level monitoring
    - A sheet titled as "Hydrometric network Balochistan (Climatological Observatories)"
    - A sheet titled as "Hydrometric Network Balochistan (River Gauging sites)"
    - A sheet titled as "Automatic Water Level Recorders in the Quetta North Sub-basin (Pishin Lora Basin)
    - 2 Sheets titled as "Hydrological boundaries"
    - 2 Sheets titled as "Administrative boundaries"
    - 5 Sheets showing Organizational setup of Irrigation and Power Department
  - **Information to be collected further from this Directorate**
    - Updated groundwater monitoring chart similar to the chart Dr. Shimizu given to the Team has still yet to be collected.
- ====the end of the document====

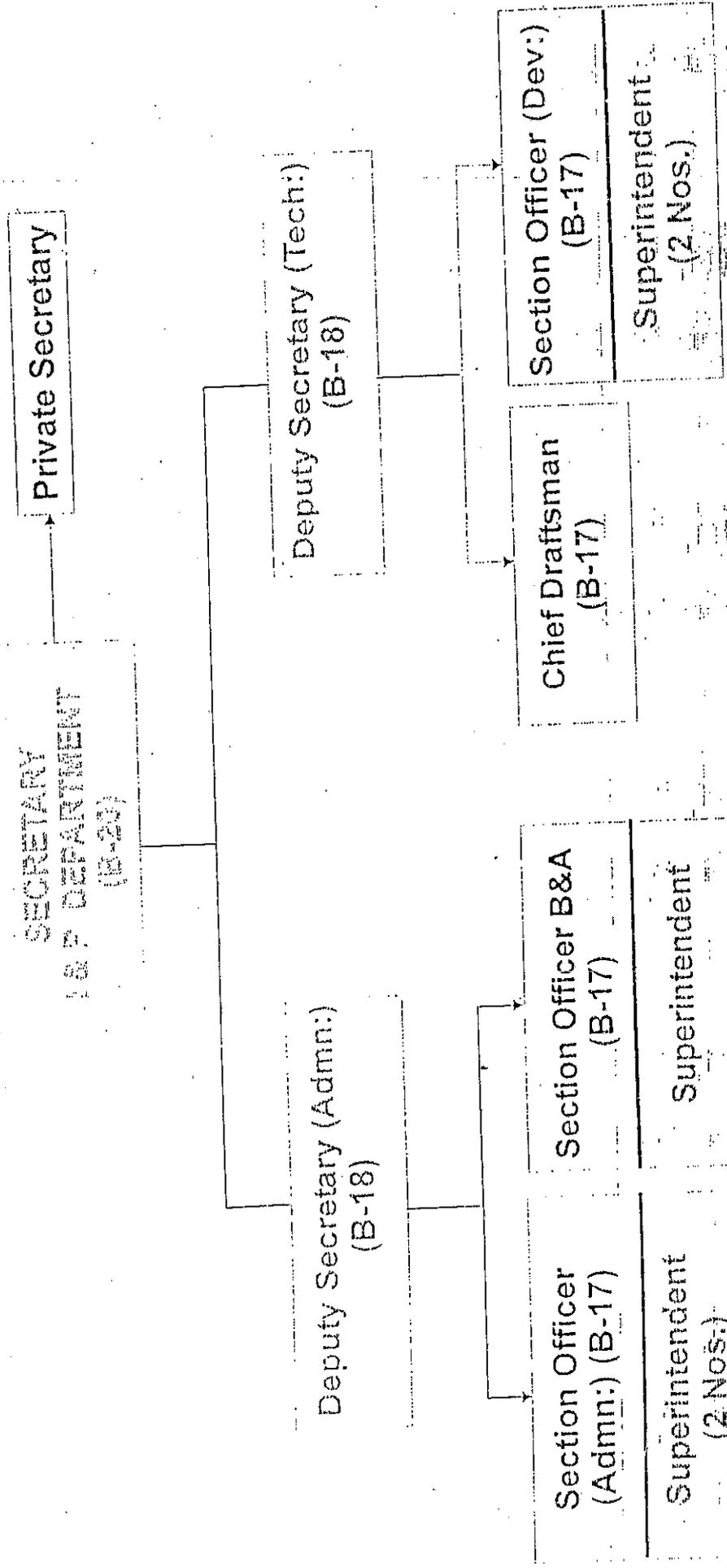
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WR P.D&M

**HYDROMETRIC NETWORK BALOCHISTAN (CLIMATOLOGICAL OBSERVATORIES)**

S. No.	Name of Site	Location			Hydrological Basin	Loop	Adminstrative District
		Latitude (North)	Longitude (East)	Altitude (feet) msl			
1	Wali Tangi	30° 16'	67° 13'	7210	Pishin Lora Basin	Quetta	Quetta ✓
2	Burj Aziz Khan	30° 18'	66° 36'	4650	Pishin Lora Basin	Quetta	Quetta ✓
3	Killi Kotwal	30° 165	67° 10'	5700	Pishin Lora Basin	Quetta	Quetta ✓
4	Qilla Abdullah	30° 43'	66° 37'	5220	Pishin Lora Basin	Quetta	Qilla Abdullah ✓
5	Kach	30° 25'	67° 18'	6350	Nari River Basin	Quetta	Ziarat ✓
6	Ziarat	30° 23'	67° 42'	8000	Nari River Basin	Quetta	Ziarat ✓
7	Nushki	29° 33'	66° 01'	3350	Hamun-e-Lora Basin	Kharan	Chagai ✓
8	Mahkay Chah	29° 03'	62° 20'	3011	Hamun-e-Mashkel Basin	Kharan	Chagai ✓
9	Qilla Ladgasht	27° 55'	62° 55'	1770	Hamun-e-Mashkel Basin	Kharan	Chagai ✓
10	Muslim Bagh	30° 49'	67° 44'	5870	Zhob River Basin	Zhob	Qilla Saifullah ✓
11	Babu Cheena	30° 50'	68° 35'	5117	Zhob River Basin	Zhob	Zhob ✓
12	Qilla Saifullah	30° 42'	68° 22'	4592	Zhob River Basin	Zhob	Qilla Saifullah ✓
13	Badinzai	31° 11'	69° 16'	4920	Zhob River Basin	Zhob	Zhob ✓
14	Murgha Kibzai	30° 45'	69° 22'	4592	Zhob River Basin	Zhob	Zhob ✓
15	Duki	30° 11	68° 34'	3560	Nari River Basin	Zhob	Loralai ✓
16	Mach	29° 52'	67° 20'	3200	Kachhi Plan Basin	Sibi	Bolan ✓
17	Nari	29° 03'	62° 20'	3011	Nari River Basin	Sibi	Sibi ✓
18	Gandawa	28° 37'	67° 29'	952	Kachhi Plan Basin	Sibi	Jhal Magsi ✓
19	Usta Muhammad	28° 11'	68° 06'	1640	Kachhi Plan Basin	Sibi	Jaffer Abad ✓
20	Bhag	29° 03'	67° 49'	1082	Kachhi Plan Basin	Sibi	Bolan ✓
21	Babar Kach	29° 47'	67° 58'	2624	Nari River Basin	Sibi	Sibi ✓
22	Turbat	25° 59'	63° 03'	500	Dasht River Basin	Mekran	Kech ✓
23	Shadi Kaur	25° 19'	63° 03'	213	Gawadar Ormara Basin	Mekran	Gawadar ✓
24	Basol Masjid	25° 44'	64° 34'	412	Gawadar Ormara Basin	Mekran	Gawadar ✓
25	Chib kalamati	25° 17'	62° 18'	400	Gawadar Ormara Basin	Mekran	Gawadar ✓
26	Mand	26° 07'	62° 02'	1500	Dasht River Basin	Mekran	Kech ✓
27	Plantak	27° 31'	64° 03'	2538	Hamun-e-Mashkel	Mekran	Kharan ✓
28	Goth Karim Bux	26° 25'	64° 12'	2450	Rakhshan River Basin	Mekran	Panigoor ✓
29	Mastung	29° 48'	66° 51'	5500	Pishin Lora Basin	Bela	Mastung ✓
30	Wadh	27° 21'	66° 22'	4100	Porali River Basin	Bela	Khuzdar ✓
31	Bela	26° 14'	66° 19'	290	Porali River Basin	Bela	Lasbela ✓
32	Uthal	25° 40'	66° 36'	7241	Porali River Basin	Bela	Lasbela ✓
33	Goth Amun	25° 26'	66° 52'	250	Porali River Basin	Bela	Lasbela ✓
34	Aghore	25° 26'	65° 32'	400	Hingol River Basin	Bela	Lasbela ✓

1  
PRESIDENT  
(PROVINCIAL LEVEL)  
ORGANIZATIONAL SETUP OF IRRIGATION & POWER DEPARTMENT (1/8)

SECRETARIATE STAFF



SECRETARIATE STAFF  
I & P DEPARTMENT  
(B-20)

SECRETARY (B-20)  
DEPUTY SECRETARY (Admn:) (B-18)  
DEPUTY SECRETARY (Tech:) (B-18)  
SECTION OFFICER (Admn:) (B-17)  
SECTION OFFICER (Dev:) (B-17)  
CHIEF DRAFTSMAN (B-17)  
CHIEF DRAFTSMAN (B-17)  
SUPERINTENDENT (2 Nos.)  
SUPERINTENDENT (2 Nos.)

