



FEDERAL PROJECT MANAGEMENT UNIT  
FEDERAL WATER MANAGEMENT CELL  
MINISTRY OF NATIONAL  
FOOD SECURITY & RESEARCH  
ISLAMABAD - PAKISTAN

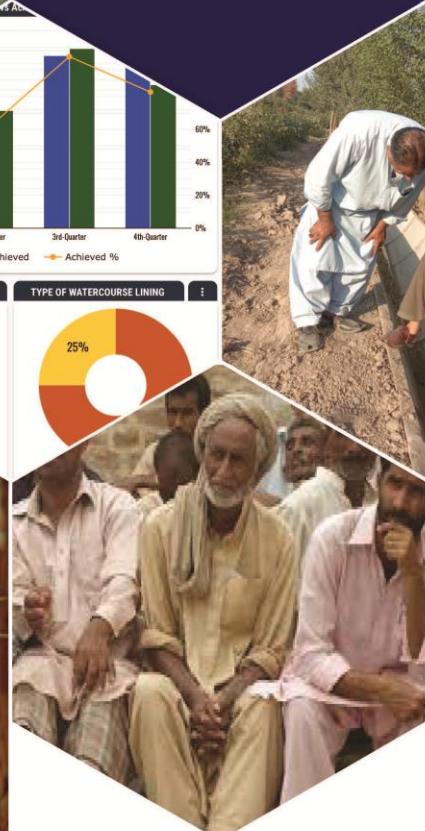
## NATIONAL PROGRAM FOR IMPROVEMENT OF WATERCOURSES IN PAKISTAN PHASE-II: (NPIWC-II)

MONITORING, EVALUATION  
AND IMPACT EVALUATION  
CONSULTANTS



## MONTHLY MONITORING REPORT

MARCH 2021



A Joint Venture of  
G3 Engineering Consultants (Pvt.) Ltd.





**Federal Project Management Unit (FPMU)  
Federal Water Management Cell (FWMC)  
Ministry of National Food Security & Research, Islamabad**

**Monitoring, Evaluation and Impact Evaluation (ME&IE) Consultants**

*For*

**National Program for Improvement of Watercourses in Pakistan Phase-II (NPIWC-II)**

## **MONTHLY MONITORING REPORT MARCH 2021**

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## ACRONYMS

ADA	Assistant Director Agriculture
AES	Agriculture Extension Services
AF	Acre-Feet
AJK	Azad Jammu & Kashmir
AWPB	Annual Work Plan and Budget
AWPs	Annual Work Plans
BCR	Benefit Cost Ratio
CFT	Cubic Feet
CMS	Content Management System
CSRD	Center for Social Research and Development
DAES	Director Agriculture Extension Services
DDA	Deputy Director Agriculture
DGA	Director General Agriculture
DTL	Deputy Team Leader
EAs	Executing Agencies
EIRR	Economic Internal Rate of Return
FCR	Financial Completion Report
FCRs	Final Completion Reports
FMFSR	Framework for Federal Financial Management System
FOs	Farmers Organizations
FPMU	Federal Project Management Unit
FWMC	Federal Water Management Cell
GAP	Gender Action Plan
GB	Gilgit Baltistan
G3EC	G3 Engineering Consultants
GIS	Geographic Information System
HEIS	High Efficiency Irrigation System
IAs	Implementing Agencies
ICR	Interim Completion Report
ICT	Islamabad Capital Territory
IRR	Internal Rate of Return
ICT	Information & Communication Technology
JV	Joint Venture
KP	Khyber Pakhtunkhwa
LLL	Laser Land Leveler

LPS	Liter Per Second
M&E	Monitoring and Evaluation
MAF	Million Acre Feet
ME&IE	Monitoring, Evaluation and Impact Evaluation
MIS	Management Information System
MNFSR	Ministry of National Food Security and Research
MMR	Monthly Monitoring Report
MT	Monitoring Template
MTE	Mid-Term Evaluation
NESPAK	National Engineering Services Pakistan
NPC	National Project Coordinator
NPIWC	National Program for Improvement of Watercourses
NPV	Net Present Value
NWMC	National Water Management Consultants
OFWM	On Farm Water Management
PC-1	Planning Commission-(Form-One)
PDO	Project Development Objectives
PIC	Project Implementation Committee
PIES	Project Impact Evaluation Study
PQC	Pre-Qualification Committee
RBM	Results-Based Management
RFT	Running Feet
RWD	Responsive Web Design
SFT	Square Feet
SOPs	Standardized Operating Procedures
SPSS	Statistical Package for Social Sciences (Software)
SSCs	Supply and Service Companies
TABs	Tablets
TL	Team Leader
TOR	Terms of Reference
TPV	Third Party Validation
TWRD	Tail-Water Recovery Ditch
WG	Women Group
WST	Water Storage Tank
WUAs	Water Users Associations

## EXECUTIVE SUMMARY

The report in hand, "Monthly Monitoring Report for the month of March 2021" is comprising of six sections.

**Section-1** describes the project introduction in detail. The Government of Pakistan is implementing a project entitled "National Program for Improvement of Watercourses in Pakistan Phase-II (NPIWC-II) at a total cost of PKR 154,542.355 million (Umbrella PC-I) over a period of 05 years. This project will cover Punjab, KP, Balochistan and Gilgit Baltistan, Azad Jammu & Kashmir as well as Islamabad Capital Territory (ICT). The proposed project Phase-II will be beneficial for the country.

The NPIWC-II comprises four components to be implemented in Punjab, KP, Balochistan, GB, AJK, and ICT:

- i) C1: Organization of Water Users Associations
- ii) C2: Watercourse Improvements: 47,278 Nos.
- iii) C3: Construction of Water Storage Tanks: 14,932 Nos.
- iv) C4: Provision of Laser Land Leveling Units: 11,610 Nos.

**Section-2** describes Scope of Work of the ME&IE Consultants for the project. Since the ME&IE Consultants are going to monitor implementation of all criteria set, procedures defined and timeline agreed for implementation of various components, all these are reproduced in this report as ready reference to devise / design M&E strategy, methodology, procedures for monitoring and impact assessments of the project interventions.

The monitoring strategy planned to be followed by ME&IE Consultants is briefly described in the Table-2.1. The strategy aims to be finalized and implemented in close coordination with the client and active participation of the beneficiaries as well as the project stakeholders.

**Section-3** covers the details about Monthly Monitoring Report. This third Monthly Monitoring Report (MMR) covers the period from March 01, 2021 to March 31, 2021.

**Section-4** of this report covers the activities completed during the reporting period are summarized below:

- The Second Monthly Monitoring Report, February 01, 2021 to February 28, 2021 was submitted to the Client within stipulated time on March 10, 2021.
- Renovation of ME&IE Consultants Offices
- Renovation of Field Teams Offices & Teams Composition.
- Meetings and Visits of ME&IE Consultants
- Pretesting of Monitoring Tools
- Refinement of Monitoring Tools
- Development of Methodology for determination of Sample Size
- Development of Android Based Application
- Website Development of NPIWC-II
- Designing of Dashboard of Project Interventions
- MIS Dashboard Process Monitoring Input Tools
- Training Sessions of Field Teams and Key Staff on Monitoring Tools & Android Application
- Training on Measurement of Water Flow (Pygmy Current Meter)

**Section-5** of this report covers the detail of ME&IE Consultants activities initiating during the First Quarter 2021 (January 1, 2021 to March 31, 2021) are listed below. Time span detail is mentioned in the Tentative Work Plan. **Annex-A**.

- Pre- Field Activities
- Field Activities
- ICT Assignment
- Coordination
- Deliverables

**Section-6:** Due to non-availability of data from NWMC (NESPAK) & respective Directorates and resources from Client, ME&IE Consultants has been facing constraints for timely initiating the activities.

## 1. INTRODUCTION TO NPIWC-II

### 1.1 PROJECT PROFILE

<b>Project Name</b>	National Program for Improvement of Watercourses in Pakistan Phase-II (NPIWC-II)
<b>Project Areas</b>	Punjab, KP, Balochistan and Gilgit Baltistan, Azad Jammu & Kashmir and Islamabad Capital Territory (ICT)
<b>Sponsoring Agency</b>	Ministry of National Food Security & Research
<b>Executing Agencies (EAs)</b>	<ol style="list-style-type: none"> <li>1. Federal Project Management Unit (FPMU),</li> <li>2. DGA OFWM Punjab</li> <li>3. DGA OFWM KP</li> <li>4. DGA OFWM Balochistan</li> <li>5. DG Irrigation and Small Dams, AJ&amp;K</li> <li>6. Director WM, GB</li> <li>7. Director Agriculture Extension Services (AES), ICT</li> </ol>
<b>Project Period</b>	5 Year (2019-2024)
<b>Total Project Cost</b>	154,542.355 million (Umbrella PC-1)

### 1.2 PROJECT DESCRIPTION

#### 1.2.1. Project Development Objectives

The Project Development Objectives (PDO) are to improve irrigation water management at tertiary and field levels in Pakistan.

#### 1.2.2. Project Objectives – General & Quantitative

##### 1) General Objectives:

The Project aims to replicate the success achieved during the NPIWC Phase-I and further improve the findings of the Project Impact Evaluation Study (PIES). The broad objectives of the project are as under:

- i) Social mobilization through capacity building of WUAs/ FOs,
- ii) Minimization of conveyance and field application losses,
- iii) Reduction in Water Logging and salinity,

- iv) Equity in water distribution,
- v) Reduction in water disputes/thefts/litigation,
- vi) Motivation/participation of farmers,
- vii) Poverty reduction through employment generation,
- viii) Increase in crops yield/sufficiency in food.

##### 2) Quantitative Objectives:

The quantitative objectives of the Project are as under:

##### Project outputs

- i) Mobilization through capacity building of Water Users Associations/Farmers Organizations in improved water management techniques and their registration under On-Farm Water Management and Water User Associations Ordinance [Act] 1981 and organization of 47,278 WUAs.
- ii) Reconstruction/renovation and remodeling of 47,278 watercourses, involving complete earthen renovation, partial lining of critical reaches (50% of the total watercourse length as decided in the high-level meeting), and installation of water control structures. It is expected to save around 5.82 MAF per annum (approx. saving of 123 acre-feet (AF) per watercourse per annum).
- iii) Construction of 14,932 water storage tanks with 60% subsidy.
- iv) Provision of 11,610 Laser Land Levelers at 50% cost sharing, with the expectation to save about 50% irrigation water for wheat and about 68% of irrigation water for paddy.

##### Project impacts

- v) Reduction in Water Logging and salinity in project areas to the extent of 10%.
- vi) Cropping intensity is expected to increase by 5-20%.
- vii) Crop's yield is estimated to increase by 10-15%.
- viii) Equity in water distribution increased by about 30%.
- ix) Reduction in water disputes/thefts and litigation amongst the Farmers over water distribution by about 80%.
- x) Help poverty reduction through generation of employment.

xi) Self-sufficiency in food through utilization of water saved for edible oil seed production.

**Project indirect benefits to industry/economic activities**

xii) Cement industry, bricks Killen, Precast Structures Industry and other related industries' production will pick up.

**Awareness support to farmers**

xiii) Motivating farmers through an awareness campaign for watercourse improvement.  
 xiv) Providing technical material to farmers for optimal utilization of water resources in the shape of technical manual and operational guidelines.

**1.2.3. Project Beneficiaries**

Majority of the direct project beneficiaries constitute the number of farmers (owners as well as tenants) growing crops and orchards on the watercourses improved under NPIWC-II. Assuming 35 farmers on each watercourse, the total number of the farmers benefiting from the activity comes to 1.655 million. The same number will benefit due to Water Users' Associations (WUAs) in terms of cooperative management of irrigation water. Moreover, 14,932 will directly benefit from Water Storage Tanks and 11,620 as recipients of Laser Land Leveling Units. Thus, total gross direct beneficiaries are expected to be around 3.336 million households. However, net beneficiaries are expected to be 1.668 million.

Taking family size at five, total net population benefitting is expected to be 8.34 million people.

