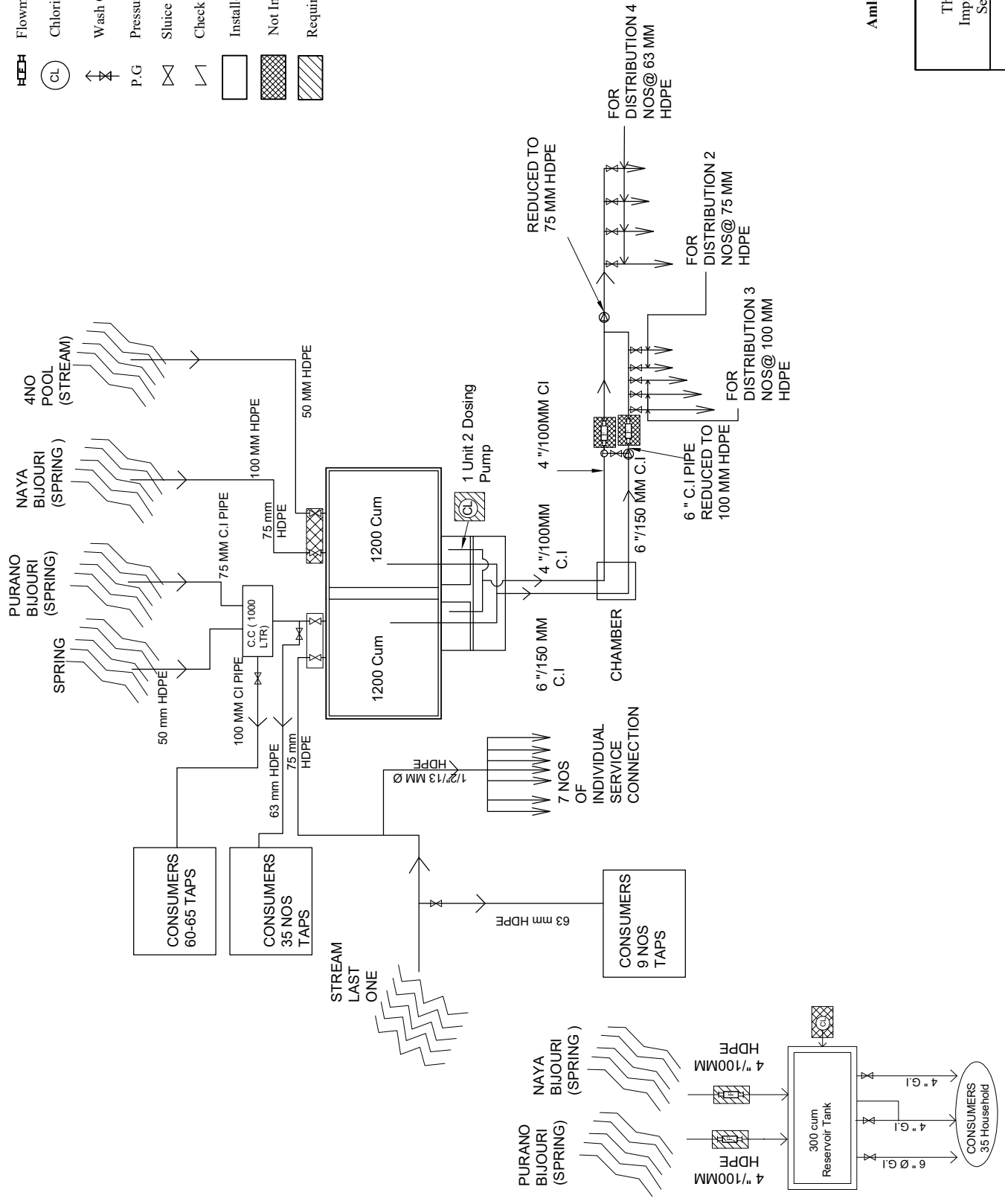


Appendix 2.19

Target WUSCs Schematic Flow Diagram

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Amlekhgunj Water Users Committee
 Bara District
 Province no 2