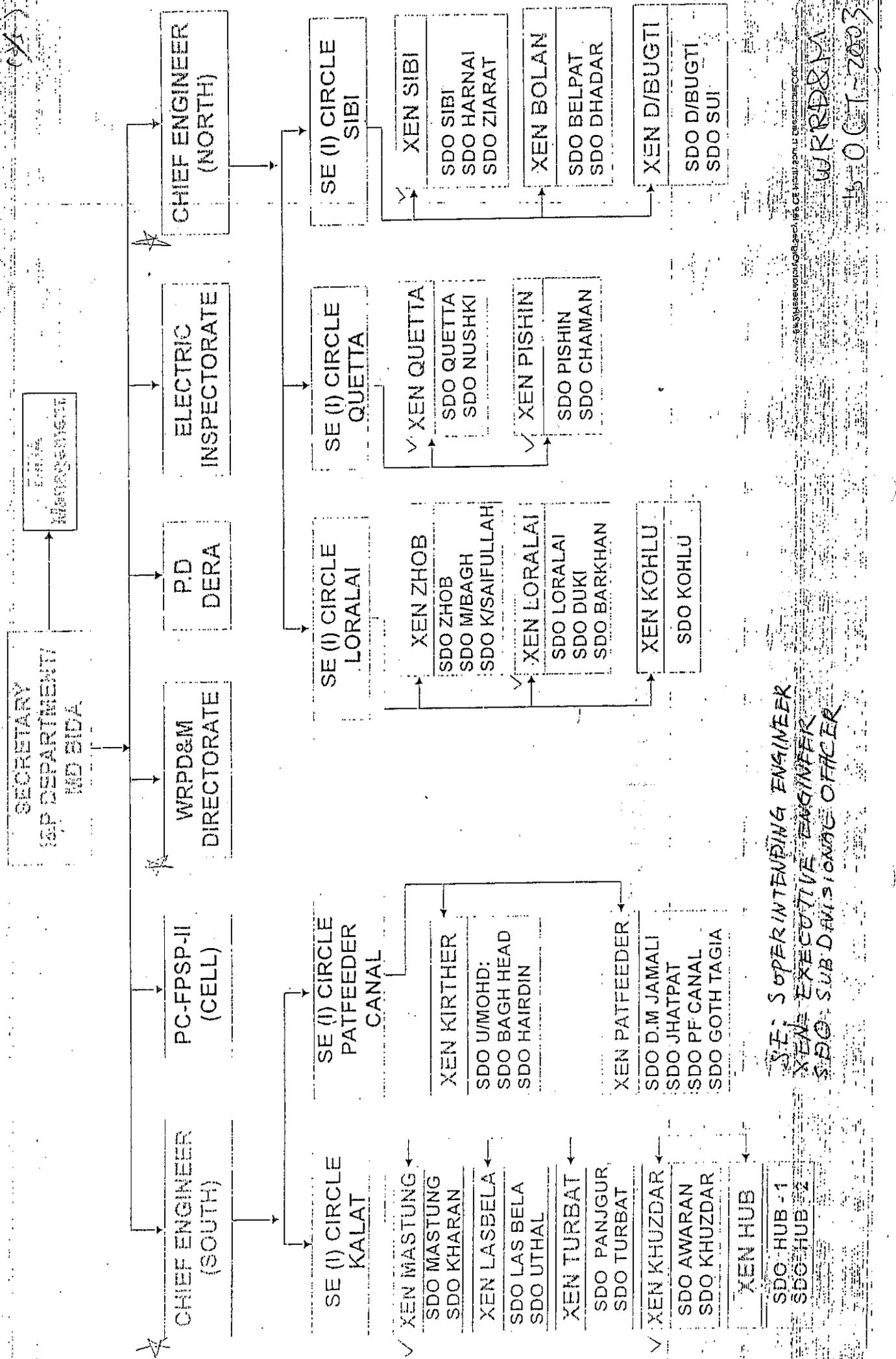
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HYDROMETRIC NETWORK BALUCHISTAN (RIVER GAUGING SITES)

S. Nr.	Name of River Station	Location			Hydrological Basin	Catchment Area (Sq. Mile)	Method of Measurement	Loop	Administ. District
		Latitude (North)	Longitude (East)	Altitude (feet) msl					
		1	Pishin Lora at Burj Aziz Khan	30° 20'					
2	Sariab Lora at Brewery Bridge	30° 11'	66° 58'	4650	Pishin Lora Basin	Bridge	Quetta	Quetta	
3	Baleli Nala at Custom check post	30° 16'	66° 54'	5180	Pishin Lora Basin	Bridge	Quetta	Quetta	
4	Pishin Lora at Anam Bostan				Pishin Lora Basin	Bridge	Kharan	Chagai	
5	Buddo River at K. Karim Bux Kharan	28° 38'	65° 28'	2460	Hamun-e-Mashkel	Cable Way	Kharan	Kharan	
6	Porali River at Sinchi Bent	26° 30'	66° 23'	1050	Porali River Basin	Cable Way	Bela	Lasbela	
7	Kud River at Mai Gundarani	26° 24'	66° 14'	690	Porali River Basin	Cable Way	Bela	Lasbela	
8	Vindor Dhora at Goth Amun	25° 26'	66° 50'	210	Porali River Basin	Float	Bela	Lasbela	
9	Hingol River at Aghore	25° 26'	65° 32'	30	Hingol River Basin	Cable Way	Bela	Lasbela	
10	Dasht River at Mirani Dam site	25° 58'	62° 45'	145	Dasht River Basin	Cable Way	Turbat	Kech	
11	Khost River at Chappar Rift	30° 20'	67° 30'	4760	Kachhi Plain	Cable Way	Zhob	Ziarat	
12	Zhob River at Killa Taimur	30° 47'	68° 23'	5050	Zhob River Basin	Cable Way	Zhob	Qila Saifullah	
13	Zhob River at Sharik Weir	31° 00'	69° 15'	4475	Zhob River Basin	Cable Way	Zhob	Qila Saifullah	
14	Zhob River at Mir Alikhel	31° 44'	69° 35'	3350	Zhob River Basin	Cable Way	Zhob	Zhob	
15	Biji River at Ghati Bridge	30° 00'	68° 50'	2975	Kachhi Plain	Bridge	Zhob	Loralai	
16	Bolan River at Kundlani	29° 27'	67° 30'	800	Kachhi Plain	Cable Way	Sibi	Bolan	
17	Nari River at Nari Bridge	29° 31'	67° 49'	420	Nari River Basin	Bridge	Sibi	Sibi	
18	Beji River at Babar Kach	29° 47'	67° 59'	975	Kachhi Plain	Cable Way	Sibi	Sibi	
19	Lehri River at Gorak Tangi	29° 18'	68° 20'	475	Kachhi Plain	Cable Way	Sibi	Bolan	
20	Mula River at Naulang				Mule River Basin	Cable Way	Bela	Khuzdar	

# ORGANIZATIONAL SETUP OF IRRIGATION & POWER DEPARTMENT



S.E. SUPERINTENDING ENGINEER  
 XEN EXECUTIVE ENGINEER  
 SDO SUB DIVISIONAL OFFICER

WRRD&M  
 15 OCT 2003

ORGANIZATIONAL SETUP OF IRRIGATION & POWER DEPARTMENT

ELECTRIC INSPECTORATE

GOVERNMENT  
OF PUNJAB

ELECTRIC INSPECTOR  
Cum DIRECTOR (B-19)