**1.2.4. Project Components**

The NPIWC-II comprises four components.

- i) **C1: ORGANIZATION OF WATER USERS ASSOCIATIONS:** Establishment/ reactivation of Water Users Associations (WUAs) through community driven implementation approach.
- ii) **C2: WATERCOURSE IMPROVEMENTS:** 47,278 Watercourses are planned to be improved /reconstructed and lined.
- iii) **C3: CONSTRUCTION OF WATER STORAGE TANKS:** Construction of 14,932 Water Storage Tanks (WSTs).
- iv) **C4: PROVISION OF LASER LAND LEVELING UNITS:** Provision of 11,610 Laser Land Leveling units to the farmers.

All the project activities are planned to be implemented on a cost sharing basis.

**1.2.5. Project Targets**

Project aims at achieving the targets (Table-1.1) for 5 years starting from year 2019-20 to 2023-24. The targets for each province/Zone (excluding Sindh) are given in Table-1.1.

**Table-1.1: Project Targets (in numbers)**

Sr. No.	Intervention	Punjab	KP	Balochistan	GB	AJK	ICT	Total
1	Reconstruction of Watercourses (more than 20 years old/Additional lining 50 %)	7,500	3,000	3,589	-	-	-	<b>14,089</b>
	New Watercourses (Unimproved)	2,500	10,000	16,800	1,165	2,500	224	<b>33,189</b>
	<b>Total Watercourses</b>	<b>10,000</b>	<b>13,000</b>	<b>20,389</b>	<b>2.500</b>	<b>1.165</b>	<b>224</b>	<b>47,278</b>
2	Water Storage Tanks	3,000	5,000	5,507	825	600	-	<b>14,932</b>
3	Laser Land Leveling Units	9,500	600	1,500	5	5	-	<b>11,610</b>

## 2. ME&IE CONSULTANTS FOR NPIWC-II

A Joint Venture of G3 Engineering Consultants (Pvt.) Ltd., Ease-Pak Engineering services (Pvt.) Ltd., Centre for Social Research and Development (CSR) and ADA Consultants Inc. Canada has been selected through a competitive bidding process as ME&IE Consultants. An Agreement was signed by the Joint Venture and the NPC FPMU-FWMC NPIWC-II on October 26, 2020. The consultants were mobilized on November 20, 2020.

Since the ME&IE Consultants are going to monitor implementation of all criteria set, procedures defined and timeline agreed for implementation of various components, all these are reproduced in this report as ready reference to devise / design M&E strategy, methodology, procedures for monitoring and impact assessments of the project interventions.

### 2.1 SCOPE OF THE SERVICES

The general scope of the ME&IE Consultants services is to:

- i) Undertake baseline, midline and endline surveys for the project activities/interventions.
- ii) Develop monitoring strategy, framework and Result-Based Monitoring (RBM) indicators.
- iii) Preparation of monthly, quarterly and annual monitoring & evaluation reports.
- iv) Assessing the water saving per annum on watercourses, water storage tanks and field levels.
- v) Assessing the improvement in water availability due to the provision of conveyance system.
- vi) Assessing the economic benefits to the agriculture in terms of changes in yields, irrigated area, cropping pattern, cropping intensity, farm income and employment in command area of watercourses and water storage tanks.
- vii) Assessing the extent of community mobilization, financial and administrative sustainability of water users' associations and ensuring the maintenance of watercourses, water storage tanks and laser land Levelers.
- viii) Economic impact of project interventions.
- ix) Carry out the impact evaluation of the project intervention on the economy and stakeholders.

- x) Develop a website containing information on facilities and services, applications, procedures, watercourses, water storage tanks and laser Levelers database, etc. (while the project staff will maintain the website).
- xi) Provide technical support for the development of a custom-designed mobile application (Android Based) to capture on-site project progress and geo-tagged photos. It should be synchronized with the central MIS/GIS database and application for instant reporting and feedback to the management. The said requirement is based on the following functional features:
- xii) Development of a GIS database with all spatial layers related to activities being undertaken under the project
- xiii) Give technical assistance for up-dation/up-gradation of water management GIS database.

The ME&IE Consultants services period comprises over four years (2020-21 to 2023-24).

### 2.2 MONITORING STRATEGY

The monitoring strategy planned to be followed by ME&IE Consultants is briefly described in the following Table-2.1. However, detailed methodology and procedures to carry out the Monitoring, Evaluations and Impact Evaluations of the project interventions are explained in Chapter 6 of Inception Report. The strategy aims to be finalized and implemented in close coordination with the client and active participation of the beneficiaries as well as the project stakeholders.

Table-2.1: Monitoring Strategy for ME&IE Activities

Sr. No.	Monitoring Activity	ME&IE Team Responsible	Monitoring Strategy
1	Baseline, midline and endline surveys	Team Leader, Socio-Economic Expert, Agricultural Economist and Deputy Team Leader of respective province/unit.	<ul style="list-style-type: none"> <li>Baseline and impact surveys will be carried out on sample basis.</li> <li>Data will be collected by field teams on pre-designed data collection tools through an android application on TABs.</li> <li>Baseline and impact surveys will be carried out in phases as target watercourses are not preselected.</li> <li>Baseline will be carried out before the intervention and the impact one year (two crop seasons) after the completion of the intervention.</li> <li>The midterm study will review the project progress at middle of the project implementation</li> <li>The endline study will assess the impact of the project interventions.</li> </ul>
2	Reporting	All core team members	<p>Following periodic reports will be prepared and submitted:</p> <ul style="list-style-type: none"> <li>Draft Inception Report 45 days after the agreement,</li> <li>Final Inception Report one week after the issuance of comments by the client on the draft,</li> <li>Monthly Monitoring Report on 10<sup>th</sup> of following month,</li> <li>Quarterly Monitoring Report on 10<sup>th</sup> of the first month of the following quarter,</li> <li>Annual Monitoring and Evaluation Report during first month of the following year,</li> <li>Baseline Survey Reports (in three phases),</li> <li>First Phase Baseline Survey report will be submitted within the four months after the start of the assignment i.e., Submission of final inception report/Beginning of field activities.</li> <li>Impact Survey Reports (in phases) – two months after the data collection completion for the impact phase,</li> <li>Midline report in the middle of the assignment,</li> <li>Endline Report at the end of Endline Survey,</li> <li>Draft Assignment completion Report at completion of the physical works,</li> <li>Final Assignment Completion Report at completion of works and financial transactions. It will also include the full economic benefit of the project (NPIWC-II) on agriculture sector as well as on the GDP of Pakistan,</li> <li>Special Reports, as and when asked by the client.</li> </ul>
3	Water saving assessment	Irrigation Agronomist, Field Team/ Engineers	<p><b>Water Saving on Watercourses:</b></p> <ul style="list-style-type: none"> <li>Water flow will be measured on sample watercourses selected for the baseline and impact surveys</li> <li>The flow will be measured at four points of the selected watercourses: close to water outlet, head reach, middle reach and tail reach.</li> <li>The measurements will be done through current meters.</li> <li>Based on water savings on sample watercourses, total water savings will be estimated for all project watercourses. The savings will be reported per watercourse, per annum and aggregate for the project in LPS and Acre feet.</li> </ul>

Sr. No.	Monitoring Activity	ME&IE Team Responsible	Monitoring Strategy
			<p><b>Water Savings on WSTs</b></p> <ul style="list-style-type: none"> <li>Since WSTs will be filled and emptied on a continuous basis, the water savings will be assessed on the basis of water pumped from the tank to irrigate the fields.</li> <li>The assessment will be done either by readings on the pump gauge or periodic interviewing the farmer.</li> <li>Based on water savings on sample WSTs, total water savings will be estimated for all project WSTs. The savings will be reported per WST, per annum and aggregate for the project in LPS and in Acre feet.</li> </ul> <p><b>Water savings due to Laser Land Leveling</b></p> <ul style="list-style-type: none"> <li>Water savings at field level will be assessed through farmers' interviews.</li> <li>The impact survey form will include questions to be asked from the farmers who got their land levelled:             <ul style="list-style-type: none"> <li>In how much time an acre was irrigated before watercourse improvement and land leveling</li> <li>In how much time an acre is irrigated after watercourse improvement with land leveling</li> </ul> </li> </ul> <p>The difference will be water saving due to laser land leveling</p>
			<p>Based on water savings on sample LLL units, total water savings will be estimated for all project LLL units. The savings will be reported per LLL unit, per annum and aggregate for the project in LPS and in Acre feet.</p>
4	Community mobilization	Social and Gender Specialist and Socio-Economic Expert	<p>The extent of community mobilization will be assessed by investigating whether:</p> <ul style="list-style-type: none"> <li>WUAs is functional</li> <li>Holds regular meetings and keep record of them</li> <li>Makes decisions democratically</li> <li>The participation in the organization is voluntary</li> <li>It is financially and administratively sustainable</li> <li>Takes steps and ensures maintenance of watercourses, WSTs and laser land leveler</li> </ul>
5	Economic benefits assessment for agriculture	Team Leader, Socio- Economist and Agricultural Economist	<ul style="list-style-type: none"> <li>As indicated at serial No. 1, Agriculture data will be collected before (baseline) and after (impact) the watercourse improvement and WSTs construction.</li> <li>In both the surveys same forms will be used and same sampled farmers will be interviewed</li> <li>Data on variables such as crop yields, irrigated area, cropping pattern, cropping intensity, farm income and employment will be collected and analyzed</li> <li>The difference between before and after situations minus natural growth will be assumed as economic benefits to the agriculture</li> </ul>
6	Impact evaluation-on the economy	Team Leader, Agricultural Economist and Socio-Economic Expert	<ul style="list-style-type: none"> <li>The results of the baseline and impact surveys will be used to quantify impact on the economy</li> <li>Additional food produced due to the project will be estimated. It is benefit towards food security</li> <li>Project costs and benefits will be compared in economic and financial terms to carry out economic and financial analysis.</li> <li>Parameters like IRR, NPV and BCR will be estimated.</li> </ul>

Sr. No.	Monitoring Activity	ME&IE Team Responsible	Monitoring Strategy
7	Impact evaluation-on the stakeholders	Team Leader, Agricultural Economist and Socio-Economic Expert	<ul style="list-style-type: none"> <li>Analysis as in serial 6 will be carried out with reference to various stakeholders, like community, government, farmers, etc.</li> </ul>
8	Spot checking	Team Leader, Deputy Team Leaders & Field teams/Engineers.	During the field visits for WUAs baselines impacts of Watercourses, WSTs and laser units, the interventions will be spot checked for quality of construction, material, functioning and beneficiaries' satisfaction etc.
9	Process monitoring	Field Teams of Agriculture Deptt., Project Consultants, ME&IE Consultants & ICT/Technology Specialist	<ul style="list-style-type: none"> <li>The process data for all the interventions will be fed to the MIS/GIS database.</li> <li>Client's field staff and field teams of consultants will furnish data of their activities.</li> <li>The ME&amp;IE will assist in developing mobile application for this purpose</li> <li>From this data reports will be generated for process monitoring</li> <li>All interventions will be fully (100%) covered.</li> </ul>
10	Project website and MIS/GIS dashboard development	ICT / Technology Specialist (Including all other core team staff will also coordinate in completing data for the MIS/GIS	<ul style="list-style-type: none"> <li>The State-of-the-art MIS / Progress Monitoring Model will be developed for NPIWC-II.</li> <li>Customized forms will be developed to collect data from the implementing teams on-site for progress monitoring</li> <li>These forms will be made available to the teams on smart phones through an android application</li> <li>The teams will be adequately trained to use the application</li> <li>Data on physical and financial stages with dates will be fed to the system for process monitoring</li> <li>GIS coordinates for watercourses, WSTs, laser units (if available) and WUAs offices will be uploaded to the system and could be viewed / reached by the management online</li> <li>The system will be maintained on GOOGLE server so that it is accessible by the management from anywhere in Pakistan and abroad</li> <li>Custom reports will be possible as the user demands / desires</li> <li>The results could be displayed on small as well as large screens.</li> </ul>
11	Development of Android based application	ICT / Technology Specialist	All the data collection forms / tools will be executed through customized developed Android based applications accessible with smart phones / TABs.