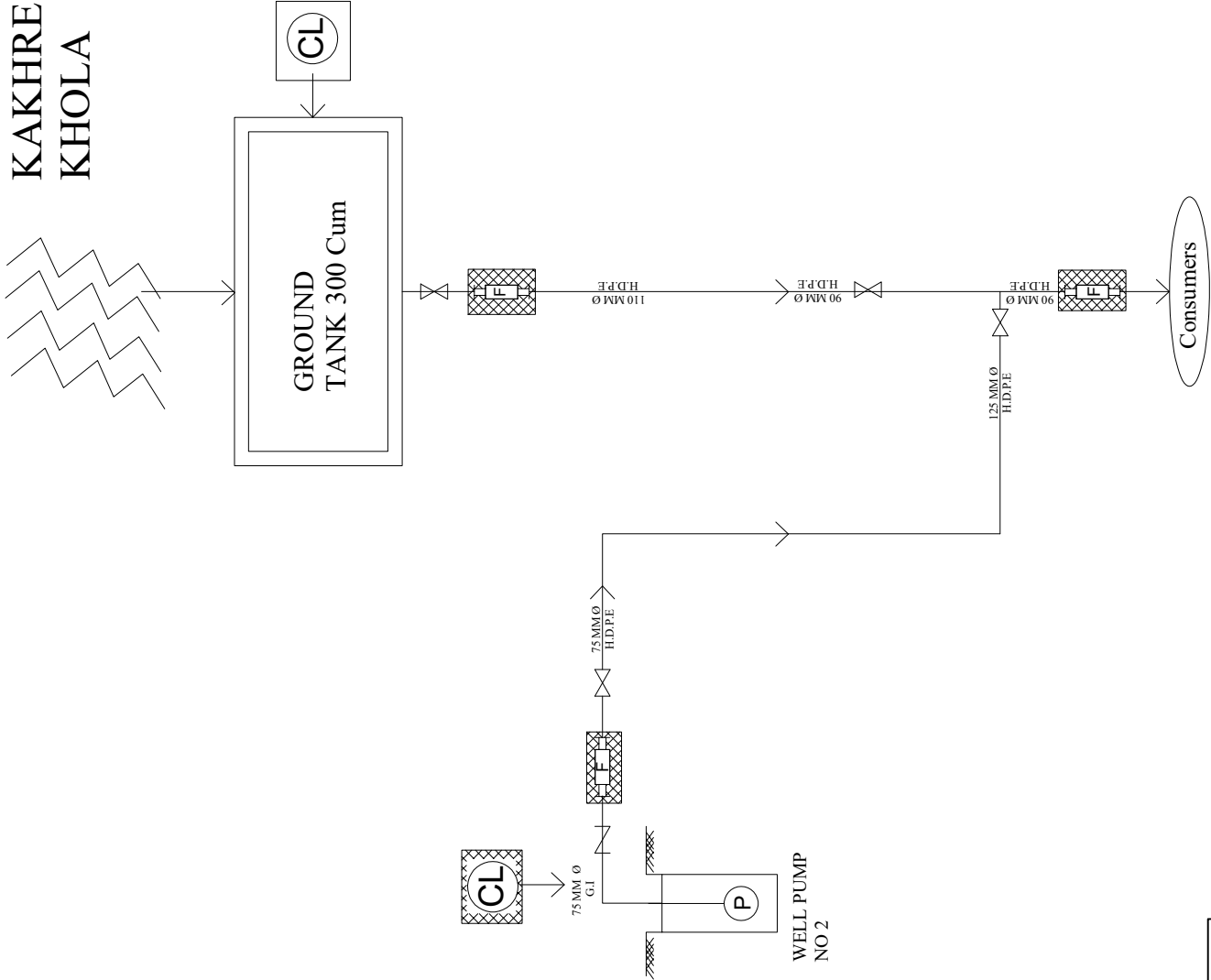
Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMP II)
 Drawing Title:
 Schematic Flow Diagram Of Amlekhgunj
 Water Users Committee
 Bara, Nepal
 Scale: Not in Scale

Revised
 Date: 27/06/2021
 Date: 25/03/2020
 Date: 18/08/2019
 Date: 26/6/2019
 Date: 25/4/2019
 Date: 11.2.2019
 Date: 11/8/2017
 DD/MM/YYYY

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

KAKHRE
KHOLA












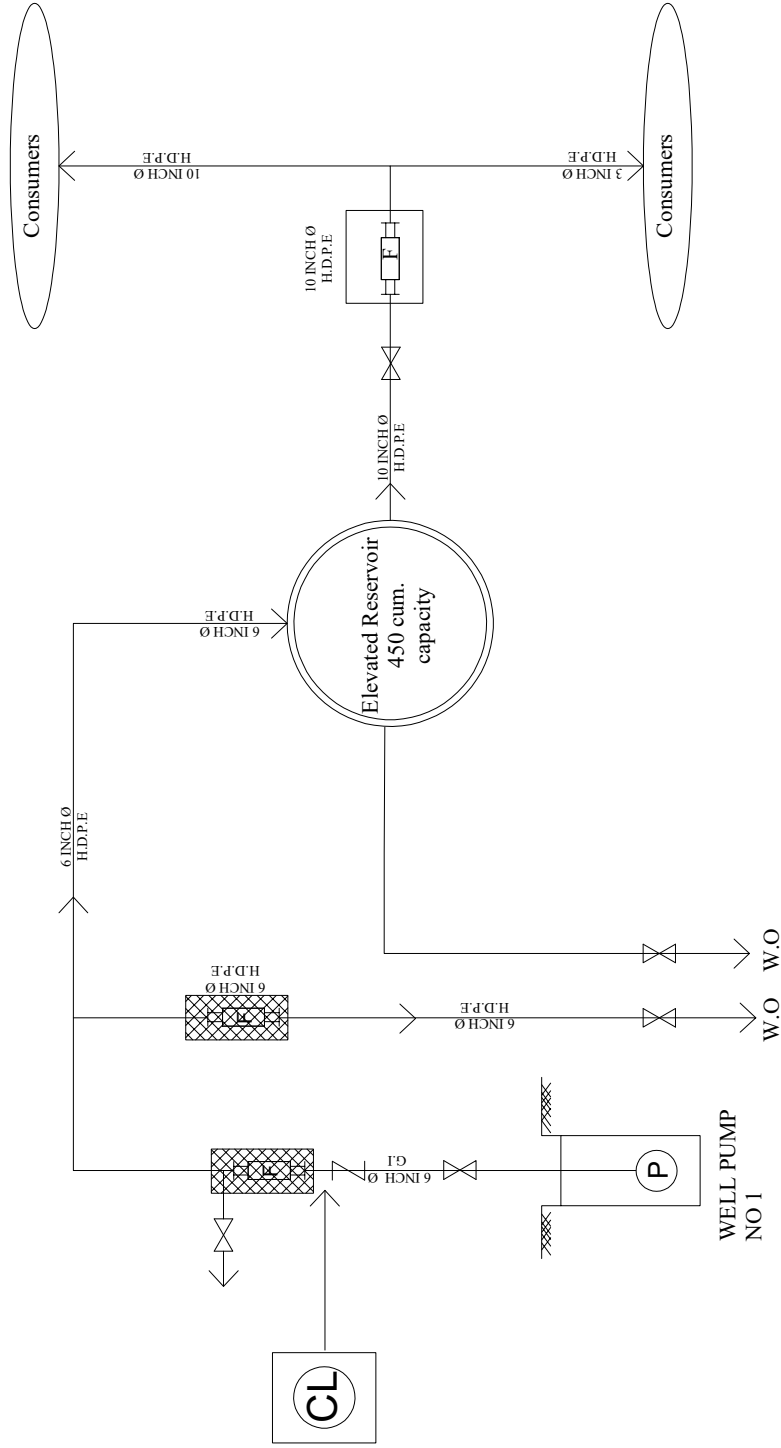
Bharatgunj singhaul Water Users Committee, Bara District,
Province No.2