Office Superintendent

ASST: ELEC: INSPECTOR  
(B-17) Quetta

ELECTRIC SUB  
INSPECTOR

ASST: ELEC: INSPECTOR  
(B-17) Hub

ELECTRIC SUB  
INSPECTOR

ASST: ELEC: INSPECTOR  
(B-17) Loralai

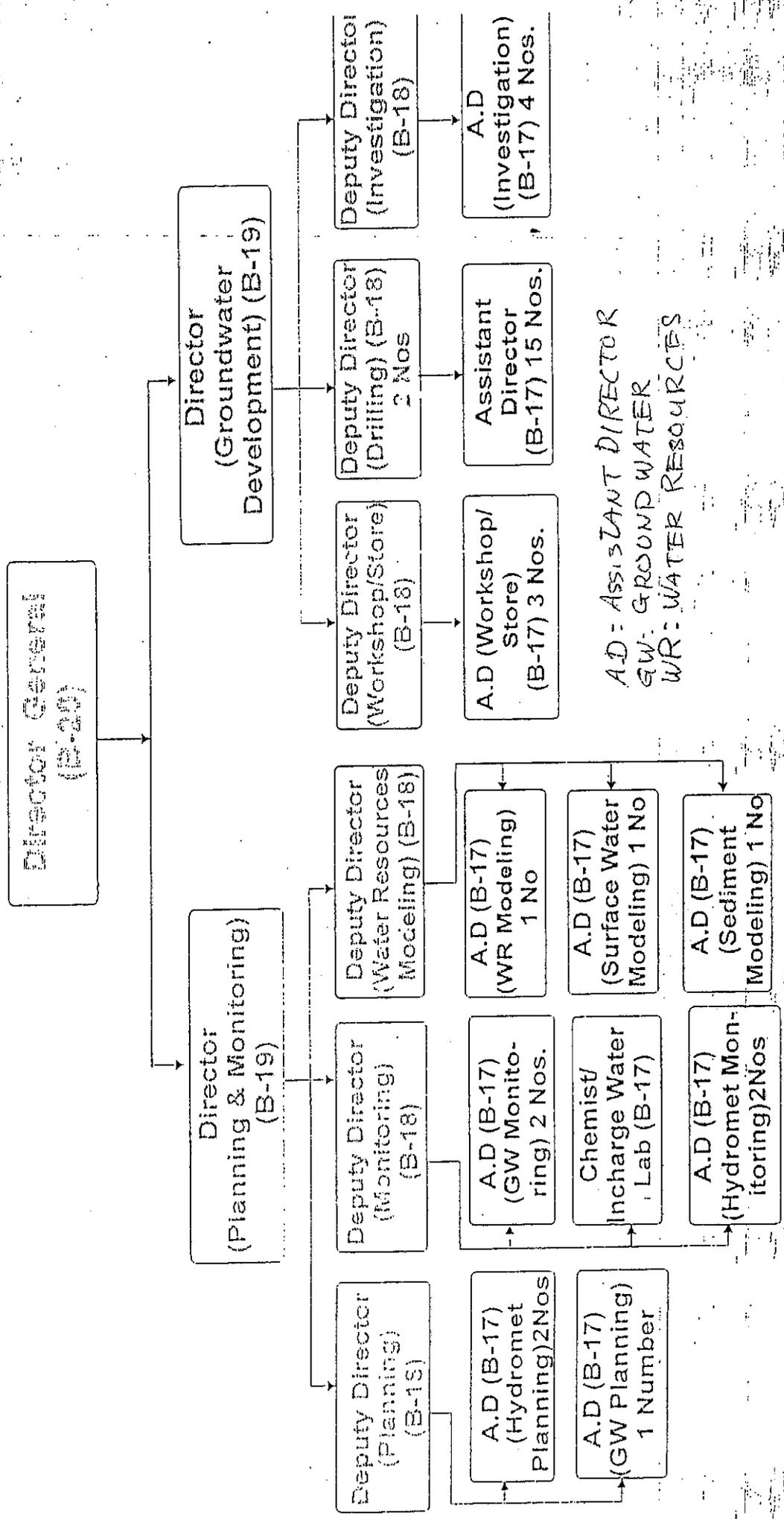
ELECTRIC SUB  
INSPECTOR

ASST: ELEC: INSPECTOR  
(B-17) Nasirabad

ELECTRIC SUB  
INSPECTOR

WRAP&M

Organizational Setup Water Resources Planning, Development and Monitoring Directorate

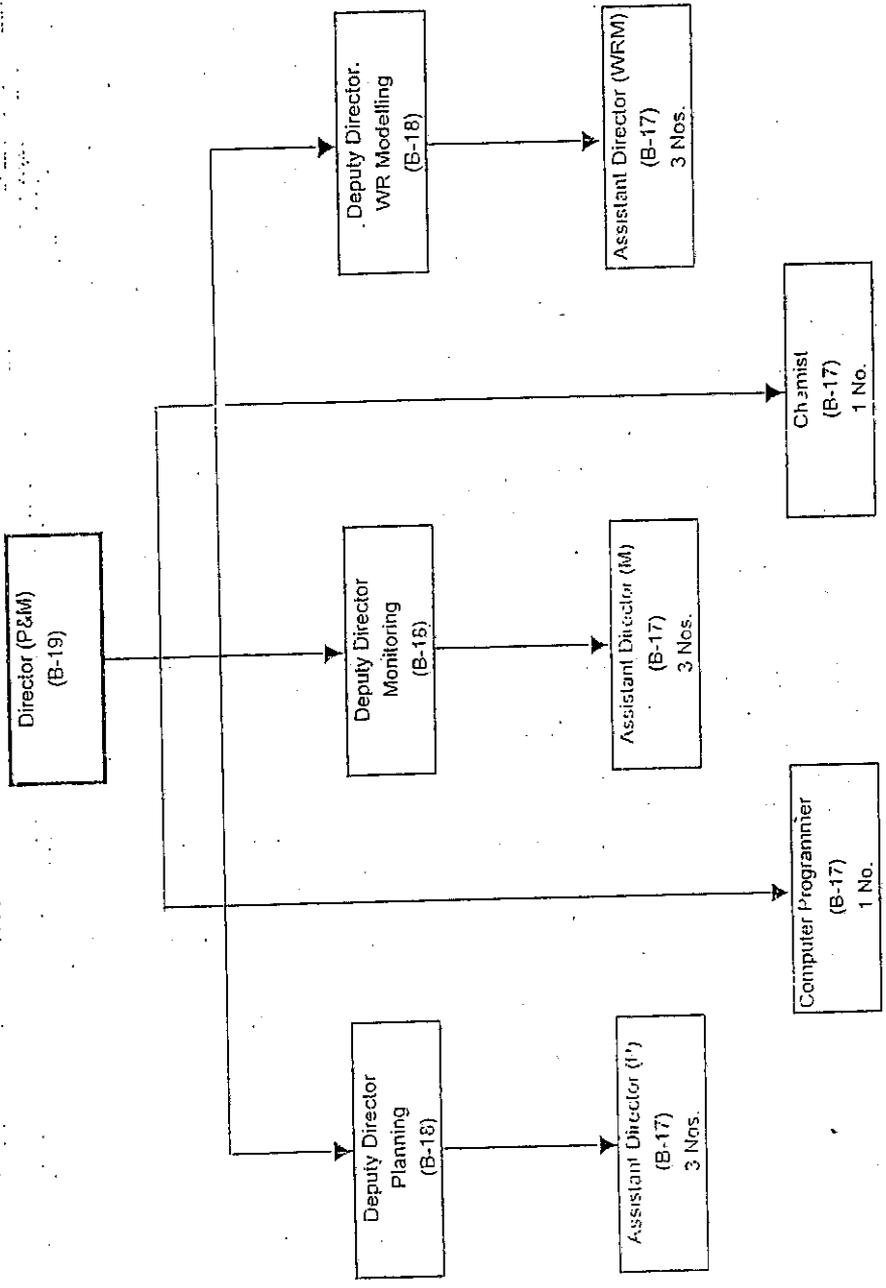


A.D: ASSISTANT DIRECTOR  
 GW: GROUND WATER  
 WR: WATER RESOURCES

5

(3/5)

**ORGANIZATIONAL SETUP**  
 (PLANNING AND MONITORING)  
**WATER RESOURCES PLANNING DEVELOPMENT & MONITORING DIRECTORATE**



S.No.	Scale	Post
1	B-19	1
2	B-18	3
3	B-17	11

WR-PP&M  
 16-OCT-2003

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 16-Oct-2003(Thu)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization: Communication and Works Department**

**Address: Quetta**

**Telephone: 081 9202769**

**Fax:**

**E-mail:**

**Answered by: Mr. Roji Khan, Chief Engineer,  
Mr. Maq Bool, Executive Engineer**

**Position: (see above)**

**Office: office**

**Subject: Request for Information on Soil Testing and Equipment**

**Answer/ Interview:**

- **General information C&W Department**
  - Responsible for road, bridge and building
  - Laboratory undertakes testing for soil, concrete, aggregates, bitumen, SPT, CBR
  - The chief Engineer met is responsible (1) Quality control, and (3) Balochistan Engineering Services Agency (PVT) L'ted for consultancy services.
  - The laboratory does not accept test directory form contractors. Testing has to be requested directory from client such as governmental department or JICA Team and etc.
- Request for a list of testing items and equipment available at the labo.
  - On request for the above, necessary information would be provided within tow days, replied.
  - The Team inspected the laboratory.