### 2.3 FRAMEWORK AND RESULTS-BASED MONITORING (RBM) INDICATORS

The framework and Results-Based Monitoring (RBM) Indicators are identified in Table-2.2 below. The indicators will be further enhanced and refined in consultation with the client as well as stakeholders. They will also get improved as the project implementation progresses as in the light of real and on the ground situations.

The draft log-frame of the project inputs, outputs, outcomes and impacts with ME&IE methodologies is placed at **Annex-C**.

### 3. MONTHLY MONITORING REPORT

#### 3.1 INTRODUCTION

Monthly Monitoring Report (MMR) explains the understanding towards all activities to be carried out as per TORs of ME&IE assignment and their completion within stipulated time frame.

#### 3.2 OBJECTIVE OF MONTHLY MONITORING REPORT

The Main objective of Monthly Monitoring Report is to update the Client about the activities carrying out by the ME&IE Consultants during the reporting period. Reporting is an integral part of monitoring and evaluation framework.

#### 3.3 REPORTING PERIOD

This Third Monthly Monitoring Report (MMR) covers the period from March 01, 2021 to March 31, 2021.

The Third Monthly Monitoring Report (MMR) has prepared under the guidance and supervision of Mr. Saif Ullah Ejaz Chaudhry, Director G3 Engineering Consultants authorized representative of ME&IE Consultants. The following core team of NPIWC-II participated in the preparation of this Report:

1. Dr. Muhammad Abdul Quddus, Team leader
2. Dr. Sarwar Zahid, DTL (Islamabad) ICT&AJK
3. Mr. Muhammad Yousaf Bhatti, DTL (Lahore) Punjab
4. Dr. Humayun Khan DTL (Peshawar) KP&GB
5. Mr. Rizwan Ahmad, DTL (Quetta) Balochistan
6. Dr. Fateh Muhammad Chaudhry, Irrigation Agronomist
7. Mrs. Munaza Bashir Tarar, Social & Gender Specialist
8. Mr. Waseem Ahmad Masood, FM Specialist
9. Mr. Rizwan Saleem, ICT/Technology Specialist

The Report In-hand provides the progress made in various activities relating to the accomplishment of Monitoring activities of project interventions e.g., development of monitoring tools for field activities. This report also describes all activities to be carried out as per quarterly work plan.

#### 4. ACTIVITIES COMPLETED DURING THE REPORTING PERIOD

The ME&IE Consultants were mobilized on November 20, 2020. The detail of activities carried out by the ME&IE Consultants during the reporting period are:

##### 4.1 SECOND MONTHLY MONITORING REPORT

The Second Monthly Monitoring Report, February 01, 2021 to February 28, 2021 was submitted to the Client within stipulated time on March 10, 2021. The Report described the achievement during the period under discussions and also gave a work plan for the First Quarter 2021 (January 1, 2021 to March 31, 2021).

##### 4.2 ESTABLISHMENT/RENOVATION OF ME&IE CONSULTANTS OFFICES

The renovation of National office Islamabad and all zonal offices has been completed and the office is functional except field offices whom the renovation works is about to complete.

###### 4.2.1 Project National Office Islamabad

The renovation of ME&IE Consultants National office has been completed and the office is functional.  
Address: House No. 6-A, F-6/4, Embassy Road, Islamabad.

###### 4.2.2 Zonal Office - Punjab

The renovation of ME&IE Consultants Punjab Zonal office has been completed and the office is functional.  
Address: First Floor, Orchard Heights, Arena Commercial, Bahria Orchard, Raiwind Road, Lahore.

###### 4.2.3 Zonal Office -Khyber Pakhtunkhwa & Gilgit Baltistan

The renovation of ME&IE Consultants Khyber Pakhtunkhwa & Gilgit Baltistan Zonal office has been completed and the office is functional.  
Address: House # 358, Khyber Colony # 2, Tahkal Payan University Road, Peshawar.

###### 4.2.4 Zonal Office -Balochistan

The renovation of ME&IE Consultants Balochistan Zonal office has been completed and the office is functional.

Address: Bungalow # 543/03 Chiltan Road Quetta Cantt, Quetta.

##### 4.2.5 Establishment of Field Offices

The process for establishment of Field Offices has been completed and the renovation works are near to be completed.

##### 4.3 MEETINGS AND VISITS OF ME&IE CONSULTANTS - PUNJAB ZONE

Date	March 04, 2021, at 11:00 AM
Venue	Office of Director (Agri) OFWM Training Institute, Lahore
<b>Participants</b>	
i.	Dr. Muhammad Maqsood Ahmad, Director, OFWM Training Institute, Lahore.
ii.	Dr. Muhammad Mujahid, Assistant Horticulturist, Training Institute, Lahore.
iii.	Dr. Muhammad Abdul Quaddus, Team Leader ME&IE Consultants.
iv.	Muhammad Yousef Bhatti, Deputy Team Leader (ME&IE) Consultants, Punjab Zone Lahore.
v.	Ch. Muhammad Aslam, Deputy Manager (ME&IE) Consultants, Punjab Zone Lahore.

###### Meeting Agenda/Points discussed:

The main objective of the meeting was to get in depth exposure of the training mechanism of farmers, particularly the service provider / operator of Laser Land Leveler units, an important intervention of the NPIWC-II

During the meeting, Dr. Maqsood, well explained the various Training programs, being organized by the institute. It was also Learnt that the institute also facilities in training on the Laser Land Leveler unit operator in other provinces. Dr, Quaddus explained the responsibilities of his team regarding this intervention and its role in water saving. Water saving' is the need of the day for our economy. Any development relating to this Technology is to be appreciated.

The team visited the institutes, saw various designs/modules of Laser Land Leveling units, and learned a lot of knowledge about this technology. The meeting ended with the thanks to the Chair and with commitment to continue cooperation in future to achieve the noble cause.



Figure-4.1: Meeting with Director, OFWM Training Institute Lahore



Figure-4.2: Meeting with Director, OFWM Training Institute Lahore

The major activities conducted by ME&IE consultants during reporting month were Pre-Testing Survey of Monitoring Tools along with ICT assignments. Meetings and field visits has been conducted mostly in context of pre testing of monitoring tools. Therefore, the detail of meetings and field visits are given under heading 4.7 in this report.

#### 4.4 MEETINGS AND VISITS OF ME&IE CONSULTANTS – KP & GB ZONE

Date	March 15, 2021
Venue	Office of the DG OFWM Peshawar
<b>Participants</b>	
i.	Dr. Tahir Anwar, Federal OFWM cell
ii.	Mr. Javid Iqbal DG OFWM Peshawar
iii.	Dr. Muhammad Quddus NTL ME&IE Consultants
iv.	Prof. Dr. Humayun Khan, DTL ME&IE Consultants
v.	Dr. Rab Nawaz Khan DD OFWM Peshawar
vi.	Mr. Wajid Khan WMO OFWM Peshawar

- vii. ME&IE Consultant Team (Two Persons)
- viii. 3 other officials of DG OFWM office Peshawar
- ix. Saiful Islam Project Coordinator ISB

#### Meeting Agenda/Points discussed:

Represented the KP zone as DTL ME&IE consultant NPIWC- II in a meeting scheduled by the Client Ministry of Food and National Security, Islamabad (Federal OFWM cell,) in the office in the office DG OFWM KP Peshawar. The following attended the meeting.



Figure-4.3: Meeting with Client in OFWM Directorate Peshawar



Figure-4.4: Meeting with Client in OFWM Directorate Peshawar

Date	March 25, 2021
Venue	Office of the DG OFWM Peshawar

#### Participants

- i. Mr. Javid Iqbal DG OFWM Peshawar
- ii. Prof. Dr. Humayun Khan, DTL ME&IE Consultants
- iii. Dr. Rab Nawaz Khan DD OFWM Peshawar
- iv. Mr. Wajid Khan WMO OFWM Peshawar
- v. ME&IE Consultant Team members

#### Meeting Agenda/Points discussed:

Visited office of the DG OFWM Peshawar in connection with our field activities and requested for the required data for our pretesting of the Monitoring Tools and deputing the relevant staff for the pretesting survey. Dr. Rab Nawaz, District Director OFWM and Mr. Wajid WMO Peshawar promised extended all cooperation in this regard.



Figure-4.5: Meeting with DG OFWM Peshawar



Figure-4.6: Meeting with DG OFWM Peshawar

The major activities conducted by ME&IE consultants during reporting month were Pre-Testing Survey of Monitoring Tools along with ICT assignments. Meetings and field visits has been conducted mostly in context of pre testing of monitoring tools. Therefore, the detail of meetings and field visits are given under heading 4.7 in this report.

#### 4.5 MEETINGS AND VISITS OF ME&IE CONSULTANTS – BALOCHISTAN ZONE

Date	March 05, 2021
Venue	Office of DG Agriculture, OFWM Balochistan, Directorate General Agriculture Balochistan, Sariab Road, Quetta
Participants	
i.	Director General, OFWM Quetta
ii.	Mr. Rizwan Ahmed, Dy Team Leader, ME&IE Consultants, Balochistan
Meeting Agenda/Points discussed:	
A meeting held with Director General, OFWM in his good office on 5th March 2021 regarding data collection / inventory and briefed the progress of ME&IE Consultants.	

Date	March 08, 2021
Venue	Office of DG Agriculture, OFWM Balochistan, Directorate General Agriculture Balochistan, Sariab Road, Quetta
Participants	
i.	Secretary, Agriculture Department, Govt. of Balochistan
ii.	All Deputy Directors, OFWM
iii.	Mr. Rizwan Ahmed, Dy Team Leader, ME&IE Consultants, Balochistan
Meeting Agenda/Points discussed:	
A meeting was attended at the Director General, OFWM office, chaired by Secretary, Agriculture Department, Govt. of Balochistan on 8th March 2021. It was a Progress Review Meeting, all Deputy Directors, OFWM, Dy Team Leader, Project Consultants and Deputy Team Leader, ME&IE Consultants attended this meeting. All DDs and DTLs shared the progress of NPIWC-II. The forum advised the Secretary regarding timelines / policy to expedite the ongoing schemes. The forum discussed the progress of both financial years i.e. 2019-20 and 2020-21.	

Date	March 15, 2021
Venue	Office of DTL, ME&IE Consultants Quetta
Participants	
i.	Mr. Rizwan Ahmed, Dy Team Leader, ME&IE Consultants, Balochistan
ii.	Team members ME&IE Consultants of Balochistan zone
Meeting Agenda/Points discussed:	
A meeting held with Deputy Team Leader, Project Consultants in his office on 15 <sup>th</sup> March 2021 to collect data / inventory of 2020-21 schemes. The DTL, Project Consultants told ME&IE Consultants that the survey works of schemes 2020-21 are under progress, as soon as the survey/feasibility works done the same will be shared with ME&IE Consultants.	

A meeting held with OFWM staff on 22nd March 2021 regarding finalization field visits was planned to pre-testing MTs.

Date	March 25, 2021
Venue	Office of Deputy Director, OFWM, Mastug
Participants	
i.	Deputy Director, OFWM, Mastug
ii.	Mr. Rizwan Ahmed, Dy Team Leader, ME&IE Consultants, Balochistan
Meeting Agenda/Points discussed:	
<p>A meeting was held with Deputy Director, OFWM, Mastug in his office at district Mastung on 25th June 2021. The ME&amp;IE Consultants shared findings of field visits and discussed the upcoming field visits plan and baseline survey activities. The ME&amp;IE Consultants checked the files of Farmer/Beneficiaries and took the data as per requirement.</p>	
	

Figure-4.7: Meeting with DD, OFWM, Mastug

The major activities conducted by ME&IE consultants during reporting month were Pre-Testing Survey of Monitoring Tools along with ICT assignments. Meetings and field visits has been conducted mostly in context of pre testing of monitoring tools. Therefore, the detail of meetings and field visits are given under heading 4.7 in this report.