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)		Date: 11/8/2017 Scale: Not in Scale
Drawing Title: Schematic Flow Diagram Of Bharatgunj Water Users Committee Bara, Nepal		

Revised
 Date: 18/08/2019
 Date: 26/6/2019
 Date: 19/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Dumarbana Water Users Committee, Bara District,
Province No.2










Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

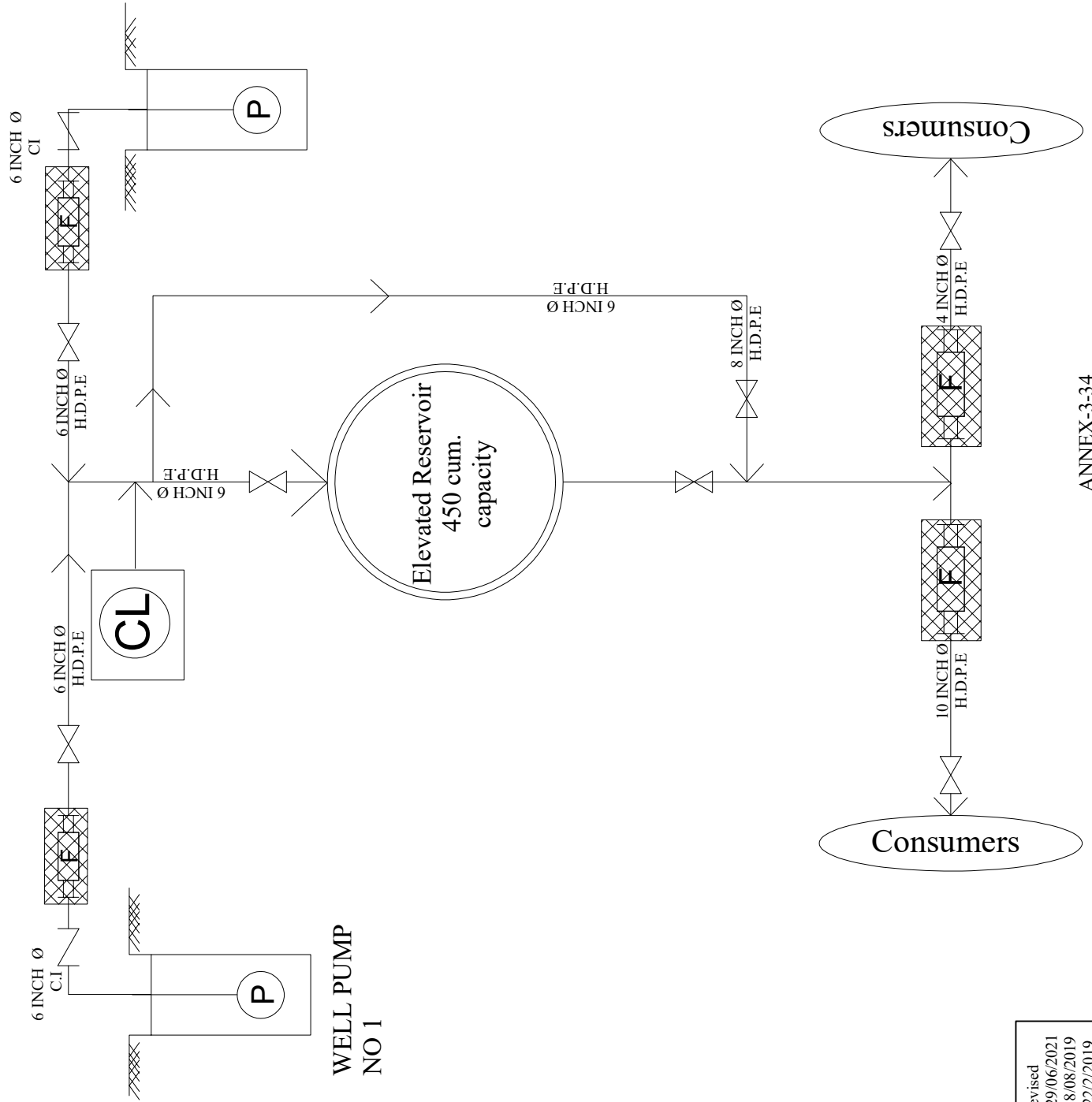
Drawing Title:
Schematic Flow Diagram Of Dumarbana
Water Users Committee
Bara, Nepal