=== the end of the document===

18-04-2012  
C & W Dep

**REVISED RATES OF TESTING CHARGES FOR DEPARTMENT / AGENCIES OTHER THAN THE  
BALOCHISTAN C&W DEPARTMENT.**

S.No	NAME OF TEST	RATE (Rs)
<b>A- AGGREGATE</b>		
1	Gradation Test	450.00
2	Los Angeles Abrasion Test	810.00
3	Flakiness and Elongation Test	360.00
4	Specific Gravity and Water Absorption	405.00
5	Bituminous Adhesion Test	405.00
6	Soundness Test	2700.00
7	Fineness Modulus (including gradation)	405.00
8	Compaction Test (Laboratory)	1350.00
9	Compaction Test (Field)	787.50
10	Unit weight and Voids	270.00
11	Crushing Value Test	562.50
12	Sand Equivalent Test	1350.00
<b>B- BITUMINOUS MATERIALS</b>		
1	Specific Gravity Test	405.00
2	Penetration Test	450.00
3	Ring and Ball Test (Softening point)	450.00
4	Flash Point	337.50
5	Bitument Extraction (including gradation)	1215.00
6	Core extraction of Bituminous Concrete, (Per inch depth)	450.00
<b>C- BRICKS</b>		
1	Compressive Strength of Bricks including capping	270.00
2	Water Absorption	75.00
3	Dimension Test	37.50
<b>D- CONCRETE</b>		
1	Flexural Strength (Excluding Moulding)	562.50
2	Compressive Strength (excluding moulding)	270.00
3	Compressive Strength (excluding moulding) with capping	505.50
4	Slump Test	135.00
5	Flow Test	405.00
6	Design of Concrete Mix (including testing of cement / aggregate etc)	9454.50
7	Compressive strength of core	742.50
<b>E- SOIL</b>		
1	Moisture Content Test	225.00
2	Particle Size Distribution Test (Sieve analysis)	337.50
3	Hydrometer Test	675.00
4	Liquid Limit Test	450.00
5	Plastic Limit Test	280.50
6	Linear Shrinkage Test	280.50
7	Volumetric Shrinkage Test	450.00
8	Specific Gravity Test	375.00
9	Compaction Test Laboratory	900.00
10	Compaction Test (Field)	562.50
11	California Bearing Ratio Test (Lab:)	
	a) Dry (including compaction)	2160.00
	b) at Optimum Moisture content soaked	2475.00
14	Unconfined compression Test (Testing of core only)	675.00
<b>F- PAVEMENT DESIGN CHARGES</b>		
1	Up to 5 Miles	27000.00
2	Up to 10 Miles	40500.00
3	Above 10 Miles	54000.00
4	Bearing capacity SPT per foot	750.00 Per Rft

**ADDITIONAL CHARGES.**

A- The rates of testing charges as mentioned above, pertains to Laboratory analysis and test results only. An extra amount to be charged in each individual case depending upon the specific requirements as given below:-

- 1- Soil survey and sampling for a given project / site (@ 5% of the above rate.
- 2- Labour required at site @ 5% of the above rate.
- 3- Detail report and documentation data @ 10% of the above rate.
- 4- Photo snaps for the project under study (@ 3% of the above rate.

B- For the carriage of the research staff, equipment and samples etc. transport will be provided by the client. In case of availability of a Government transport the approved millage / KM rate is to be paid in advance.

Prepare by  
Quality Control Specialist,  
Material Testing & Field Control Lab:  
Communication and Works Department,  
Quetta.

Approved by  
Chief Engineer (Design)  
C&W PP&H Department  
Balochistan.

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 16-Oct-2003(Thu)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization: B-WASA (Balochistan Water And Sanitation Authority)**

**Address: Quetta**

**Telephone: 081**

**Fax:**

**E-mail:**

**Answered by: Mr. ISHTIAQ, Senior Hydro geologist.**

**Position: (see above)**

**Office: office (WASA)**

**Subject: Request for Information on Groundwater Monitoring**

**Answer/ Interview:**

• **General information**

- Responsible for water supply for Quetta
- A corporation belonging to the Quetta Municipal but financially autonomous
- Presently undertaking "Quetta Water Supply and Environmental Improvement Project
- Presently possessing 148 wells in alluvial, about 70 successful wells in hard rock, among the wells in hard rock some 35 -40 wells will be utilized as production wells.
- 27 observation wells plus 92 production wells in both hard rock and alluvial (at present) are being monitored. Wells to be monitored have progressively increased as in parallel to the progress of drilling activities starting from the beginning of 2003.
- For the purpose of the project, B-WASA obtains groundwater monitoring information of 18 monitoring stations form WRPD&M Directorate.
- It was explained the monitoring activities presently undertaken by WRPD&M Directorate are not satisfactory to B-WASA.
- B-WASA will continue their monitoring activities for their own wells in future too. Monitoring of wells belonging to other organization is as a matter of course left to the each organization, explained.

• **The following information was given to the Team**

- Data from WRMD (feet) for groundwater monitoring results of 18 monitoring station, form March-03 to Aug-03
- Monitoring data acquired from WASA in meters (27 wells).
- In response to the Team's request, the past groundwater monitoring data is saved in a computer whose user is on 20-month leave; the password not known. The senior hydrogeologist requested the DG of WRPD&M to release the data to the Team. The data would be available again at WRPD&M the next day.

===the end of the document===

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 17-Oct-2003(Fri)**

**Time: 09:30**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization: United Nation Development Program**

**Address: Quetta**

**Telephone: +92-81-9211638, 449690, 445981; +92-320-4282012**

**Fax: +92-81-443621**

**E-mail: adpbundp@qta.paknet.com.pk**

**Answered by: Dr. Rashid Javaid, Programme Coordinator.**

**Position: (see above)**

**Office: office (UNDP, Quetta)**

**Subject: Request for Information**

**Answer/ Interview:**

- **The following information were requested by the Team**
  - Report “UN-ESCAP Utilization of Groundwater Resources Under-Water-Stressed Area in Balochistan” 5-16 May 1999; UN Economic and Social Commission for Asia and the Pacific.
  - Information on ‘reversed siphon’ install at three existing DADs.
  - Other information was requested by Mr. SHINMURA; detail report will be made by him.
  
  - On request of the above information, it was proposed that:
  - The office will try to locate the requested Report of “UN-ESCAP”
  - The person in charge of DADs Mr. Ijaz is available at 9:30 on 21<sup>st</sup> Oct. 2003 (Mon), at UNDP Quetta office.
  - In addition to the above, a person in charge of water shed management Mr. Ghulam Muhammad is available 18<sup>th</sup> Oct 2003.
- ===the end of the document===

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 17-Oct-2003(Fri)**

**Time: 12:15**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization: Water Resources Planning, Development and Monitoring  
(WRPD&M) Directorate, I&P Dept.**

**Address: Quetta**

**Telephone: 081 9211190**

**Fax:**

**E-mail:**

**Answered by: Mr. Amjad Ali Shal, Deputy Director (Monitoring)**

**Position: (see above)**

**Office: office (WRPD&M Directorate)**

**Subject: Request for Information on Groundwater Monitoring**

**Answer/ Interview:**

- The person in charge of updating groundwater information is off for medical checking.
- The information required (updated charts; time vs groundwater level for automatic water level recorders; and digital information of them) will be provided by 21<sup>st</sup> Oct 2003 (Mon).
- It was confirmed the Directorate is responsible for all the aspect of water resources. Groundwater monitoring presently carried out by B-WASA for the Quetta City; will be handled by the Directorate, explained; as against the explanation made by B-WASA on 16<sup>th</sup> Oct 2003.
- The Act defining the responsibility will be provided by the Directorate to the Team on the coming Monday.

===the end of the document===

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 18-Oct-2003(Sat)**

**Time: 09:15**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization: Forest Department**

**Address: Quetta**

**Telephone: 081 9202400**

**Fax: 0819201835**

**E-mail:**

**Answered by: Mr. K. M. Siddiq Akbar, Secretary of Forest Department**

**Position: (He is in the position of Secretary of Home and Tribal Affairs also)**

**Office: Secretariat of Home and Tribal Affairs**

**Subject: Request for Cooperation for his office**

**Answer/ Interview:**

- The Team explained the purpose of the visit.
- The secretary expressed his willingness for cooperation to the Team and issued an instruction for his staff to extend full cooperation to the Team.

====the end of the document====



No. I&P-SO(D)1-74/2003/ 2237-  
GOVERNMENT OF BALOCHISTAN,  
IRRIGATION & POWER DEPARTMENT

Dated Quetta, the 9/10 2003.

**TO WHOM IT MAY CONCERN**

Subject: JICA PREPARATORY STUDY TEAM ON FLOOD WATER UTILIZATION DEVELOPMENT IN BALOCHISTAN PROVINCE.

A JICA (JAPAN INTERNATIONAL COOPERATION AGENCY) Team comprising of the following members are now conducting their survey on "Flood Water Utilization Development in Balochistan Province" from 16-September, 2003 towards the end of October, 2003.

S.No.	Name (s)	Nationality
1	Mr. Kuninobu NOD	Japanese
2	Mr. Koji KOGA	--do--
3	Mr. Shinya TAKAHASHI	--do--
4	Mr. Norifumi SHINMURA	--do--

In this connection, you are kindly requested to extend your cooperation to them as much as possible

With Kind Regard

✓ DEPUTY SECRETARY (TECH)  
Irrigation & power Department  
Quetta.