#### 4.6 DETAIL OF COLLECTIVE MEETINGS OF ME&IE CONSULTANTS

Date	March 08, 2021
Venue	FPMU NPIWC-II Islamabad
Participants	
i.	Mr. Tahir Anwar NPC (Chair)
ii.	Mr. Saif ul Islam Deputy Project Coordinator
iii.	Dr. Abdul Quddos TL
iv.	Dr. Sarwar Zahid DTL

v.	Mr. Rana Muhammad Usman Project Coordinator/ NPC Support
Meeting Agenda/Points discussed:	
<p><b>Progress review of three-month work plan:</b></p>	
<p><b>Observations:</b></p>	
<p><b>Pre-Field Activities:</b> Chair Directed to complete National office renovations, Procurement of Furniture, Equipment's Establishment of field offices till end of March.</p>	
<p><b>Field Activities:</b> Chair Directed to complete the field activities as per work plan.</p>	
<p><b>ICT Assignment</b> It was decided that ME&amp;IE Consultant will give demonstration of Android based Mobile application till 15 March on one day notice of TL ME&amp;IE &amp; directed to ensure compliance of work plan.</p>	
<p><b>Coordination:</b> Chair Directed to share consolidated report of each visit /meeting with concern DGs, DA, DDA, and ADA.</p>	
<p><b>Deliverables:</b> ME&amp;IE Consultants will confirm to submit monthly progress report within stipulated time frame i.e. 10<sup>th</sup> of March.</p>	
<p><b>Concerns:</b> Chair shows concerns to ME&amp;IE Consultants over meeting timelines of Pre-Field activities &amp; Field Activities as per Work plan.</p>	
	

Figure-4.8: Progress Review Meeting at FPMU NPIWC-II Islamabad

## 4.7 PRE-TESTING SURVEY OF MONITORING TOOLS

Pre-testing a survey is the only way to make sure that it is going to deliver to you the data that you were hoping to receive. While there may not be such a thing as a survey without a single response error, there are ways to make sure that the people answering the survey are providing you with the responses that you expect, and that the survey is working correctly.

Many survey researchers fail to pre-test the survey. But without pre-testing, it is difficult to find out if your survey has any logic problems, if the questions are too hard to understand, if it is prone to central tendency and habituation, if it has too high a dropout rate, or if it has any response bias. There are many issues that affect the quality of your data, and pre-testing is the only way to make sure that your survey is getting you as close to perfect answers as possible.

### Six Ways to Pre-Test a Survey Questionnaire

Researchers' pre-test for a variety of reasons. At its core, pretesting is designed to make sure that people understand the questions, and that there isn't anything in the data that indicates that the information is inaccurate. Still, this is admittedly a difficult process – how can one assume that the answers they are receiving are accurate or inaccurate? What may seem like an anomaly may be honest answers, and what may look like sensible answers may be incorrect responses. In general, researchers look for the following in pre-test data to indicate that something may be wrong with their survey.

### Skipped Questions

One of the most telling examples that a question may not be understandable is when it's skipped. While some people may answer the questions anyway, questions that are not understandable are the most likely questions to be skipped on a survey.

### "Don't Know" Answer

Another common answer when a question is unclear is the "don't know" or default answer. If respondents are unclear what a question is asking, they may select the response that most closely resembles "don't know." If you don't have this option, it may be the

"neither agree nor disagree," although confusion may arise if this is simply the most likely answer.

### Data Differences

When businesses are willing to spend extra to run several pre-test surveys, another issue may be seen if identical questions have different meanings based on where they are in the survey. For example, if a question that shows up late in the survey gets a different response when it shows up early in the survey.

### Hesitation Times

Some surveys show the length of time it takes for a person to answer a question. Hesitation times may be measured in some datasets to include long pauses that may indicate problems answering the questions.

### Debriefing Respondents

Depending on your sample, it's not uncommon to debrief a small number of respondents before sending the survey out to a large sample of people. This helps to find out if they had any issues while taking the survey, problems with any of the question clarity, and more.

### Question Types

Sometimes researchers play around with multiple questions to see if there are different answers for different styles of questions that are supposed to be asking the same thing. If so, one may be preferable to another.

Another method of pre-testing is to simply have those trained in survey research to review the test and see if there are any issues. Often times a confusing question can be noticed by a trained interviewer in a way that not even data analysis would show. Finally, there are ways to analyze the data (such as looking at variation in the results and whether that runs counterintuitive to the interviewer's beliefs), that may indicate a problem.

Pre-testing a survey is very important, there is an inherent assumption that problems will reveal themselves, and this simply may not be the case. Several papers have discussed problems with the belief that all problems will be revealed with these pre-testing methods, and while it is always going to

be an important part of the survey process, researchers should be careful about believing too strongly that their survey problems have been addressed. However, making sure that the person is trained in survey research and conforming to best practices will go a long way.

Still, pre-testing remains an important part of survey research, and does need to play a role in the way you handle your own research process. Without it, problems may not be noticed or addressed, and you may be wasting your survey if you haven't caught an obvious error by the time the official survey has been conducted.

#### Pre-Testing of the Monitoring Tools in the Field Areas in the Following Zones

- **Punjab Zone**
- **Balochistan Zone**
- **KP Zone**

#### 4.7.1 PRE-TESTING OF MTs IN THE PUNJAB ZONE

Field visits for pre-designed monitoring and Evaluation Tools were planned with the coordination of OFWM officers of Sheikhupura District (DDA-OFWM) and ADA-OFWM-muridke. The visit was made as under:

##### 1-Date of Visit:

March 26, 2021 Muridke, ADA-OFWM Office and field  
March 27 2021 DDA-OFWM Sheikhupura Office and Field.

##### 2-ME&IE Consultants Team:

1. Muhammad Yousaf Bhatti  
Deputy Team Leader (ME&IE Specialist)
2. Muhammad Rizwan Suleman  
Field Team Engineer
3. Syed Ali Haider Shah  
Field Team Engineer

##### 3-OFWM officers and Staff Members:

The officers and staff members of OFWM provided necessary Basic data and Cooperated fully during the field visit.

List of Officers and Staff Members of OFWM:

Sr. No	Name	Designation
1	Mr. Malik Charagh Din	Deputy Director (Agri) OFWM – Sheikhupura.
2	Mr. Zafar Munir	Assistant Director (Agri) OFWM-Muridke, District Sheikhupura.
3	Mr. Muhammad Bilal	Sub Engineer OFWM Muridke.
4	Ch. Asif Mehmood	Sub-Engineer OFWM Sheikhupura.
5	Rana Muhammad Tanveer	Sub-Engineer OFWM Sheikhupura.
6	Mr. Muhammad Ilyas	Rodman OFWM Muridke.



Figure-4.9: Meeting with Deputy Director Agriculture OFWM District Sheikhupura



Figure-4.10: Meeting with Assistant Director Agri. OFWM Tehsil Muridke District Sheikhupura

In the field various intervention sites were visited and Team interviewed various respondents keeping in view the present Tools defines and suggestions.

#### 4-Interventions and their Respondents:

Efforts were made to collect the information From Various types of Respondents on Pre-Designed Monitoring Tools. Details of the Respondents are given below:

##### List of Respondents for Pre-Testing of Monitoring Tools:

###### i) Water Users Association / Share Holder Beneficiaries of improvement of Watercourses Intervention.

1. Ch. Muhammad Naseem Chairman (WUA)  
Watercourse No: 6140-R Village:  
Bheianwala, Tehsil Muridke District Sheikhupura
2. Mr. Ahmad Moaeen Sindu  
Watercourse No: 18800-R Village kukkar Gul,  
Tehsil and District Sheikhupura
3. Muhammad Nawaz (Treasurer WUA)  
Watercourse No: 18800-R Village kukkar Gul,  
Tehsil and District Sheikhupura
4. Mr. Muhammad Adeel  
Watercourse No: 6140-R Village Bheianwala  
Tehsil Muridke District Sheikhupura



Figure-4.11: Meeting with Assistant Director OFWM along with Chairman WUA of Tehsil Muridke



Figure-4.12: Data collection from Farmers/Beneficiaries of Watercourse Bheinawala, Tehsil Muridke District Sheikhupura.



Figure-4.13: Visit of Watercourse 6140-R, Bheinawala, Tehsil Muridke, District Sheikhupura



Figure-4.14: Visit of Watercourse 18800-R,  
Kukkar Gil, District Sheikhupura

**(ii) Laser Land Levelling Units (Service provider and User)**

1. Mr. Rasheed Ahmad:

Village Bheianwala, Tehsil Muridke District Sheikhupura

2. Mr. Intizar Ahmad:

Chak No 29, Tehsil Muridke District Sheikhupura



Figure-4.15: Visit of Laser Land Leveling Units in Bheianwala of Tehsil Muridke District Sheikhupura



Figure-4.16: Data Collection from Laser Land Leveller Service Provider/User in Bheianwala of Tehsil Muridke District Sheikhupura

**(iii) Water Storage Tanks Intervention (owner / Beneficiaries):**

1. Habib-ur- Rehman Hashmi  
Village Qiampur Tehsil and District Sheikhupura
2. Muhammad Mansha Anjum (Farm Manager)  
Village Qiampur Tehsil and District Sheikhupura



**Figure-4.17: Visit of water Storage Tank,Qiampur Tehsil and District Sheikhupura**



**Figure-4.18: Meeting with Water Storage Tank owner**



**Figure-4.19: Meeting with Water Storage Tank Farm Manager**

**5-Conclusions:**

As a result of Interview with the respondents, Discussion with OFWM officers/Field staff, and Team member's own observations, certain modifications in questions, additions, deletions and some new questions are added in the existing Monitoring Evaluation Tools. The refinement of Monitoring Tools is under process.

The Monitoring and Evaluation Tools, used for Pre-Testing have been Filled, Partially Filled in Some Cases only Important Points were noted. Filled in, partially filled in and other tools are available in the form of Hardcopy. Action taken in the light of Pre-testing in the Field is summarized in para 4.8 Refinement of monitoring Tools.

**6-Limitations:**

There were Certain Limitations in Completion of all the tools and in all respects. The main limitations were:

- 1) Field Team members although were very Hard workers but inexperienced.
- 2) Limited time for in house training of the field staff.
- 3) Limited time for Covering/filling of about 20 tools of 4 interventions in the field.
- 4) Different Site Locations of interventions in the field.
- 5) The Measurement of water flow in the Watercourse without original equipment and record of reading on tools were not possible.
- 6) Finding out a Female Respondent and interview by the Field Team (males), on Social and Gender aspects was very difficult.

**7-Suggestions:**

For the Smooth operations of field activities following are the main Suggestions

- 1) The interviewee for filling the questionnaire for Social and Gender, the respondent should be female. Respondents may be taken from respondent's family members (6 beneficiaries on each Watercourse).one respondent in each District will be a reasonable sample size OR one focus group/group meeting in each district. During the field survey a social and gender

specialists should accompany the team or this purpose.

- 2) Equipment is needed for measuring flow of water and recording the data on the tool. So, an Engineer is necessary in each field team.
- 3) Early mobilization of Field Team Social and Gender Specialists and DTL other team members are also required for assistance in field works.
- 4) In House training and field training of field teams should be initiated as early as Possible.

#### 4.7.2 PRE-TESTING OF MTs IN THE BALOCHISTAN ZONE

To determine the effectiveness of Monitoring Tools (MTs), it is necessary to pretest it before actually using it on field. Pretesting can help us determine the strengths and weaknesses of our survey concerning question format.

Pretesting field visits is an important way to pinpoint problem areas, reduce measurement error, reduce respondent burden, determine whether or not respondents are interpreting questions correctly, and ensure that the order of questions is not influencing the way a respondent answer.

The Deputy Team Leader, Balochistan organized two days workshop/training for ME&IE Officers on Monitoring Tools (MTs) and Survey Manual / guidelines from 23rd to 24th March 2021.