Date: 11/8/2017
Scale: Not in Scale

Revised
Date: 28/06/2021
Date: 18/08/2019
Date: 26/6/2019
Date: 22/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G.
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



WELL PUMP
NO 1

Gadimai Water Users Committee, Bara District,
Province No.2










Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

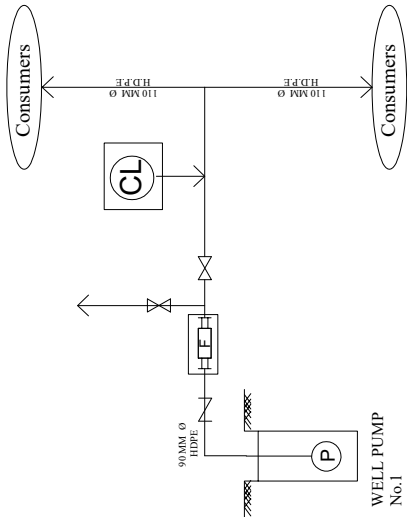
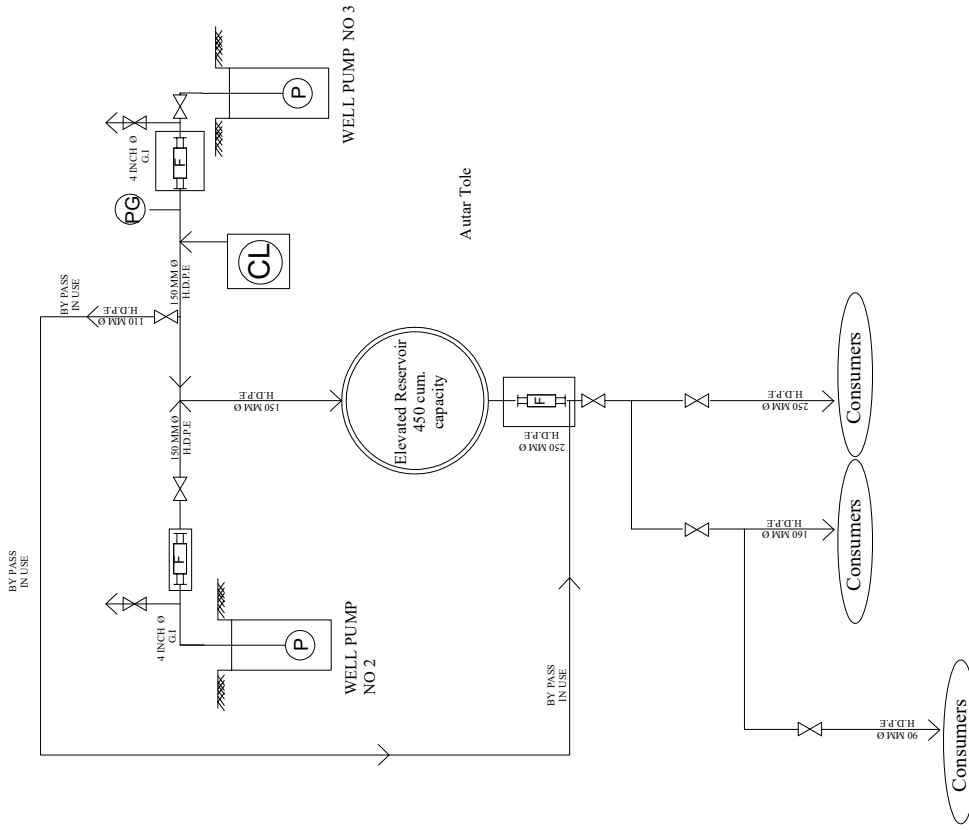
Drawing Title:
Schematic Flow Diagram Of Gadimai
Water Users Committee
Bara, Nepal

Date: 11/8/2017
Scale: Not in Scale

Revised
Date: 29/06/2021
Date: 18/08/2019
Date: 22/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Thado Line

Nijgadh Water Users Committee
Bara District, Province No.2

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIIP II)