DR. Saleem Sheerani

cc f

MR Manzoor  
c wife.

Pl. extend all  
possible assistance.

18/x

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 18-Oct-2003 (Sat)**

**Time: 09:45**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization: Water Resources Planning, Development and Monitoring (WRPD&M) Directorate, I&P Dept.**

**Address: Quetta**

**Telephone: 081 9211190**

**Fax:**

**E-mail:**

**Answered by: Mr. Amjad Ali Shal, Deputy Director (Monitoring)**

**Position: (see above)**

**Office: office (WRPD&M Directorate)**

**Subject: Request for Information on Groundwater Monitoring**

**Answer/ Interview:**

**The following information was provided.**

- Mean Monthly Maximum Daily Depth to Water Level (MNW-QA-1 to 11, QA-9 not monitored due to dry well)
- Mean Monthly Maximum Daily Depth to Water Level – Military Diary Farm
- Mean Monthly Minimum Daily Depth to Water Level – Military Diary Farm
- Digital file of the above
- Graphs of time vs GWL + Rainfall for MNW-QA-1 to MNW-QA-11 except QA-9)
- Depth to water table contour map for August -03
- “A brief Note of the Activities of Bureau Water Resources Bureau of Water Resources” as described in the title of the sheet.
- **In relation to the activities of Monitoring section;** it was explained that annual monitoring report was published in the year of 2000 for the date upto 1999. Since then updated report has yet to be published.

**Laboratory**

- Function of laboratory was succeeded from WAPDA to then Bureau, now called WRPD&M Directorate.
- Presently ‘sedimentation test’ only is carried out.
- Equipment for other major testing was provided by UNDP in 2002. ***The list as attached was provided to the Team.***
- Trainings and transfer of knowledge will be performed by the University of Balochistan with the funding arrangement of UNDP

**On 21-Oct-2003**

The Baluchistan Ground Water Rights Administration Ordinance, 1978, amended in 2000 was obtained from the Technical Officer, WRPD&M Directorate.

===the end of the document===

Carton No	Item (Description)	Unit	Quantity	Condition
1	Water Purification System	No.	1	Packed
2 ✓	Spectrophotometer	No.	1	Packed
3 ✓	Quality Electrode (with chemicals)	No.	1	Packed
4 ✓	Hydrometer	No.	7	Packed
	Digital Thermometers	No.	2	Packed
	Cylinders	No.	5	Packed
	Software/Instruction Manual for	Set	1	Packed
✓	Spectrophotometer			
5	Digital Balance, Top Loaded	No.	1	Packed
6	Stirrilized Bottles with bags	No.	50	Packed
7	Centrifugal Machine	No.	1	Packed
	(with instruction mannual)			
8	Magnetic Stirrer	No.	2	Packed
9 ✓	Dissolved Oxygen Regent	No.	2	Packed
10 ✓	Combination Fluoride Electrode			
	(with manual and chemicals)			
11	Electric Balance	No.	2	Packed
12	Reference Electrode (with manual)	No.	4	Packed
13 ✓	Pocket Turbidimeter	No.	1	Packed
14 ✓	pH Meter with water sampling kit	No.	1	Packed
15 ✓	Chlorimeter <i>colorimeter</i>	No.	1	Packed
16	Stirrilized Sampling Bottles	Cartoon	1	Packed
17	Chemical for stirrelization	Cartoon	2	Packed
18	Digital Tirator	No.	1	Packed
19	Portable Incubator	No.	1	Packed
20 ✓	Reverse Osmosis System	No.	1	Packed
21 ✓	Spectrophotometer	No.	1	Packed
22	Box for Spectrophotometer	No.	1	Packed
14 23 ✓	pH Meter with electrodes	No.	6	Packed
24	Battery Kit for Spectrophotometer	No.	1	Packed
25	Reagent and apparatur case	No.	2	Packed
26 ✓	Chemical for reagent	No.	1	Packed
27	Thermometers	No.	6	Packed
28	Portable Conductivity metr	No.	4	Packed
29	Dissolved Oxygen meter	No.	1	Packed
30	Reverse Osmosis with storage and	No.	1	Packed
	delivery tank			
31	Blanket/raincoat (used)	No.	1	Loose

provided by UNDP 2002

5.26  
24.10.2001

lit  
24.10.2001



# The Baluchistan Gazette

PUBLISHED BY AUTHORITY

No. 20      QUETTA,      WEDNESDAY,      MARCH 22,      1978

GOVERNMENT OF BALUCHISTAN  
LAW DEPARTMENT.

NOTIFICATION.

Dated Quetta, the 22<sup>nd</sup> March, 1978.

No. Legis:-1-47/Law/71. The following ordinance made by the Governor of Baluchistan on the 21<sup>st</sup> March, 1978 is hereby published for general information:-

BALUCHISTAN ORDINANCE NO. IX OF 1978.

THE BALUCHISTAN GROUND WATER RIGHTS ADMINISTRATION ORDINANCE, 1978.

AN  
ORDINANCE

to provide for the management of Ground  
Water Rights in Baluchistan.

Printed by the Manager Government Printing & Stationery Department Baluchistan Quetta.

Price Re 1 -

G.P.(Q) 531-450-4-78.

(#17-WRPD & M)

55

Secretary  
Provincial Water Board  
Director General, WRPD & M  
Director, Baluchistan, Quetta

WHEREAS it is necessary to provide for law to regulate the use of Ground Water and to administration rights of various persons therein.

AND THEREFORE, in pursuance of the proclamation of the fifth day of July, 1977 read with the

Law

(Continuance in Force) Order 1977 (CMLA ORDER NO. 1 of 1977) and in exercise of all powers enabling him in that behalf, the Governor of Baluchistan is pleased to make and promulgate the following Ordinance:-

1. (1) This Ordinance may be called the Balochistan Ground Extend and Water Rights Administration Ordinance, 1978.

(2) It extend to the entire Province of Balochistan Ground Water Rights Administrative Ordinance 1978.

(3) It shall come into force at once.

2. (1) In this Ordinance unless there is anything repugnant in the subject or context, the following terms shall be defined as under:-

✓ (a) "PROVINCIAL WATER BOARD" means a body consisting of such members as may be appointed by the Government to administer the ground water rights and to lay down policies for conservation and development of ground water resources.

✓ (b) "DISTRICT WATER COMMITTEE" means a body consisting of such official and non-official members of the District as may be notified by the Government for carrying out the functions mentioned in this ordinance.

(c) "BASIN" means the surface area with a given water-shed.

(d) "ACQUIFER" means a preambled geological formation that stores and transmits water.

(e) "BASE RUN-OFF" means sustained or dry weather flow. In most streams base run-off is composed largely of subsurface run-off.

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Secretary  
Provincial Water Board  
Director General, WRPD&M  
Directorate, Baluchistan, Quetta.

- (f) "DEPLETION" means the continued withdrawal of water from a surface or ground water stream, reservoir or basin at a rate greater than the rate of replenishment.
- (g) "ABANDONED WELL" means any well whose use has been permanently discontinued. Any well shall be deemed discontinued. Any well shall be deemed disrepair of obtaining ground water is impractical.
- 3. (1) There shall be a Provincial Water Board consisting of:-
  - (a) Additional Chief Secretary (Dev) / Commissioner, P&D Government of Baluchistan.
  - (b) Member, Board of Revenue, Baluchistan.
  - (c) Secretary, Government of Baluchistan, Irrigation Department.
  - (d) Two such other non-official members as the Provincial Government may appoint.
  - (2) The Government may appoint the Secretary, Government of Baluchistan, Irrigation Department as the Director of the Board.
  - (3) The tenure of the office of non-official members in the Board will be terminated after three years.
  - (4) The Government may appoint any member of the Board for a second term of three years.
  - (5) The Government may also make any Change in the composition of the Board whenever necessary.
  - (6) The Provincial Water Board will:-
    - (a) lay down policies for conserving and developing the ground water resources

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    - (a) lay down policies for conserving and developing the ground water resources

- in Baluchistan.
- (b) Make rules and regulation for use of ground water resources and administratering the water rights of various persons.
- (c) Act as a supervising and controlling authority of the various water committees.
- (d) Work as revisional authority against the decisions of Water Committees and other tribunals charged with the administration of Water rights.
- (e) Identify aquifers of ground water and declare such aquifers as it may consider necessary as Designated Ground Water Basins.
- (f) Such basins shall be notified by the Board in the official Gazette.
- (g) The Board will arrange to determine the existing withdrawal of ground water through tube wells/open surface wells/Persian wells/karezes or any other means.
- (h) All the existing open surface wells/karezes/ springs and any other device of extracting ground water will be got registered with the provincial Water Board.
- (i) All such registered wlls/Karezes/ Springs and other means of extracting ground water will be notified by the Provincial Water Board.
- (j) The Water Board will also lay down distances between Wells/Springs and Karezes within the district Water Committee shall be allowed to issue permits; and
- (k) It shall also determine the safe yield in

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- (k) It shall also determine the safe yield in

respect of each basin beyond which the District Water Committee will not be authorized to issue further permits.

respect of each basin beyond which the District Water Committee will not be authorized to issue further permits.