The Training was covered following topics:

- a) To determine the effectiveness of Monitoring Tools (MTs), it is necessary to pretest it before actually using it on field. Pretesting can help us determine the strengths and weaknesses of our survey concerning question format.
- b) Pretesting field visits is an important way to pinpoint problem areas, reduce measurement error, reduce respondent burden, determine whether or not respondents are interpreting questions correctly, and ensure that the order of questions is not influencing the way a respondent answer.
- c) Session on Survey Manual
- d) Selection of sites for Pre-Testing the MTs.

In response to pretesting of MTs the Team Leader, Balochistan planned to visit 07 sites of 02 districts i.e. Pishin (North Zone) and Mastung (South Zone) with his team. Due to time constraints, the Team Leader selected nearest districts from Quetta.

The team visited 07 sites as listed below:-

1. Watercourse, Haji Dinar Khan, District Pishin
2. Watercourse, PVC Pipe, Sidequllah, District Pishin
3. Watercourse, RCC Pipe, Sarwar Khan, District Pishin
4. Water Storage Tank, Haji Dinar Khan, District Pishin
5. Watercourse, Noor Muhammad, Mastung
6. Watercourse, Muhammad Arif Khan, Distt. Mastung
7. Water Storage Tank, Khair Muhammad, Distt. Mastung

#### 1-Date of Visit:

- The first pretest field visit was conducted on 24<sup>th</sup> March 2021 of district Pishin
- The second pretest visit was made on 25<sup>th</sup> March 2021 of District Mastung.

#### 2-ME&IE Consultants Team:

1. Rizwan Ahmed  
Deputy Team Leader (ME&IE Specialist)
2. Qaisar Tareen  
Field Team Engineer
3. Hamza Qureshi  
Field Team Engineer

#### 3-OFWM officers and Staff Members:

The officers and staff members of OFWM provided necessary Basic data and Cooperated fully during the field visit.

Collective List of Officers and Staff Members of OFWM:

Sr. No	Name	Designation
1	Haji Faqir Muhammad	Deputy Director
2	Abdul Naeem	Water Management Officer
3	Tanveer Ahmed	Sub Engineer, OFWM
4	Imran Agha	Water Management Officer
5	Shams-uddin Baqa	Agriculture Officer
6	Fazal Ahmed	Junior Engineer
7	Sher Ahmed	Sub Engineer
8	Daad Ali	Sub Engineer

**Field Visit – Village Haji Dinnar Khan, District Pishin:**

Field Visit	Description
Site Name:	Haji Dinnar Khan
District:	Pishin
Date of visit:	24 <sup>th</sup> March 2021
List of officials visited the site for pre-testing of Monitoring Tools	
<ol style="list-style-type: none"><li>1) Rizwan Ahmed, Dy Team Leader, ME&amp;IE Consultants</li><li>2) Abdul Naeem, Water Management Officer,</li><li>3) Tanveer Ahmed, Sub Engineer, OFWM</li><li>4) Imran Agha, Water Management Officer</li><li>1) Qaisar Tareen, M&amp;E Office, ME&amp;IE Consultants</li><li>5) Hamza Qureshi, M&amp;E Office, ME&amp;IE Consultants</li></ol>	



**Figure-4.22: Haji Dinnar Khan (View of Watercourse 2019-20)**



**Figure-4.20: Group Session at Site of Haji Dinnar Khan (Watercourse and Water Storage Tank–2019-20)**



**Figure-4.23: Haji Dinnar Khan (View of Water Storage Tank 2019-20)**



**Figure-4.21: Haji Dinnar Khan (View of Watercourse 2019-20)**



**Figure-4.24: Haji Dinnar Khan (View of Water Storage Tank 2019-20)**

**Field Visit – Village Sarwar Khan, District Pishin:**

Field Visit	Description
Site Name:	Sarwar Khan
District:	Pishin
Date of visit:	24 <sup>th</sup> March 2021
List of officials visited the site for pre-testing of Monitoring Tools	
<ol style="list-style-type: none"> <li>1) Rizwan Ahmed, Dy Team Leader, ME&amp;IE Consultants</li> <li>2) Abdul Naeem, Water Management Officer,</li> <li>3) Tanveer Ahmed, Sub Engineer, OFWM</li> <li>4) Imran Agha, Water Management Officer</li> <li>2) Qaisar Tareen, M&amp;E Office, ME&amp;IE Consultants</li> <li>5) Hamza Qureshi, M&amp;E Office, ME&amp;IE Consultants</li> </ol>	



Figure-4.25: Site of Sarwar Khan (View of Manhole, 2019-20 RCC Pipe)

**Field Visit – Village Sidiqullah, District Pishin:**

Field Visit	Description
Site Name:	Sidiqullah
District:	Pishin
Date of visit:	24 <sup>th</sup> March 2021
List of officials visited the site for pre-testing of Monitoring Tools	
<ol style="list-style-type: none"> <li>1) Rizwan Ahmed, Dy Team Leader, ME&amp;IE Consultants</li> <li>2) Abdul Naeem, Water Management Officer,</li> <li>3) Tanveer Ahmed, Sub Engineer, OFWM</li> <li>4) Imran Agha, Water Management Officer</li> <li>3) Qaisar Tareen, M&amp;E Office, ME&amp;IE Consultants</li> <li>5) Hamza Qureshi, M&amp;E Office, ME&amp;IE Consultants</li> </ol>	



Figure-4.27: Site of Sidiqullah (Scheme PVC Pipe, 2019-20 View of Tube Well and source of electricity)



Figure-4.26: Site of Sarwar Khan (View of RCC Pipe 2019-20)



Figure-4.28: Site of Sidiq-ullah (Scheme PVC Pipe, 2019-20, View of Command Area)



Figure-4.29: Site of Sidiqullah (Scheme PVC Pipe, 2019-20 View of water discharge at Kacha Talab)



Figure-4.31: Site of Noor Muhammad (Scheme Watercourse - 2019-20, view of Apricot Tree)

**Field Visit – Village Noor Muhammad, District Mastung:**

Field Visit	Description
Site Name:	Noor Muhammad
District:	Mastung
Date of visit:	25 <sup>th</sup> March 2021
List of officials visited the site for pre-testing of Monitoring Tools	
1) Haji Faqir Muhammad (Deputy Director)	
2) Rizwan Ahmed, Dy Team Leader, ME&IE Consultants	
3) Shams-uddin Baqa (Agriculture Officer)	
4) Fazal Ahmed (Junior Engineer)	
5) Sher Ahmed (Sub Engineer)	
6) Daad Ali (Sub Engineer)	
7) Qaisar Tareen, M&E Office, ME&IE Consultants	
8) Hamza Qureshi, M&E Office, ME&IE Consultants	



Figure-4.30: Site of Noor Muhammad (view of Watercourse, 2019-20, measuring to check as per design)

**Field Visit – Village Khair Muhammad, District Mastung:**

Field Visit -	Description
Site Name:	Khair Muhammad
District:	Mastung
Date of visit:	25 <sup>th</sup> March 2021
List of officials visited the site for pre-testing of Monitoring Tools	
1) Haji Faqir Muhammad (Deputy Director)	
2) Rizwan Ahmed, Dy Team Leader, ME&IE Consultants	
3) Shams-uddin Baqa (Agriculture Officer)	
4) Fazal Ahmed (Junior Engineer)	
5) Sher Ahmed (Sub Engineer)	
6) Daad Ali (Sub Engineer)	
7) Qaisar Tareen, M&E Office, ME&IE Consultants	
8) Hamza Qureshi, M&E Office, ME&IE Consultants	



Figure-4.32: Site of Khair Muhammad (Scheme WST 2019-20)



Figure-4.33: Site of Khair Muhammad (Scheme WST 2019-20)



Figure-4.35: Site of Muhammad Arif Khan (Scheme PVC Pipe 2019-20, checking discharge of water)

#### Field Visit – Village Muhammad Arif Khan, Distt. Mastung:

Field Visit -	Description
Site Name:	Muhammad Arif Khan
District:	Mastung
Date of visit:	25 <sup>th</sup> March 2021
List of officials visited the site for pre-testing of Monitoring Tools	
1) Haji Faqir Muhammad (Deputy Director) 2) Rizwan Ahmed, Dy Team Leader, ME&IE Consultants 3) Shams-uddin Baqa (Agriculture Officer) 4) Fazal Ahmed (Junior Engineer) 5) Sher Ahmed (Sub Engineer) 6) Daad Ali (Sub Engineer) 7) Qaisar Tareen, M&E Office, ME&IE Consultants 8) Hamza Qureshi, M&E Office, ME&IE Consultants	



Figure-4.36: Site of Muhammad Arif Khan (Scheme PVC Pipe, 2019-20, view of tomato farm)



Figure-4.34: Site of Muhammad Arif Khan (Scheme PVC Pipe 2019-20)

#### Observations:

1. We felt a lot of problems in collecting data during field visits as the Farmer/Beneficiaries were not present at site. However, labour (Harris) were present and we tried to get maximum information from them as per our MTs requirements.
2. It has been observed that Water Users Associations are not operative as per demand of project.
3. The filing works of OFWM staff were found weak, a lot of information was missing. However, after the entrance of Project Consultants they made a checklist/file for OFWM staff, hopefully the filling system will be improved gradually.

4. All MTs found necessary and had sufficient indicators to cover all Monitoring Evaluation and Impact Evaluation aspects,
5. It has been observed that payment procedure is not being followed by the OFWM Staff. As per criteria payment will be made on 03 three stage i.e. ICR, 2CR & FCR, but in most cases payments made in two installments as per need. However, Project Consultants made proformas of 03 individual payments which will be applicable in works of 2020-21. It also has been observed that payment records were not maintained in files by OFWM staff.
6. The Balochistan agriculture zones have been divided in two zones i.e. Barani and Canal. The most of districts are belongs to Barani Zone, in these areas water source are tube wells while rest of district i.e. Naseerabad Zone, Lasbella, Jhal Magsi and some areas of Dera Bugti belong to Canal Zones. It is, therefore, data regarding feedback of three beneficiaries from head, middle and tail are applicable in Canal Zone only. However, MTs covering this component are okay and such data will be obtained from canal areas in regular monitoring.
7. The MTs to determine velocity of water through Pygmy Meter could not be taken due to non-availability of Pygmy Meter, however, MTs indicators found okay and will be filled in routine monitoring accordingly.
8. There are different types of constructions being used throughout Balochistan, hence, it was difficult to cover all components in pre-testing. However, MTs are very much comprehensive and will cover all required data/information.

#### Recommendations

1. The OFWM assures ME&IE Consultants that Farmer/beneficiaries and beneficiaries other than members of WUA should be present at site so that data can be obtained as per M&E requirement.
2. The MTs as per result of site visits are being highlighted with two colours i.e. yellow and green, the yellow colour is indicating that these indicators look repetition or un-necessary while green colour is indicating that these indicators

should be added in MTs to make more comprehensive M&E data.

3. It is requested that a post of Social and Gender Expert (Female) should be filled on priority basis as it is very hard to collect such data without having female team members, especially in Balochistan's areas.
4. It is suggested that each team of three members should have one Engineer, so that engineering related works and quality of structures should be monitored properly.
5. It is therefore, that all MTs would not be applicable for each site due to different types of structure. It is suggested that before uploading data on Android Application, all Deputy Team Leaders may consult for their opinion to simplify the MTs.

#### Conclusion

As per pre-testing field visits and some field visits made in previous months, I found all MTs are very comprehensive and as per requirement of our service scope.

#### 4.7.3 PRE-TESTING OF MTs IN THE KP ZONE

As per schedule the field team of NPIW-II ME&IE Consultants KP Zone made field visits of district Peshawar for pretesting of the monitoring tools. Keeping in view the time constraint the field visits were restricted to the central district of the province.

With the help of OFWM staff, three villages: namely Mera Badhaber, Urmur Bala and Urmur Miana were selected for pretesting of the Monitoring tools. Selection of these villages were made on the basis of source of irrigation. On this criterion two sites one for tube well and the other for canal irrigation were selected. Four cases were selected in these two sites listed below.