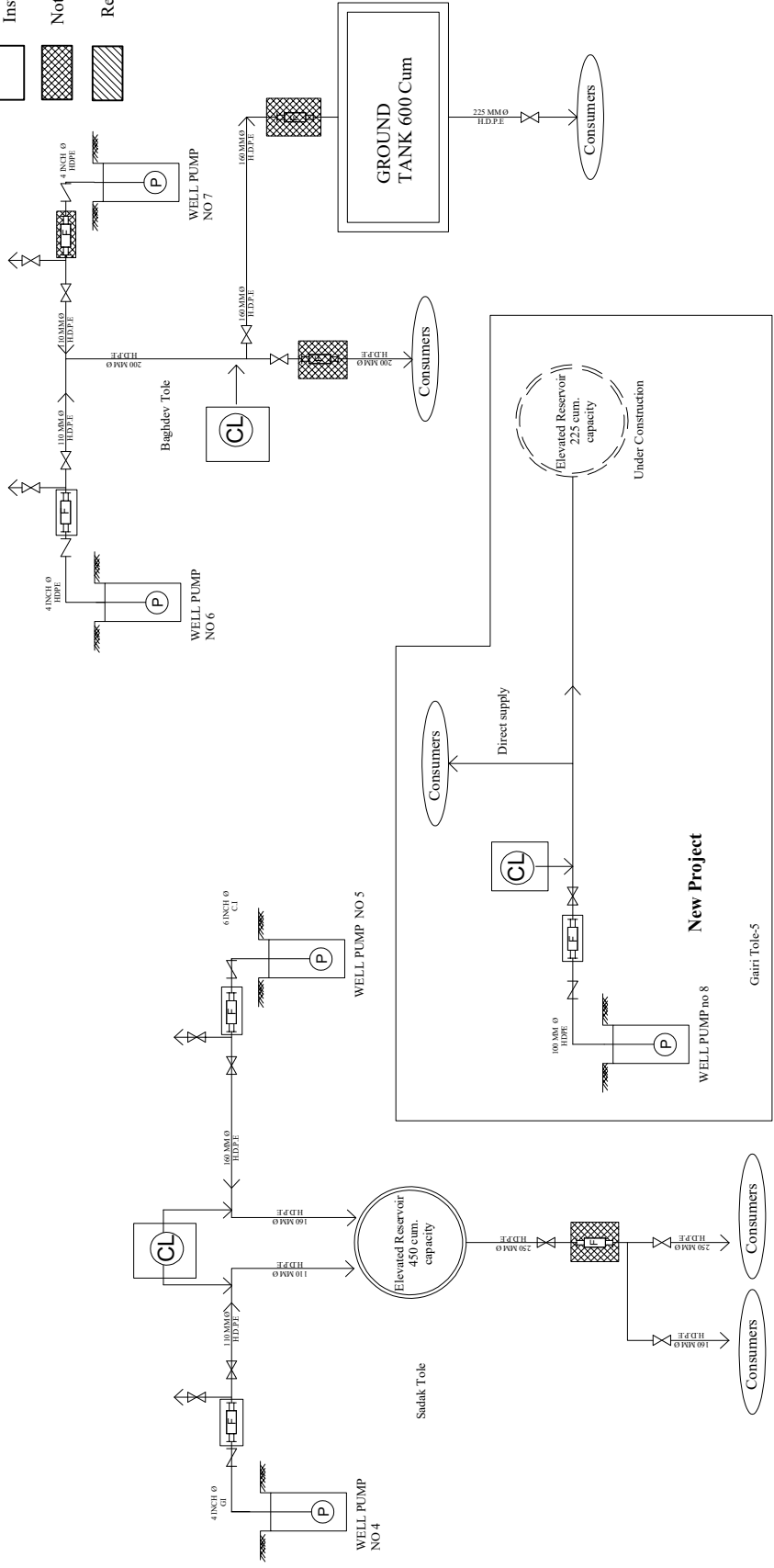
Drawing Title:
Schematic Flow Diagram Of Nijgadh
Water Users Committee
Bara, Nepal