4. (1) There shall be a water committee in each District to be constituted by the Government.

There shall be a water committee in each District to be constituted by the Government.

(a) The Committee shall consist of Deputy Commissioner, Executive Engineer Extra Assistant Director Agriculture and one of the non-official members to be nominated by the Government. Executive Engineer Irrigation will be the Secretary of Committee.

(a) The Committee shall consist of Executive District Officer Revenue, Executive Engineer, District Officer Agriculture and one of the non-official members to be nominated by the Government. Executive Engineer Irrigation will be the Secretary of Committee.

(b) The committee shall work under the direct supervision and over-all control of the Provincial Water Board for the purpose of carrying out the objectives of this Ordinance.

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(c) No Person will be allowed to extract groundwater within designated ground water basins, without the permission of the District Water Committee.

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(d) Any person who wants to extract groundwater within the designated groundwater basins will submit an application on prescribed form to the District Water Committee.

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(e) The Committee will invite objections in respect of the above application from various persons having any interest in the groundwater either in the vicinity of proposed place of mining of groundwater or in the basin as a whole.

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(f) The Committee will hear all such objections and will give due opportunity to all such interested persons to produce evidence in respect of their contention. After hearing the

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Secretary  
Provincial Water Board  
Director General, WRP&SM

parties it will either grant permission to the applicant to mine the ground water subject to such conditions as may be prescribed by it or it may reject the applications.

- (g) The District committee while accepting or rejecting the application will give grounds for doing so.
- (h) The Committee will have the power to stop the extraction of ground water by any unauthorized person.
- (i) The Committee will also have the power of forfeiting any machinery, equipment and tools deployed for the purpose of unauthorized extraction of ground water.
- (j) The Committee may also take cognizance of any dispute pertaining to any tube wells/surface wells/karezes pending before any Revenue Officers.
- (k) The Committee will also issue a permit to any person applying for a new Tubewell which is substitute for the Abandoned well. The Committee may Not hear objections in such cases.
- (l) The Committee may allow a permit holder to change the location of his well before the completion of the well. It will amend the permit if it considers that the change of location does not effect the existing water rights of any other person.
- (m) While issuing permit the committee will ensure that the extraction of water by a permit holder does not cause depletion of perennial stream or any other perennial source of water.
- (n) The decision of the District Water Committee on an application submitted to it for extraction of ground

parties it will either grant permission to the applicant to mine the ground water subject to such conditions as may be prescribed by it or it may reject the applications.

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- (n) The decision of the District Water Committee on an application Submitted to it for extraction of ground

#19(7/11)

water will be governed by the decision of the majority of the members.

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(o) Any person aggrieved of any order of the District Water Committee may file an appeal before the Commissioner of the Division within a period of 30 days.

(o) Any person aggrieved of any order of The District Water Committee may file An appeal before the District Coordinating Officer, The Division within a period of 30 days.

(p) The provincial Water Board shall have the power to call for the record of any case relating to the Water rights pending either before the District Water Committee or the Commissioner, to examine and satisfy itself as to the regularity, proprietary and legality of these proceedings. It may set aside any of the order and quash the proceedings if it considers that any material irregularity has occurred so as to occasion a miscarriage to justice.

(p) The provincial Water Board shall have the power to call for the record of any case relating to the Water rights pending either before the District Water Committee or the District Coordinating Officer, to examine and satisfy itself as to the Regularity, proprietary and legality of These proceedings. It may set aside any Of the order and quash the proceedings If it considers that any material Irregularity has occurred so as to Occasion a miscarriage to justice.

5. (1) The District Water Committees shall be responsible:-

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(a) To implement the policies and directions given to it by the Provincial Water board from time to time.

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(b) To issue water permits to various water users; and

(b) To issue water permits to various water users; and

(c) To hear and decide the objections raised by various persons about the use of ground water.

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6. (1) Any person contravening any of the provisions of this Ordinance shall be punished with imprisonment of either description for a term which may extend to one year or with fine or both.

6. (1) Any person contravening any of the provisions of this Ordinance shall be punished with imprisonment of either description for a term which may extend to one year or with fine or both;

(2) The offence under the Ordinance shall be bailable.

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(3) The court shall not take cognizance of offence under this Ordinance

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Secretary  
Provincial Water Board  
Director General, WRPD&M  
Director of Balochistan, Quetta

unless a complaint in writing has been made by the District Water Committee.

(4) The court while passing any sentence on a person accused of violating any provisions of this ordinance may also order payment of compensation to the aggrieved person out of fine imposed on the accused.

7. The Government may make rules to carry out the purpose of this Ordinance.

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7. The Government may make rules to carry out the purpose of this Ordinance.

21.3.1978

Mr. Justice Mir Khuda Bakhsh Marri.  
Governor Baluchistan.

Fakhruddin H. Shaikh,  
Law Secretary.

### STATEMENT OF OBJECTS AND REASONS.

There is no law in Baluchistan regulating the use of water of tube wells/open surface wells within the vicinity of karez. In some areas of Baluchistan there was a Riwaj that no well should be allowed to dug within the distance of 250 yards of the first well of karez in case of soft lands and 500 yards of the stony lands. There are certain areas in Baluchistan where most of the cultivators depend on the Karezaes for their livelihood. Hydrological conditions in Baluchistan are not uniform through out the province like Indus Plain. The ground water reservoirs also vary from place to place. It is, therefore, not advisable to provide a uniform policy for the entire Baluchistan for regulating the use of ground water. Areas having ground water resources are to be identified and declared as designated Ground Water Basins for which a law should be framed with a view to ensuring the maximum utilization of ground water resources. Hence this Ordinance.

Secretary  
Provincial Water Board  
Director General, WRP&M  
Directorate Baluchistan, Quetta

EXTRAORDINARY

REGISTERED NO.S-2771



# THE BALOCHISTAN GAZETTE

PUBLISHED BY AUTHORITY

NO. 42      QUETTA      FRIDAY      NOVEMBER      17,      2000.

GOVERNMENT OF BALOCHISTAN,  
LAW DEPARTMENT

NOTIFICATION

Dated Quetta, the 17<sup>th</sup> November, 2000.

No. Legis:1-47/Law/71-VII. The following Ordinance made by the Governor of Balochistan on 13<sup>th</sup> November, 2000, is hereby published for general information:-

BALOCHISTAN ORDINANCE NO.IX OF 2000

THE BALOCHISTAN GROUND WATER RIGHTS ADMINISTRATION  
(AMENDMENT) ORDINANCE, 2000.

AN  
ORDINANCE

further to amend the Balochistan Ground Water Rights  
Administration Ordinance, 1978 (IX of 1978)

Preamble

WHEREAS it is expedient further to amend the Balochistan  
Ground Water Rights Administration Ordinance, 1978, in the manner  
hereinafter appearing;

Printed by the Controller, Government Printing and Stationery Department, Balochistan Quetta.  
D.No. 42-00-Copies-1-2001

Secretary  
Provincial Water Board/  
Director General, WRPD&M  
Directorate, Balochistan, Quetta

#11(11)

AND WHEREAS the Provincial Assembly of Balochistan stands suspended in pursuance of the Proclamation of Emergency of the fourteenth day of October, 1999, and the Governor of Balochistan is satisfied that circumstance exist which render it necessary to take immediate action;

NOW, THEREFORE, in pursuance of Article 4 of the Provincial Constitution (Amendment) Order, 1999, (Chief Executive's Order No.9 of 1999), and in exercise of all powers enabling him in that behalf, the Governor of Balochistan, on the instructions of the Chief Executive of Pakistan is pleased to make and promulgate the following ordinance:-

Short title and Commencement

Amendment of Section 3 of section Ordinance IX of 1978.

1. (1) This Ordinance may be called the Balochistan Ground Water Rights Administration (Amendment) Ordinance, 2000.  
(2) It shall come into force at once.
2. In the Balochistan Ground Water Rights Administration Ordinance, 1978, after clause (k) of sub section (6) of 3, the following new clause shall be added,

(1) The Board will arrange to determine the existing withdrawal of ground water through the tube wells, open surface wells, Persian wells, karezes or any other means, by installation of water meters, or any other water measuring devices, on the sources.

Dated Quetta,  
The 13<sup>th</sup> November,  
2000.

Mr. Justice (Retd.) Amir-ul-Mulk Mengal  
Governor Balochistan.

IMTIAZ HUSSAIN.  
Secretary Law.

Secretary  
Provincial Water Board  
Director General, WRPD&M  
Directorate, Balochistan, Quetta.