1. Shah Hussain Tube well Watercourse Mera Badhaber,
2. Water Storage Tank (Aamer Khan) Mera Badhaber,
3. Watercourse No. 21200 Urmur Bala
4. Watercourse No. 70,000, Urmur Bala

**1-Date of Visit:**

- The first pretest field visit was conducted on 26<sup>th</sup> March 2021 in two sites of district Peshawar.
- The second pretest visit was made on 27<sup>th</sup> March 2021 in another two sites of District Peshawar.

**2-ME&IE Consultants Team:**

- Dr. Humayun Khan  
 Deputy Team Leader (ME&IE Specialist)
- Muhammad Bilal  
 Core Team Member Islamabad
- Abdul Rauf Saad  
 Field Team Engineer

**3-OFWM officers and Staff Members:**

List of Officers and Staff Members of OFWM:

Sr. No	Name	Designation
1	Engr. Shaheen	Asstt Director, OFWM District Peshawar
2	Engr. Said Muhammad	WMO District Peshawar
3	Engr. Riyaz	Sub Engineer OFWM, District Peshawar

**NOTE:** Laser Land leveling activity has been terminated since 2018 due to lack of farmers' interest. However, it was told by the OFWM staff that those who need this activity, hire the services of machines from the local market.

I enquired telephonically from the office of the DG OFWM for the absence of laser land leveling. They explained that due to the non-availability of funds for the LLL, they couldn't intervene in this activity. Moreover, they also stated that, as private firms are involved in providing their services through the bidding process it will take a bit longer to initiate this activity for farmers after the release of funds from the concerned quarters.

**1) Field Visit – Village Mera Badhaber, District Peshawar**

Watercourse ID:	Shah Hussain Tube well Watercourse
Name of village:	Mera Badhaber

<b>Union council:</b>	Badhaber
<b>Chairman WUA:</b>	Shah Hussain
<b>Tehsil &amp; District:</b>	Peshawar
<b>Source of irrigation:</b>	Tubewell
<b>Total length of watercourse:</b>	2100 meter
<b>Estimated length of lining:</b>	491 meters
<b>Command area of watercourse:</b>	40 Acres
<b>No of beneficiaries:</b>	07
<b>Starting date:</b>	25-01-2020
<b>Completion date:</b>	04-03-2020
<b>Cost of Construction of WC:</b>	Rs. 919,664 (80% OFWM 20% Farmer share)

Water Storage Tank (Aamer Khan)	
<b>Name of village:</b>	Mera Badhaber
<b>Union council:</b>	Badhaber
<b>Chairman WUA:</b>	Aamer khan
<b>Tehsil &amp; District:</b>	Peshawar
<b>Source of irrigation:</b>	Tube well
<b>Shape of water storage tank:</b>	Square
<b>Size of water storage tank:</b>	12x12 meters
<b>Depth of WST:</b>	1.36 meters
<b>Command area of watercourse:</b>	22 Acres
<b>No of beneficiaries:</b>	05
<b>Starting date:</b>	January 2020
<b>Completion date:</b>	March 2020
<b>Construction Cost of watercourse:</b>	Rs. 500,000 (80% OFWM 20% Farmer share)

**2) Field Visit – Village Urmur Bala, District Peshawar**

<b>Watercourse ID:</b>	21200
<b>Name of village:</b>	Urmur Bala
<b>Union council:</b>	Urmur Bala
<b>Chairman WUA:</b>	Zalo Khan
<b>CNIC No.</b>	17301-1436652-3

<b>Cell No.</b>	03347585379
<b>Tehsil &amp; District:</b>	Peshawar
<b>Source of irrigation:</b>	Canal
<b>Total length of watercourse:</b>	4000 meters.
<b>Estimated length of lining:</b>	700 meters bricks work
<b>PCPS:</b>	800 meters
<b>Command area of watercourse:</b>	250 Acres
<b>No of beneficiaries:</b>	15
<b>Starting date:</b>	March 2020
<b>Completion date:</b>	April 2020
<b>Cost of Construction of WC:</b>	Rs. 24,42,383 (80% OFWM 20% Farmer share)



**Figure-4.37: Field visit of Mera Badhaber Shah Hussain Tube well Watercourse District Peshawar along with Shaheen Assistant Director OFWM Peshawar**

<b>Watercourse ID:</b>	70,000, Hazar Khwani Branch
<b>Name of village:</b>	Urmur Miana
<b>Village council:</b>	Urmur Miana
<b>PK</b>	70
<b>Chairman WUA:</b>	Muhammad Naseer
<b>CNIC:</b>	17301-0105518-9
<b>Cell No.</b>	03127703935
<b>Tehsil &amp; District:</b>	Peshawar
<b>Source of irrigation:</b>	Canal
<b>Total length of watercourse:</b>	5000 meters
<b>Estimated length of lining:</b>	757 meters
<b>Command area of watercourse:</b>	500 Acres
<b>No of beneficiaries:</b>	15
<b>Starting date:</b>	28-01-2020
<b>Completion date:</b>	24-03-2020
<b>Construction cost of WC:</b>	Rs. 2,268,440 (80% OFWM 20% Farmer share)



**Figure-4.38: Aamer Khan Water Storage Tank Mera Badhaber, Peshawar**



**Figure-4.39: Another view of Aamer khan Water Storage Tank Mera Badhaber District Peshawar**



Figure-4.40: Another view of Aamer khan Water Storage Tank Mera Badhaber District Peshawar



Figure-4.42: Solar System for Tube well of Shah Hussain Mera Badhaber, District Peshawar



Figure-4.43: Water Storage Tank of Shah Hussain Mera Badhaber, District Peshawar



Figure-4.41: Tube well Watercourse of Shah Hussain Mera Badhaber, District Peshawar



Figure-4.44: Survey Team Field Visit of Watercourse ID No. 21200 Urmur Bala, District Peshawar



Figure-4.45: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar



Figure-4.46: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar



Figure-4.47: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar



Figure-4.48: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar



Figure-4.49: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar



Figure-4.50: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar



Figure-4.51: Survey Team Field Visit of Watercourse  
ID No. 21200 Urmur Bala, District Peshawar

#### Main findings of field visits:

1. Monitoring tools were very comprehensive covering almost all aspects of activities taking place in the field. However, in most of the MTs unnecessary repetition was found among the **Identification of watercourse i.e; from serial No. 1.2 to 1.12.**
2. The OFWM staff had not maintained the file work in a systematic way so that one can easily understand the process of implementation.
3. The construction/improvement of Watercourses made available more irrigation water, which resulted in increased crop production and application of modern seed technology (Hybrid seeds).
4. Water User Associations (WUA) were not functioning as per their mandated role. No WUA meetings were held for the maintenance of WCs. WUA were formed only for the official record.

5. Construction of Watercourses and WSTs by OFWM has no effect on cropping patterns in the project areas.
6. Questions asked in the village profile especially in part-B, i.; Village socio economic data S. No. 1 to 8 collected from the field is not authentic and is based on estimation. This data should be collected from the official sources.
7. Large variations exist reported by the farmers among the agriculture output prices especially, fruits and vegetables within the same crop season. As these are collected on daily bases the prices of these commodities are very unstable.
8. The data regarding the water flow (**MT-17**) Pygmy Current Meter (PCM) reading for determination of Velocity can't be collected without trained staff.
9. No females were found in OFWM practices. The reason reported was the cultural barriers of Pakhtoon Society.
10. Load shedding problem was reported in the areas where the source of irrigation was tube well. In these areas the farmers requested for the installation of solar energy systems along with the construction/improvement of Watercourses/WSTs.
11. Worth mentioning concern in the field survey is the cooperation of the OFWM staff. We can't succeed without their full cooperation in identifying the target farmers/Watercourses.

#### Conclusion

With the exception of some minor repetition, all the MTs are very comprehensive covering almost all aspects of monitoring and evaluation and impact assessments of the interventions of the OFWM department of the Khyber Pakhtunkhwa. However, it is also to be noted that some questions in the MTs may be relevant to some zones while others to other zones of the province.

#### Recommendations

1. The services of at least one OFWM employee should be ensured during the field visits so that the availability of the relevant farmers may be made possible.

2. For collecting the technical data, it is important to include an agriculture engineer as a member in the field team.
3. Benefits accrued to the farmers due to OFWM intervention may be taken in real terms not in nominal terms so that real picture of improvement in farm benefits will emerge.
4. Findings of the pretesting cannot be generalized because of the limited scope of the survey.

#### OUTCOME OF THE PRE-TESTING OF THE MONITORING TOOLS - ME&IE CONSULTANTS

The pre-testing of the Monitoring Tools in the field areas of the three Zones (Punjab, KP and Balochistan) was conducted from March 24, 2021 to March 27, 2021.

It was observed while the Pre-testing of the Monitoring Tools in the respective field areas that the MTs are very comprehensive covering almost all the aspects of the Monitoring and Evaluation and Impact assessments of the interventions.

However, it is also to be noted that some questions in the MTs may be relevant to some Zones while others to other Zones of the Province.

On the foregone, the present Monitoring Tools covering all the intervention will be refined and modified as per the field experience in the three Zones and the respondent's responses during the questions asked by them. Moreover, it is important to mention that due to unavoidable circumstances and COVID-19, the Pre-testing in the ICT, AJK and GB was not conducted. The Pre-testing of the MTs in these Units will be carried out shortly.

Moreover, at many sites the enough stakeholders were not present i.e. farmers etc. therefore ME&IE Consultants will perform the pre-testing activities again, if required.

#### 4.8 REFINEMENT OF MONITORING TOOLS

The refinement of monitoring tools is under process after pre-testing, in accordance with table below.

#### Remarks for Revision of Monitoring tools after Pre-Testing

##### 1-WUA/ Improvement of Watercourse\*

WC-MT NO	Title	Original MT Filling	Remarks
WC-MT-1	Watercourse Identification	Filled-2	Revised merged with MT-2
WC-MT-2	Brief Profile of sampled Watercourse	Filled-2	Revised merged with MT-1
New	Identification and Brief Profile of Watercourse		Revised/Merged
WC-MT-3	List of watercourse Share Holders	-----	Revised
WC-MT-4	List of watercourse Beneficiaries	-----	Revised
WC-MT-5	Questionnaire for Social and Gender	-----	Revised
WC-MT-6.1	Brief Profile of Beneficiaries of Sample Watercourse	Filled	Original ok
WC-MT-6.2	cost of production and income on sampled farm	Filled	Revision Under Process
WC-MT-6.3	Beneficiaries Perception about Saving of water	Filled	Original ok
WC-MT-7	Beneficiaries feedback and environment	-----	Revised
WC-MT-8	Spot Check of watercourse improvement	Filled	Revised
WC-MT-9	Measurement of Water Flow in a Sampled Watercourse	-----	Original ok

\*Title and no of MT may vary from the earlier tools title and number

**Remarks for Revision of Monitoring tools after Pre-Testing**

**2-Water Storage Tank\***

WST-MT NO	Title	Original MT Filling	Remarks
<b>WST -MT-1</b>	Identification of owner of Water Storage Tank	Filled	Revised
<b>WST -MT-2</b>	Spot Check of Water Storage Tank and Feedback	Filled	Revised merged with MT-3
<b>WST -MT-3</b>	Beneficiary feedback for Water Storage Tank	-----	merged with MT-2

\*Title and no of MT may vary from the earlier tools title and number

**Remarks for Revision of Monitoring tools after Pre-Testing**

**3-Laser Land Leveler\***

LLL-MT NO	Title	Original MT Filling	Remarks
<b>LLL -MT-1</b>	Identification of Laser Land Leveler/Service Provider	Filled-2	Revised
<b>LLL -MT-2</b>	Checklist for training of service provider/operator of Laser Land Leveling	Filled-2	Revised merged with MT-3
<b>LLL -MT-3</b>	service provider feedback and Follow-up for laser unit	Filled-2	Original ok
<b>LLL -MT-4</b>	Beneficiary feedback of user of laser land leveler	Filled-2	Revised

\*Title and no of MT may vary from the earlier tools title and number

**4.9 METHODOLOGY OF SAMPLE SIZE DETERMINATION ME&IE CONSULTANTS (NPIWC-II)**

Sampling is the process of choosing a representative portion (a respondent sample) of a population. The population is the entire group of items/ individuals of interest in a study for ME&IE study. Population comprises 4 different components viz Water Users Association, Watercourse Improvement, Water Storage Tank and Laser Land Leveler. Sampling design and sample size for each intervention will be drawn separately.