Date: 11/8/2017
Scale: Not in Scale

Revised
Date: 29/06/2021
Date: 18/08/2019
Date: 26/6/2019
Date: 22/2/2019

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



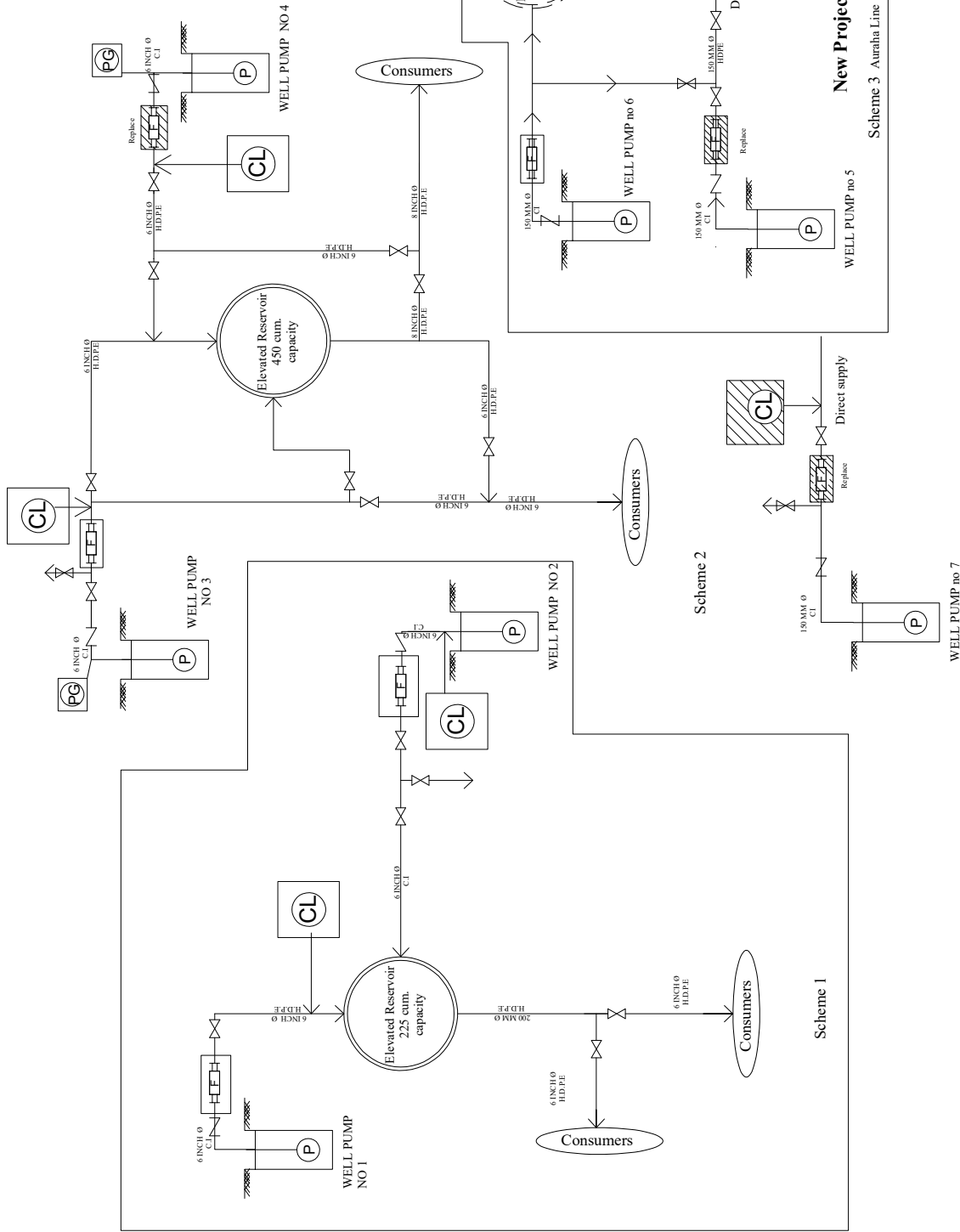
Nijgadh Water Users Committee, Bara District,
Province No.2

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Nijgadh Water Users Committee Bara, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised
Date: 29/06/2021
Date: 18/08/2019
Date: 26/6/2019
Date: 22/2/2019

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Points



Simara Water Users Committee
Bara District
Province no:2

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Simara
Water Users Committee
Bara, Nepal