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 18-Oct-2003 (Sat)**

**Time: 11:00**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization: Irrigation and Power Dept.**

**Address: Quetta**

**Telephone: 081**

**Fax:**

**E-mail:**

**Answered by: Mr. Mumtaz Khan, Chief Engineer (North), I&P dept.**

**Mr. Iftikhar Ahmed Mir, Executive Engineer (Technical)**

**Position: (see above)**

**Office: Chief Engineers Office**

**Subject: Discussion of the progress of Data Collection, and others**

**Answer/ Interview:**

- It was explained that the following information requested by the team was obtained.

**From Loralai**

- Chinjan DAD
- Torkhezai DAD
- Lori Daman

**From Khuzdar**

- Dashtak DAD
- Khori DAD
- Gatero DAD
- Hazargani DAD

- To response to a question raised by the team addressed to C/Engineer dated on 13 OCT 2003 , it was explained as follows:

***Question raised by the team in a letter form;** The Table in the Annexure-B of the 'Briefing Report' shows the STATUS OF DAMS IN BALOCHSTAN. A column under the title 'DISPOSAL OF ACCUMULATED WATER' describes a remark as 'Through 12" pipe underneath body of the dam & spillway'; for all the dams of S.NO. from 2 onwards. On the other hand, we have observed such a DAD as Hazar Gunhi, Khuzdar which was not equipped with a discharging pipe underneath the dam body. It is our understanding that discharging pipes have only recently drawn an increasing attention; and that DADs constructed before are not always equipped with such a discharging pipe. Please kindly review the table attached to the Briefing Report, and revise the table as required.*

**Answer given to the Team:** By about the year 2000, all DADs were not equipped with discharging pipes underneath the dam body. Mainly because of a recommendation of JICA

F/S, such discharging pipes have compulsory been equipped to DADs. The description made in the Brief Report has to be corrected.

- **The Team cast a question to the Chief Engineer about the other options than DAD for the areas where no major rivers exist.**
    - It was answered by the Chief Engineer that I&P dept. considers that DAD is the most cost effective option for flood water utilization in such areas mentioned.
    - Such a method as flood dispersion system requires concrete structures and zigzag bands or contour bands which are expensive options.
  - In closing the meeting with the Chief Engineer, the Chief Engineer expressed his continuous support to the team in survey activities.
- ===the end of the document===

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 18-Oct-2003 (Sat)**

**Time: 11:00**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization: Balochistan Water And Sanitation Authority (B-WASA)**

**Address: Quetta**

**Telephone: 081**

**Fax:**

**E-mail:**

**Answered by: Mr. Ishtiaq, Senior Hydrogeologist, B-WASA**

**Position: (see above)**

**Office: B-WASA office**

**Subject: Data collection and Discussion on GWL-monitoring**

**Answer/ Interview:**

- **Updated monitoring information of 93 wells provided by B-WASA was given to the Team.**
- **Groundwater fluctuation of NMW-QA-series was discussed.**
- It was explained by the senior Hydrogeologist that stream water flushes out 5 – 10 minutes after rainfall. It is hardly said such rainfall recharge the groundwater.
- The groundwater recharge was made mainly due to snow fall.
- The fluctuations shown in the charts are caused mainly due to pumping operation which is active for irrigation purposes in summer season and dormant in winter.
- Fluctuation curve of NMW-QA-04 is anomalous. To his knowledge, GWL in most of wells around NMW-QA-04 continued falling down. Close consideration and correlation with various factors will be necessary.

===the end of the document===

**Answer Sheet for Questionnaire on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 18-Oct-2003 (Sat)**

**Time: 13:30**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

Interviewee:

**Organization: Survey of Pakistan, under Federal Ministry of Defense**

**Address: Quetta**

**Telephone:**

**Fax:**

**E-mail:**

**Answered by: Mr. Director (name not given)**

**Position: (see above)**

**Office: Survey PK office, Quetta**

**Subject: Availability of such Information as contour maps and etc.**

**Answer/ Interview:**

- **To respose to questions, it was explained that:**
- In Quetta office, general maps such as map of the world, Pakistan, Provinces, scale up to 1/1,000,000 – 1/500,000 are available to public..
- Administrative boundary maps of provinces or districts are also available to public in Quetta office.
- Contour maps of 1/50,000 scale not showing important facilities are available to public at Survey General in Rawalpindi City close to Islamabad.
- Digitized data of 1/250,000 is also available at Survey General.
- ***Such information will be available at the Survey General, on request from Governmental organizations as; satellite imagery, aero photograph, 1/50,000 contour maps with full information.***
- Survey office, Quetta will undertake field survey works for governmental organization. Costs for survey works will be charged.

====the end of the document====

**Answer Sheet for Questionnaire  
on  
Preparatory Study on the Project  
for Development of Flood Outflow Water in Balochistan Province  
in the Islamic Republic of Pakistan**

**Date: 20-Oct-2003(Mon)**

**Time:**

Interviewer:

Name; TAKAHASHI Shinya

Position; Hydro-Geologist

JICA Preparatory Study Team

**Interviewee:**

**Organization: Irrigation and Power Department, GoB**

**Address: Siryad Road, Quetta**

**Telephone 081 9211602**

**E-mail:**

**Answered by: Mr. Iftikhar Ahmed, Executive Engineer (Technical), I&P Dept.  
Mr. Ghulam Serwar Khan, Provincial Project Coordinator for Food  
Protection Sector Project (FPSP) II, I&P Dept.**

**Position: (see above)**

**Office: Chief Engineers Office**

**Subject: Up dated information on “Flood Management of Hill Torrents of Pakistan”  
requested by Dr. Shimizu, the JICA expert to Ministry of Water & Power**

**Answer:**

- In response to the question cast by the Team; Mr. Ghulam Serwar Khan, Provincial Project Coordinator for Food Protection Sector Project (FPSP) II, I&P Dept. explained:-
  - ✧ The project names submitted 2001 were preliminary and tentative. Due to budgetary constraint, the projects were reviewed and completely replaced with the list attached.
  - ✧ The projects in the attached ‘Proposed Revised List of Projects of Flood Protection Sector Project Phase-II’ are at various stages in PC-I preparation for approval.
  - ✧ Although ‘FPSP-II’ is aimed for Flood protection, GoB requested ADB to include dam projects in consideration of the natural condition of Balochistan
  - ✧ Some of projects in the original list may have been taken up under other packages such as Groundwater Recharge Project, Federal Public Sector Development Program.
- Having known the present status of the listed projects, Mr. Iftikhar Ahmed, Executive Engineer (Technical) will look into the matter which projects have been taken up under what program or which projects have not.

==End of Document==

On

Flood Water Utilization Development in Balochistan Province

Ref: BLJP-08

Date: 20 October, 2003

To: Mr. MUMTAZ KHAN,  
Chief Engineer (North),  
Irrigation and Power Department,  
Government of Balochistan

Subject: Requests for Updated information 'FLOOD MANAGEMENT OF HILL TORRENTS OF PAKINSTAK'

Dear Sir,

We thank you for your kind supports to our survey on 'Flood Water Utilization Development in Balochistan Province'.

We refer to the attached copy of a letter from J&P Dept. of GoB addressed to Minister of Water & Power (MoW&P), which was handed over from Dr. Shimizu, JICA expert attached to MoW&P; to the Team on 15<sup>th</sup> Oct 2003 in Islamabad.

Please be kindly requested to let us know the present status of the Hill Torrents in Balochistan listed in the letter. The updated information may describe such information as (1) constructed, or under construction, or yet to be constructed; (2) PC-I approved, or submitted but not approved yet, or under preparation, or yet to be prepared (3) proposal canceled; and (4) as required.

Your kind cooperation will be highly appreciated.

Yours Faithfully,

Kuninobu NODA

The Team Leader of Consultants for  
JICA Preparatory Study Team on  
Flood Water Utilization Development in Balochistan Province

CC: Mr. Abdul Wahab, Sub-divisional Officer, Flood Sector Project.

S Takahashi



No.M&P-SO(D)/1-43/20001/2158

Government of Balochistan  
Irrigation & Power Department

Dated Quetta, the 13 April, 2001.

To

✓  
Mr Ashok kumar  
Senior Engineer (Floods )  
Government of Pakistan  
Ministry of Water & Power,  
Office of the Chief Engineering Adviser/  
Chairman, Federal Flood Commission  
16 -D East ( Safder Mansion ) Blue area,  
Islamabad.

Subject:-

FLOOD MANAGEMENT OF HILL TORRENTS OF PAKISTAN

I am directed to refer to your letter No FC-1 (2)A/T-FS/98-IV,  
Dated ✓ March, 2001, on the above noted subject and to enclose herewith the  
Prioritized list of Hill Torrents in Balochistan under FPSP-II for Physical  
Implementation as desired please.