**1. Sample Size of Watercourses**

Generally, establishment of a watercourse association is a pre requisite for the improvement of a watercourse. So, the number of the target/sample will also represent the number/sample of water users

associations. In all there are 47,278 watercourses, scattered in the project area. As stated earlier in the inception report Cochran's formula and its modifications are considered appropriate in project situations. For example, in the Punjab province sample size was estimated by using Cochran formula, as under.

$$n_o = \frac{(z)^2(p)(q)}{(e)^2}$$

Whereas:

- $n_o$ =Sample size
- $e$  is the desired level of precision (i.e., the margin of error)
- $p$  is the (estimated) proportion of the population which has the attribute in question,
- $q$  is  $1-p$

- Z square is a numerical measurement that describes a value's relationship to the mean of a group of values.

Taking 90% confidence interval with  $\pm 5\%$  precision so,  $z\alpha/2=1.645$   $e=0.05$

$$p+q=1 \quad q=1-p$$

$$p=0.5 \quad q=1-0.5=0.5$$

So, while putting these values in formula we get:

$$n_o = \frac{(1.645)^2(0.5)(0.5)}{(0.05)^2}$$

$$n_o = 270.60 \sim 271$$

Cochran modified formula:

$$N=10,000$$

$$n = \frac{n_o}{1 + \left( \frac{n_o - 1}{10000} \right)}$$

$$= \frac{271}{1 + \left( \frac{271 - 1}{10,000} \right)}$$

$$= 263.8, \text{ say}$$

$$= 264$$

This modified formula is being used for sample size determination in each Province viz Punjab, KP and Balochistan. As regards the other units of the project GB and AJK sample size will be taken as 3 % of the population. As regards ICT areas whose population is too low, a sample size of 7 percent is considered measurable size for information from the target Watercourses. The sample size is given in Table-4.1.

Table 4.1: Sample Size of Watercourses

Sr. No.	Province /Unit	Target Population (Watercourses)	Sample Size	Say
1	Punjab	10,000	264	300
2	KP	13,000	265	300
3	Balochistan	20,389	268	450
4	GB	2,500	(3 %)	75
5	AJK	1,165	(3%)	35
6	ICT	224	(7%)	15
		<b>47,278</b>	<b>922</b>	<b>1175</b>

Considering the ground reality of the provinces, the estimated sample size in Punjab and KP was enhanced to 300 in each. Whereas in Balochistan it was enhanced to 450. So, the overall sample size increased from 922 to 1175. It is more than 2.28 percent of the total watercourses in the project area.

The Baseline study will be conducted in three phases and sample size will accordingly spread over three phases/periods. In each phase sampled watercourses will be divided into various districts of a respective province /unit to its allocated target.

The first phase baseline is likely to be started towards the end of 2nd financial year (2020-21) of this project. There are limited chances for getting information on (Before the startup of an intervention (particularly construction works of the watercourse) as most of the works might be completed or in the last stage of completion. It will not be possible to measure the water flow before improvement works starts.

The second phase of baseline will be started in the beginning of the 3rd financial year of the project (2021-22). There seems to be logic and ground realities that 1st and 2nd baseline will be conducted in one go and there will be only one report i.e. (Combine baseline)

The baseline will be started with watercourse improvement intervention (also applicable for other interventions) data at district level. Initially samples will be drawn proportionally from the target number of watercourse improvement intervention numbers for the year 2019-20, 2020-21. The sample will be chosen from the available number of watercourse (T.S. issued or improvement work is pending yet). Similarly, the 2021-22 target will be included later on.

Each watercourse has a Water Users Association. The association comprises its members/shareholders generally the landowners using the water of this watercourse. At the same time there are certain farmers which are non-owners/ non-member of this association.

Besides getting the feedback from the association, users are also interviewed for feedback. A list of total beneficiaries (owners/non-owners) on this watercourse will be prepared. Number of users on each watercourse varies from watercourse to watercourse. This reflects the beneficiary status regarding farm size, reburial status as well the farm location on the watercourse. Such data are used to draw the sample of beneficiaries.

In the second stage six beneficiaries (owners/non owners of land) on each watercourse will be selected with due representation of farm size, tendril status, location of the Watercourses. In all these 7050 (1175 \*6) beneficiaries will serve as feedback respondents of the baseline survey.

In addition to these six respondents generally male, one female member of these respondent's family using a convenient sampling method will also be sampled. This respondent will be asked questions regarding social structure and female participation in this project activities. So there will be in all 1175 extra respondents to be included in this sample size. In Punjab, there will be 300 extra female respondents.

## 2. Sample Size of Water Storage Tanks

We have used the same formula (Cochran's formula and its modifications) in estimation of sample size of water storage tank in the project area. The sample size becomes 300 (More than 2 %). Using the convenient sampling technique, the sample size is further divided proportionally in the Provinces / Units as shown in table 4.2.

**Table 4.2: Sample Size of Water Storage Tank**

Sr. No.	Province /Unit	Target population (WSTs)	Sample Size
1	Punjab	3,000	60
2	KP	5,000	100
3	Balochistan	5,507	110
4	GB	825	17
5	AJK	600	13
		<b>14,932</b>	<b>300</b>

The sample size in each province/unit will be divided into three phases and subsequently into districts in proportion of their targets.

There is generally one beneficiary of the water storage tank, i.e., the owner of the water tank. Therefore, 300 beneficiaries are our respondent farmers for feedback. In Punjab such beneficiaries/owners will be 60.

Baseline /end-line survey of WST beneficial/owner will also be conducted on the same pattern as for watercourse improvement intervention.

## 3. Sample of Laser Land Leveler

While using the same formula, as used for other interventions, the sample size for the project area is estimated to be 374 (2.2 %). In the units GB and AJK, the sample size is 40% as the population is too tiny but needs representation. Sample is distributed among the population of each Province / Unit proportionally as in **table 4.3.**

**Table 4.3: Sample Size of Laser Land Leveler**

Sr. No.	Province /Unit	Target LLL Service Provider	Sample Size
1	Punjab	9,500	300
2	KP	600	20
3	Balochistan	1,500	50
4	GB	5	2
5	AJK	5	2
		<b>16,610</b>	<b>374</b>

This sample will be further subdivided into phases and then in each district proportionally on the basis of yearly target. Generally, each Laser land Leveler will be given to an individual who will provide services to the farmers. It is the respondent for the purpose of evaluation.

It is felt that users of the Laser Land Leveler are the real beneficiaries of this service. So at least one user of each service provider vicinity will be taken into account and will also be interviewed in addition to the interview of the Laser land Leveler service provider. So in all 374 users of Laser Land leveling unit will form our beneficiary /Respondents. In Punjab the number of such beneficiaries/ respondents becomes 300.

## 4.10 DEVELOPMENT OF ANDROID BASED APPLICATION

The development of Android based application has started in the second week of February 2021 and is near to complete.

## 4.11 WEBSITE DEVELOPMENT OF NPIWC-II

The development of Website of NPIWC-II has been started in the first week of February 2021 and is about to complete.

## 4.12 DESIGNING OF DASHBOARD OF PROJECT INTERVENTIONS

The designing/development of MIS/GIS system followed the software engineering methods. Thus, user requirements elicitation, requirements analysis, system design, system implementation and maintenance were done in a circular fashion. Thereafter, evaluation will be done to test the efficacy, effectiveness, and efficiency of the management information system in the real environment. In the system development, both structured system analysis, design, object-oriented analysis, and design approaches will be used.

An established Management Information System will enable Federal and Provincial PMUs to demonstrate to key stakeholders whether the project is achieving the stated goals, outcomes, and outputs in accordance with targeted time frame.

The GIS based MIS will provide the means of:

- i) Comprehensively tracking the project inputs and outputs, using mainly the set of key performance indicators outlined under each component at frequent intervals;
- ii) Monitoring of project outcome indicators;
- iii) Robustly analyzing the relevant ME&IE data;
- iv) Reporting progress on an open-access and regular basis, to support knowledge sharing, greater transparency, and improved project governance.

The initial steps towards the development of MIS dashboard have been initiated in accordance with the ICT assignment TORs. MIS architecture design and database structural design are under process, meanwhile the UI (User Interface) design flows are also under creation. The MIS main structure of database is linked with the component's processes. As the processes will be finalized / communicated by Project Consultants' it will be integrated in the database structural design and the localization of these processes as per the zonal/unit based will also be integrated.

#### **4.13 MIS DASHBOARD PROCESS MONITORING INPUT TOOLS**

To monitor and track the project's component wise progress, ME&IE Consultants' developed data input tool, which will be later configured with Android application.

#### **4.14 TRAINING SESSIONS OF FIELD TEAMS AND KEY STAFF ON MONITORING TOOLS & ANDROID APPLICATION**

Mr. Rizwan Saleem ICT Manager has conducted the training session regarding using of Monitoring Tools & Android Application for all ME&IE Field Teams & Key Staff. Moreover, it was also decided to conduct series of virtual Training Sessions in the next month of April 2021, after pretesting of MTs in the field and refinement of MTs.

#### **4.15 TRAINING ON MEASUREMENT OF WATER FLOW (PYGMY CURRENT METER)**

A comprehensive Training Session for ME&IE Field Teams was conducted to use of Pygmy current meter for the measurement of Water Flow during the field activity.

## 5. WORK PLAN-ACTIVITIES OF FIRST QUARTER

The ME&IE activities initiating during the First Quarter 2021 (January 1, 2021 to March 31, 2021) are listed below. Time span detail is mentioned in the Tentative Work Plan. **Annex-A**.

### 5.1 PRE- FIELD ACTIVITIES

- i) Finalization and submission of Final Inception Report to the Client at the end of January 2021.
- ii) Meetings with Stakeholders.
- iii) Renovation of National office Islamabad and Zonal offices.
- iv) Operational of National office Islamabad and Zonal offices.
- v) Procurement of office Furniture, Equipment, Computer, Tabs/Smart Phone, Pygmy Current Meter and Vehicles, etc.
- vi) Acquiring the buildings for field offices.
- vii) Renovation/furnishing of buildings for field offices.
- viii) Establishment/operational of field offices.
- ix) Preparation of 3-months plan.

### 5.2 FIELD ACTIVITIES

- i) Mobilization of field teams.
- ii) Training sessions of field teams and key staff on Monitoring Tools & Android application.
- iii) Pre-testing of Monitoring Tools.
- iv) Refinement of Monitoring Tools.
- v) Training on Measurement of water flow (Pygmy Current Meter).
- vi) Determination of Sample size on District/Tehsil level.
- vii) Sampling and data collection methodology, Approval from Client.
- viii) Baseline Survey.

### 5.3 ICT ASSIGNMENT

- i) Mobilization of field teams.
- ii) Development of Android based Mobile Application.

- iii) Testing of Monitoring tools on Android based system.
- iv) Data collection of interventions in MIS/GIS database.
- v) Designing of dashboard of Project Interventions.

### 5.4 COORDINATION

- vi) Meeting of DTLs with respective DTL of PC.
- vii) Meeting of DTLs with respective DGs.
- viii) Field visit/meeting with senior field engineer.
- ix) Field visit/meeting with DA, DDA and ADA.

### 5.5 MATRIX OF RESPONSIBILITIES

Matrix of Responsibilities is placed at **Annex-B**.

### 5.6 DELIVERABLES

The detail of deliverables of ME&IE Consultants with the timelines are as under:

Document	Status
Draft Inception Report	Submitted
Final Inception Report	Submitted
Monthly Monitoring Report (First)	Submitted
Monthly Monitoring Report (Second)	Submitted
Monthly Monitoring Report (Third)	To be submitted on Stipulated time.
Quarterly Monitoring & Evaluation Report	To be submitted on Stipulated time.