Scale: Not in Scale

Scheme 4 Ramban area

WELL PUMP no 7

Scheme 2

Scheme 3 Auraha Line

New Project

WELL PUMP no 5

WELL PUMP no 6

WELL PUMP NO 3

WELL PUMP NO 2

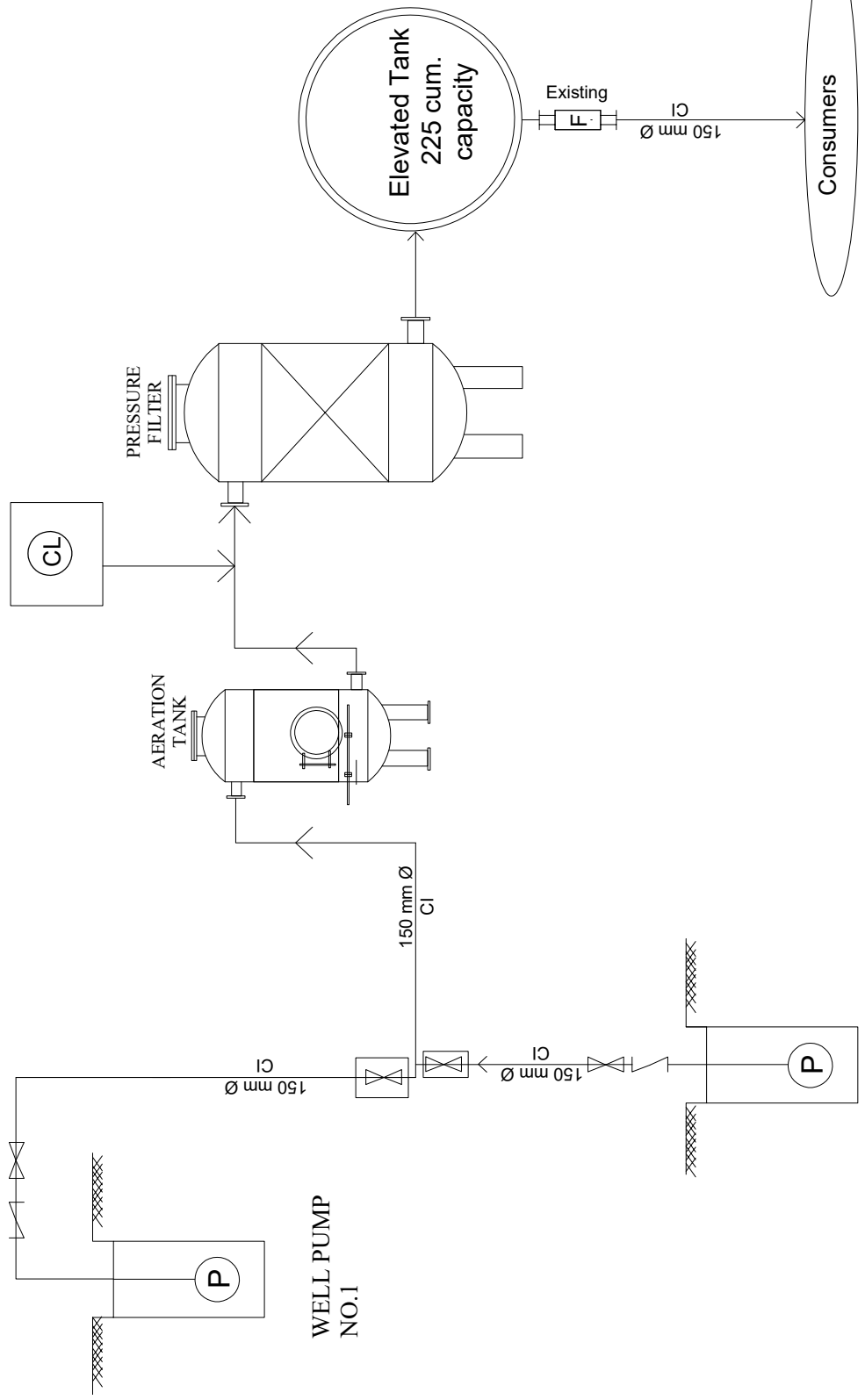
WELL PUMP NO 1

WELL PUMP NO 4

Revision Date:	29/06/2021
	25/03/2020
	18/08/2019
	24-4-2019
	11-9-2018

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



WELL PUMP
NO.2

WELL PUMP
NO.1

Elevated Tank
225 cum.
capacity










Consumers

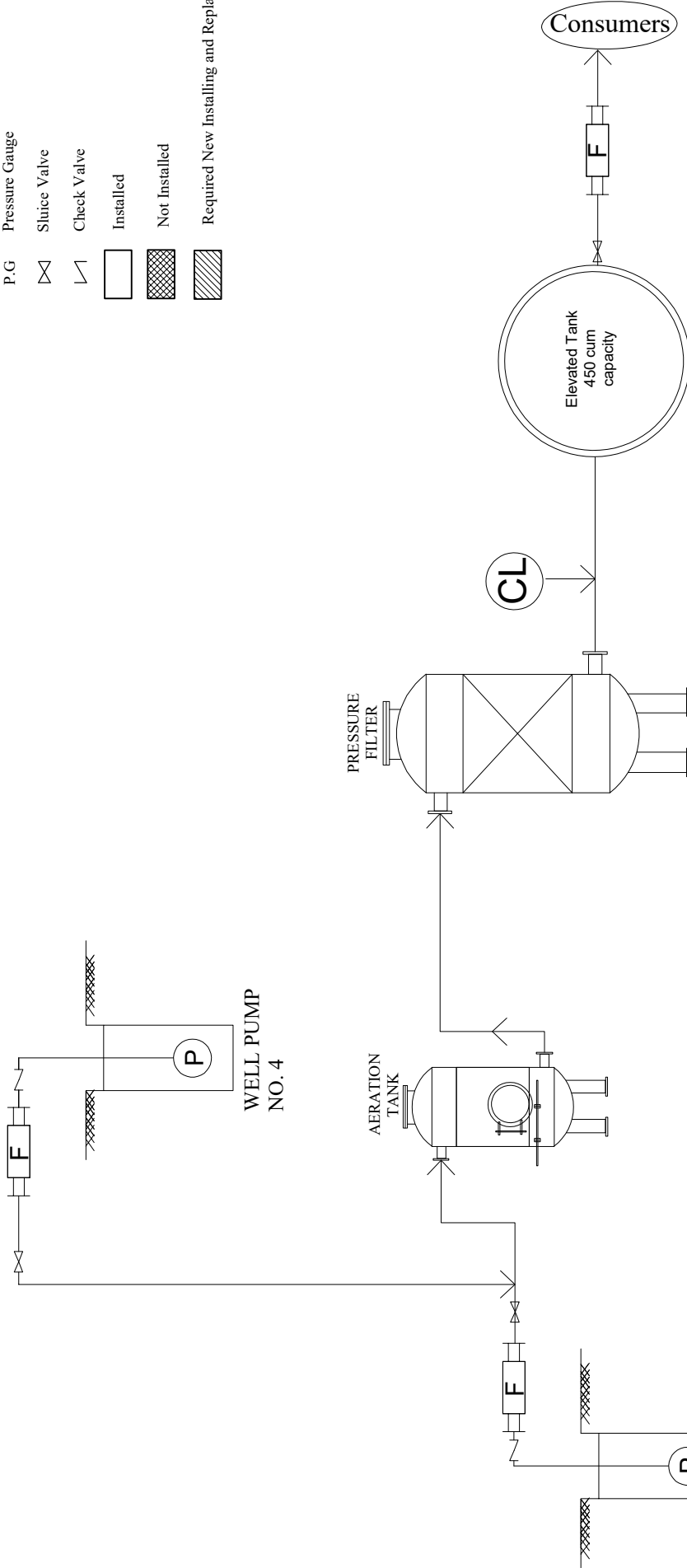
Gulariya 1 Water Users Committee
Bardiya District
Province no 5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Gulariya-1 Water Users Committee	Scale: Not in Scale