✓ P-23

Label  
Date 13-4-2001  
Serial No. 263  
Office of the Chief Engineer  
Irrigation & Power Department  
Government of Balochistan  
Quetta

✓  
Mr. Ashok Kumar  
Senior Engineer  
CICF/Dev  
17/4

✓  
Bashir Khan  
Section Officer (Dev)  
Irrigation & Power Department  
Government of Balochistan Quetta

#71(16)  
2/12

Scheme	Estimated Cost (Million Rs)
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<u>DISTRICT QUETTA</u>	
1. Khak Delay Action Dam.	10.50
2. Chashma Achozai Delay Action Dam.	16.50
Total:	27.00

<u>DISTRICT KILLA ABDULLAH</u>	
1. Ajram Flood Irrigation Scheme.	52.50
2. Series of Dam on Toba Achakzai, Kadnai Tashrabad, Aghibergai, Takrai, Hasna & Zomal ( 5 Nos ).	37.50
3. Roghuni Flood Irrigation Scheme.	7.50
4. Nida Karez Flood Irrigation Scheme.	6.00
5. Arambai Delay Action Dam ( 3 sites)	60.00
6. Inayatullah Karez Dam.	9.00
7. Haji Din Muhammad Delay Action Dam.	9.00
8. Haji Abdullah Delay Action Dam.	9.00
9. Toba Chinar Delay Action Dam.	15.00
Total:	205.50

<u>DISTRICT PISHIN</u>	
1. Gazluna Delay Action Dam.	5.25
2. Garah Delay Action Dam.	7.50
3. Pasta Manda Delay action Dam.	7.50 - #173 v/const.
4. Khilji Delay Action Dm (Barshore Area)	7.50
5. Khiaz Delay Action Dam.	7.50
6. Spia Galoon Delay Action Dam.	9.00
7. Shin Kach Delay Action Dam.	7.50
8. Abasil Tangi Delay Action Dam.	9.00
9. Surghara Delay Action Dam.	9.00
10. Surcha Malik Aman Delay Action Dam.	9.00
Total:	78.75

<u>DISTRICT LORALAI</u>	
1. Storage/Recharge Dam on Ananiber River near Chinjan Village (4 No).	142.50
2. Kanni Manda Delay Action Dam	24.00
3. Wuchwani Delay Action Dam.	10.50
4. Tirag Malazai Delay Action Dam.	9.00
5. Manzaki Delay Action Dam.	15.00

#21 (9/6)

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6.	Nalai Mekhtar Delay Action Dam.	9.00
7.	Misaki Rud Delay Action Dam.	6.00
8.	Dandi Storage Dam.	15.00
9.	✓ Poi Delay Action Dam.	15.00
	<b>Total:</b>	<u>246.00</u>

DISTRICT MUSA KHEL

1.	✓ Tangber Storage/Delay Action Dam.	37.50
2.	Adozai Delay Action Dam.	9.00
3.	Khodzai Delay Action Dam.	12.00
4.	Tolzar Delay Action Dam.	9.00
	<b>Total:</b>	<u>67.50</u>

DISTRICT BARKHAN

1.	Shahi Flood Irrigation Scheme.	13.11
2.	Arizwari Flood Irrigation Scheme.	21.675
3.	Waga/Toran Shah F.I. Scheme.	12.405
4.	Murunj Flood Irrigation Scheme.	3.705
	<b>Total:</b>	<u>50.895</u>

DISTRICT ZHOBI

1.	✓ Kuchai Delay Action/Storage Dam.	30.00
2.	Susnakai Delay Action Dam.	6.00
3.	✓ Series of dams on Saliya River (2 Nos)	60.00
4.	✓ Spilmai Storage Dam (Qilla Akhtar Khan)	12.00
5.	Shozgai Delay Action Dam.	15.00
6.	Rakhpore Delay Action Dam.	7.50
7.	✓ Omza Delay Action Dam.	30.00
8.	Baldol Delay Action Dam (near Omza)	12.00
9.	Dubandi Dad.	37.50
	<b>Total:</b>	<u>210.00</u>

DISTRICT KILLA SAIFULLAH

1.	Ush Manda Flood Irrigation Scheme.	22.50
2.	Nawab Muhammad Khan F.I. Scheme.	15.00
3.	✓ Tirka Multipurpose Dam.	15.00
4.	Kesh Manda Delay Action Dam.	10.50
5.	Nasa (Jantor) Delay Action Dam.	7.50
6.	✓ Akhtar Nika Delay Action Dam.	10.50
7.	✓ Khan Mehtarzai Delay Action Dam.	6.00
8.	Samihel Shela Delay Action Dam.	5.25
9.	Kaza Manda Delay Action Dam.	6.00
	<b>Total:</b>	<u>98.25</u>

#21(5/6)

DISTRICT SIBL

1.	Ghale Zavar Flood Irrigation Scheme.	27.00
2.	Loi Manda Flood Irrigation Scheme and	118.50
3.	Diversion Weir (2 Nos).	
4.	Sehara Tor Khan Flood Irrigation Scheme.	90.00
5.	Wangi Tangi Diversion Weir Harnai.	45.00
		-----
	Total:	280.00

DISTRICT ZIARAT.

1.	Shin Maghzai Delay Action Dam.	22.50
2.	Sera Barki Delay Action Dam.	37.50
		-----
	Total:	60.00

DISTRICT BOLAN.

1.	✓ Ghazi Flood Irrigation Scheme (Nari)	22.50
2.	✓ Uptun Flood Irrigation Scheme.	45.00
3.	Mai Wah Flood Irrigation Scheme.	22.50
4.	Allah W. Diwayo & Mirad Wah F.I. Scheme.	22.50
5.	Kharo Flood Irrigation Scheme.	18.00
6.	Haji Shah Flood Irrigation Scheme.	15.00
7.	Tak Flood Irrigation Scheme.	37.50
8.	Khekar Flood Irrigation Scheme.	45.00
9.	Kumbri Delay Action Dam.	12.00
10.	Kotra Delay Action Dam.	15.00
		-----
	Total:	255.00

DISTRICT NASIR ABAD.

1.	Sharkal Khan Disposal Structures.	45.00
2.	Flood Diversion System at Qabula River.	40.50
3.	Flood Diversion Structure Badra River.	39.00
		-----
	Total:	124.00

**PROPOSED REVISED LIST OF PROJECTS OF  
FLOOD PROTECTION SECTOR PROJECT PHASE-II**

Annex: "B"

#21 (4/6)

SNO.	NAME OF SCHEME	Estimated Cost. Rs. In M.
<b>Core Project.</b>		
A.	Flood Protection of lands/Gardens at Banks of rivers in Toba Achakzai and Killa Abdullah areas.	
1	Flood Protection of lands/orchards and construction of check Delay action dams in Chinar Manda	10.980
2	Flood Protection of lands/orchards and construction of check Delay action dams in Wuch Dola	5.000
3	Flood Protection of lands/orchards and construction of check Delay action dams in Amrat Dola	5.000
4	Flood Protection of lands/orchards and construction of check Delay action dams in Baghak Manda	5.000
5	Flood Protection of lands/orchards along Machka Manda	7.000
6	Construction of Guilstan Delay Action Dam	17.173
	<b>Sub Total.</b>	<b>50.153</b>
B.	Flood Protection of Pat Feeder Canal and its system	50.00
	<b>Total (A+B)</b>	<b>100.153</b>
C.	<b>Other Sub Projects.</b>	
8	Garhi Manda Delay Action (District Quetta)	15.00
9	Suka Delay Action Dam (District Kohlu)	6.50
10	Shoog Delay Action Dam near Hirak (District Kachhi)	7.50
11	Sorab Delay Action Dam (District Turbat)	7.50
12	Zarap Delay Action Dam (District Panjgur)	5.00
13	Rehabilitation of Nundra Kapar Dam at Jhau (Distt: Awaran)	8.50
14	Chotang Delay Action Dam (District Kalat)	7.00
15	Shootgun Delay Action Dam (District Kharan)	8.00
16	Sara Barkai Delay Action Dam (District Ziarat)	9.00
17	Khaiz Delay Action Dam in Toba Kakari area (Distt: Pishin)	8.00
18	Kapip Delay Action Dam (District Zhob)	45.00
19	Flood Protection of lands in Sanjavi area (District Ziarat)	5.00
20	Flood Protection of lands in Rakhpore area (District Zhob)	6.00
21	Flood Protection of lands in Rud Malazai area (Distt: Pishin)	5.00
22	Flood Protection of lands in Omzha (District Zhob)	5.00
23	Flood Protection of lands/orchards on both sides of Khudabadan river (District Panjgur)	15.00
24	Flood Protection of lands on both banks of Rud Jogezai (Distt: Killa-Saifullah)	17.00
25	Flood Protection of Lands along Banks of Purali River (District Lasbella)	12.00
26	Flood Protection of Lands along Bank of Kech River (Distt: Turbat)	5.00
	<b>Total</b>	<b>197.00</b>

20-OCT-2003