Deliverables/Reporting Requirements is placed at **Annex-D**.

## 6. ISSUES NEED TO BE ADDRESSED

The ME&IE Consultants has been facing following constraints for timely initiating the activities:

- Non-availability of complete up-to-date inventory / data of all interventions from Client, Provincial Agriculture departments & NWMC (NESPAK) till date.
- Due to non-availability of NWMC (NESPAK) deliverables/reports, ME&IE Consultants are facing hurdles to evaluate working of NWMC. In this regard the cooperation of NWMC and respective Directorates is required.
- Non-availability of resources in time from Client.

# ANNEXES A to D

## ANNEX-A: TENTATIVE WORK PLAN

## ANNEX-A: TENTATIVE WORK PLAN

<b>TENTATIVE WORK PLAN</b> <b>ME &amp; IE CONSULTANTS - NPIWC-II</b>												<b>LEGEND</b>					
NO.	ACTIVITIES	3 Months - Year 2021 (Weeks)															
		January				February				March							
		WK-1	WK-2	Wk-3	Wk-4	Wk-1	Wk-2	Wk-3	Wk-4	Wk-1	Wk-2	Wk-3	Wk-4	Wk-1	Wk-2	Wk-3	Wk-4
1	<b>Pre-field Activities:</b>																
	1.1 Incorporating the comments in Final Inception Report.																
	1.2 Meetings With stakeholders (DGs OFWM, NPC & PC).																
	1.3 Renovation of National office Islamabad and Zonal offices.																
	1.4 Operational of National office Islamabad and Zonal offices.																
	1.5 Procurement of office Furniture, Equipment, Computer, Tabs/Smart Phone, Pygmy Current Meter and Vehicles, etc.																
	1.6 Acquiring the buildings for field offices.																
	1.7 Renovation/furnishing of buildings for field offices.																
	1.8 Establishment/operational of field offices.																
	1.9 Preparation of 3-months plan.																
2	<b>Field Activities:</b>																
	2.1 Mobilization of field teams.																
	2.2 Training sessions of field teams and key staff on Monitoring Tools & Android application.																
	2.3 Pre-testing of Monitoring Tools.																
	2.4 Refinement of Monitoring Tools.																
	2.5 Training on Measurement of water flow (Pygmy Current Meter).																
	2.6 Determination of Sample size on District/Tehsil level.																
	2.7 Sampling and data collection methodology, Approval from Client.																
	2.8 Baseline Survey.																
3	<b>ICT Assignment:</b>																
	3.1 Development of web site of NPIWC-II.																
	3.2 Development of Android based Mobile Application.																
	3.3 Testing of Monitoring tools on Android based system.																
	3.4 Data collection of interventions in MIS/GIS database.																
	3.5 Designing of dashboard of Project Interventions.																
4	<b>Coordination</b>																
	4.1 Meeting of DTLs with respective DTL of PC.																
	4.2 Meeting of DTLs with respective DGs.																
	4.3 Field visit/meeting with senior field engineer.																
	4.4 Field visit/meeting with DA, DDA and ADA.																
5	<b>Deliverables:</b>																
	5.1 Final Inception Report.																
	5.2 Monthly Monitoring Report.																
	5.3 Quarterly Monitoring Report.																

## ANNEX-B: MATRIX OF RESPONSIBILITIES

**MATRIX OF RESPONSIBILITIES**

LEGEND			
●	Primary Responsibility		
○	Secondary Responsibility		
○	Assistance		

SR. NO.	DELIVERABLE / ACTIVITIES	NPC-FPMU	Agriculture Dept. (OPUWMA)	Project Consultants	ME&IE Consultants
1	<b>Provision of Pre-requisite data of project components for starting of Field Activities:</b> <ul style="list-style-type: none"> <li>Organization of Water Users Associations,</li> <li>Watercourses Improvement,</li> <li>Water Storage Tanks,</li> <li>Laser Land Levelers,</li> </ul>	○	●	-	-
2	<b>Certification of operational documents of the project,</b> <ul style="list-style-type: none"> <li>Design, cost estimates, completion reports of watercourses,</li> <li>Design, cost estimates, completion reports of water storage tanks,</li> </ul>	○	○	●	-
3	Undertake baseline, midline and endline surveys of the project activities/interventions in all the project areas.	-	-	-	●
4	Develop monitoring strategy, framework and Result Based Monitoring (RBM) indicators,	-	-	-	●
5	Assessing the water saving per annum on watercourse and water storage tanks as well as aggregate due to the project interventions.	-	-	-	●
6	Assessing the improvement in water availability due to provision of conveyance system.	-	-	-	●
7	Assessing the economic benefits to the agriculture in terms of increase in yield, irrigated area, cropping pattern, cropping intensity, farm income and employment in command area of watercourses and water storage tanks.	-	-	-	●
8	Assessing the extent of community mobilization, financial and administrative sustainability of Water Users' Associations and ensuring the maintenance of watercourses, water storage tanks and laser land levelers.	-	-	-	●
9	Economic Impact of project interventions.	-	-	-	●
10	Carryout impact evaluation of the project investment on the economy and stakeholders.	-	-	-	●
11	Preparation of Monthly, Quarterly and Annual Monitoring, Evaluation and Validation Reports of the project activities.	-	-	-	●
12	Develop a website containing information of facilities and services, applications, procedures, watercourses, water storage tanks, and laser levelers database etc. (Maintaining website should be the responsibility of project staff).	-	-	-	●
13	Provide technical support for the development of a custom-designed mobile application (Android) to capture on-site project progress, geo tagged photos; should be synchronized with the central MIS/GIS database and application for instant reporting and feedback to the	-	-	-	●

## ANNEX-C: MONITORING LOG-FRAME

### Annex-C: Monitoring Log-frame

Project subcomponents	Targets	Activities	Outputs	Outcome-1	Outcomes-2	Goals / Impact	Methodology for measuring results
C1: Organization of Water Users' Associations (WUAs)	Reactivation of existing / organization of water users' associations. Ensuring one on each target watercourse. Total WUAs ensured 47,278.	a) Community mobilization at 47,278 watercourses	a) Total 47,278 WUAs reactivated / established/registered	a) Right of way of 47,278 watercourses available b) Skilled and unskilled labour required for watercourse improvement available c) Construction material for civil works of watercourses procured d) Alternate arrangement for water conveyance during construction made e) Watercourse improved	a) Disputes among the water users settled b) Farmers' branched improved c) Water allocation made amicably d) Maintenance of watercourses, WST and laser units done e) Cooperation among farmers increased	a) 47,278 watercourses improved and 15 percentage points conveyance losses reduced b) Litigation among farmers reduced	a) The functioning of the WUAs will be established through sample interview surveys of WUAs members twice during the project period
C2: Watercourses Improvements	Improvement of 47,278 watercourses on	a) Establishment of 47,278 Water users'	a) 47,278 WCAs established;	a) Conveyance losses for improved	a) Increase in cropping intensity on	a) Increase in farm income;	a) The water flow measurements will be carried

Project subcomponents	Targets	Activities	Outputs	Outcome-1	Outcomes-2	Goals / Impact	Methodology for measuring results
	cost sharing basis: 40% farmers in terms of labour, and 60% funded by project.	associations (WUAs); b) Registration of 47,278 WUAs; c) Improvement and realignment of earthen section of 47,278 watercourses; d) Lining of up to 50% length of 47,278 watercourse either by: <ul style="list-style-type: none"> <li>• Precast concrete parabolic lining (PCPL) segments, or</li> <li>• Rectangular brick masonry, or any other method as approved by the project</li> </ul>	b) 47,278 WCAs registered; c) 47,278 watercourses improved and lined;	watercourses decreased by about 15 percentage points. b) 1.654 million households benefited from the activity; c) 11.347 million acres served with improved watercourses	improved watercourses by 5-24%; b) Increase in crop yields. c) Increase in irrigated area d) Increase in agriculture output per unit of water by about 37%	b) Increase in employment for farm labour; c) Reduction in poverty; d) Enhanced food security for the country.	out at before and after watercourse improvement on 2-5% sample basis; b) Agriculture survey before and after watercourse improvement on 2-5% sample basis; c) The survey will determine: <ul style="list-style-type: none"> <li>• Cropping pattern before and after the improvement;</li> <li>• Cropping intensities before and after improvement;</li> <li>• Before and after crop yields;</li> </ul>

Project subcomponents	Targets	Activities	Outputs	Outcome-1	Outcomes-2	Goals / Impact	Methodology for measuring results
							<ul style="list-style-type: none"> <li>• Before and after employment;</li> </ul> <p>d) The difference between before and after will be considered the result of the intervention after netting out the contribution of the growth pattern of the crop sector otherwise.</p>
C3: Construction of Water Storage Tanks (WSTs)	a) Construction of 14,932 water storage tanks	a) 14,932 small farmers mobilized to construct water storage tanks for irrigation  b) They agree to contribute 40% of the cost	a) 14,932 WSTs constructed  b) 14,932 WSTs operated and maintained	a) Water which was otherwise largely going to be wasted is saved  b) Irrigation provided at critical stages of the crops  c) Flexibility achieved for irrigation	a) More area irrigated  b) Increased cropping intensities	a) Increased crop yields  b) Increased total crop output quantum  c) Increased farm income  d) Increased farm employment	a) 2-5% sample of WSTs will be surveyed  b) A data collection form will be designed to measure water saving due to WSTs  c) The forms used for baseline and

Project subcomponents	Targets	Activities	Outputs	Outcome-1	Outcomes-2	Goals / Impact	Methodology for measuring results
		c) Agree to first construct the tank with his/her own funds and then received subsidy at 40% on issuance of FCR					impact surveys in case of watercourses will also be used for WSTs d) Same data analysis will be carried out here as in case of watercourses.
C4: Provision of Land Leveling Units	a) Provision of 11,610 laser land leveling units to farmers and service providers on a cost sharing basis: 50% by farmer / service provider and 50% by the project.	a) 11,610 laser units provided to farmers / service providers; b) Farmers trained in using the units.	a) 11,610 farmers / service providers received PLL units; b) Farmers / service providers received training in using the units.	a) Land levelled on Farmers' / service providers' farms; b) Land levelled on fellow farmers on rent; c) Total 3.483million acres levelled by 11,610 units.	a) Water application efficiency increased at field level; b) Even germination of seed. c) Field application losses reduced by 10 percentage points d) Water productivity increased by 24%	e) Increased area under irrigated crops; f) Enhanced crop yields g) Increased farm income	a) The land levelling is expected to save irrigation water and result in better and even germination of seeds which can enhance crop yields. The crop yields thus affected will be reflected in agriculture sample surveys. b) 2-4% sample units will be visited by

Project subcomponents	Targets	Activities	Outputs	Outcome-1	Outcomes-2	Goals / Impact	Methodology for measuring results
							<p>ME&amp;IE Consultants teams after one years of delivery</p> <p>c) The unit will be verified</p> <p>d) Area treated during the year will be collected</p> <p>e) Farmers' feedback collected on quality of the unit, quality of the after-sale service, etc.</p>

## ANNEX-D: DELIVERABLES/REPORTING REQUIREMENTS

## ANNEX-D: DELIVERABLES/REPORTING REQUIREMENTS

### Deliverables/Reporting Requirements

Sr. No.	Document	Copies	Due
1	Draft Inception Report	8	45 days after the effectiveness of the Consulting services Agreement.
2	Final Inception Report	15	One week after the issuance of comments by the Client on Draft Inception Report
3	Monthly Monitoring Report	10	10 <sup>th</sup> of the following month
4	Baseline Survey Report	10	4 months after start of the assignment
5	Midline Survey Report	10	In the middle of the assignment
6	Endline Survey Report	10	At the end of the endline survey
7	Quarterly Monitoring and Evaluation Report	10	10 <sup>th</sup> of the first month of following quarter
8	Annual Monitoring and Evaluation Report	10	During first month of following year
9	Draft Assignment Completion Report	5	At completion of physical works / activities
10	Final Completion Report	25	At completion of works as well as financial transactions
11	Special Reports	10	As and when required