Revised
Date: 25/08/2011
Date: 06/08/2019
Date: 25/11/2019
Date: 11.2.2019
Date: 11/8/2017
DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












Scheme 2 Under construction

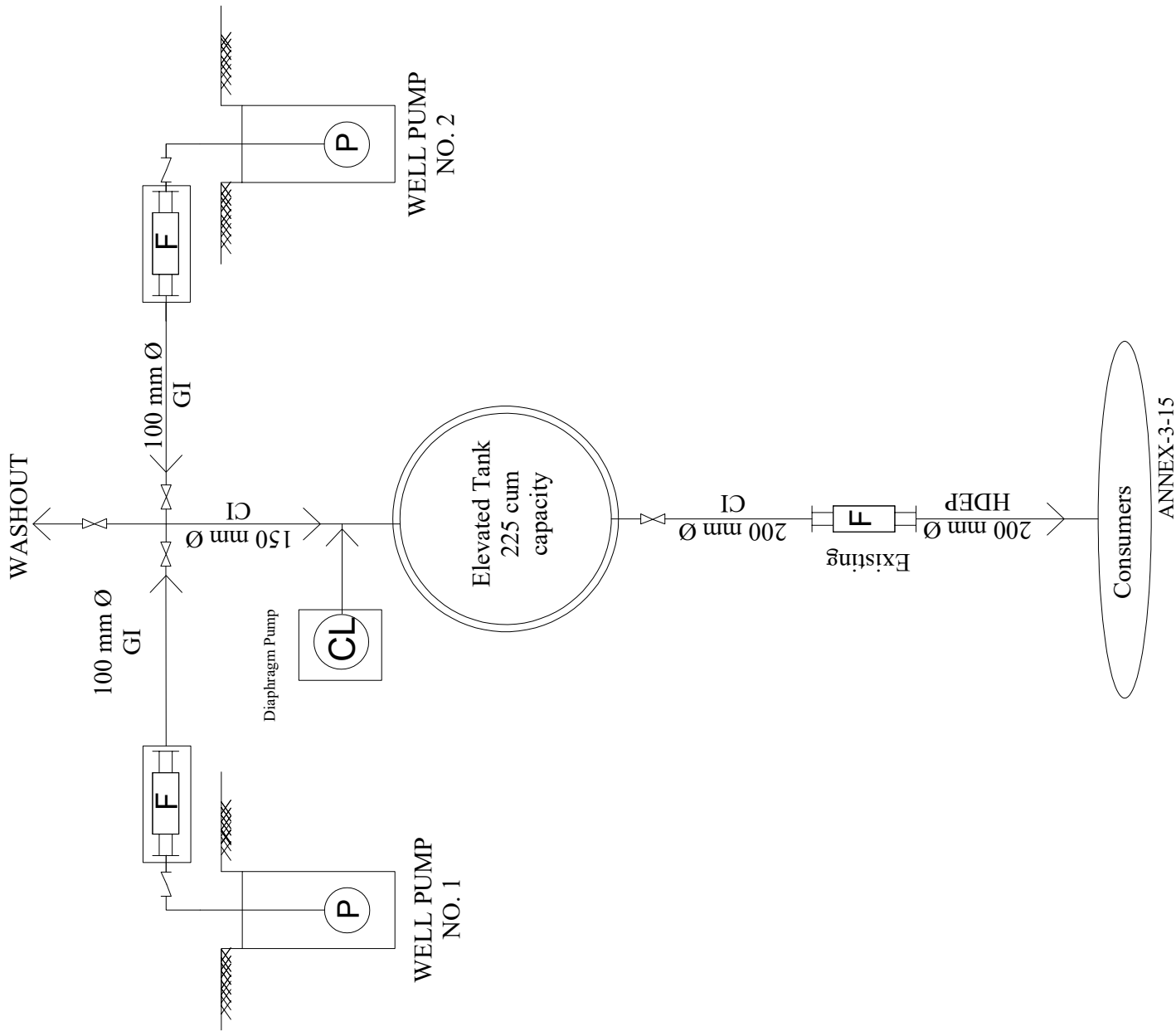
Gulariya J Water Users Committee
Bardiya District
Province no 5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Gulariya-J Water Users Committee Bardiya, Nepal	
Scale: Not in Scale	

Revised
Date: 25/08/2011
Date: 08/02/2019
Date: 25/11/2019
Date: 11.2.2019
Date: 11/8/2017
DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Gulariya II Water Users Committee, Bardiya District,
Province No.5










Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

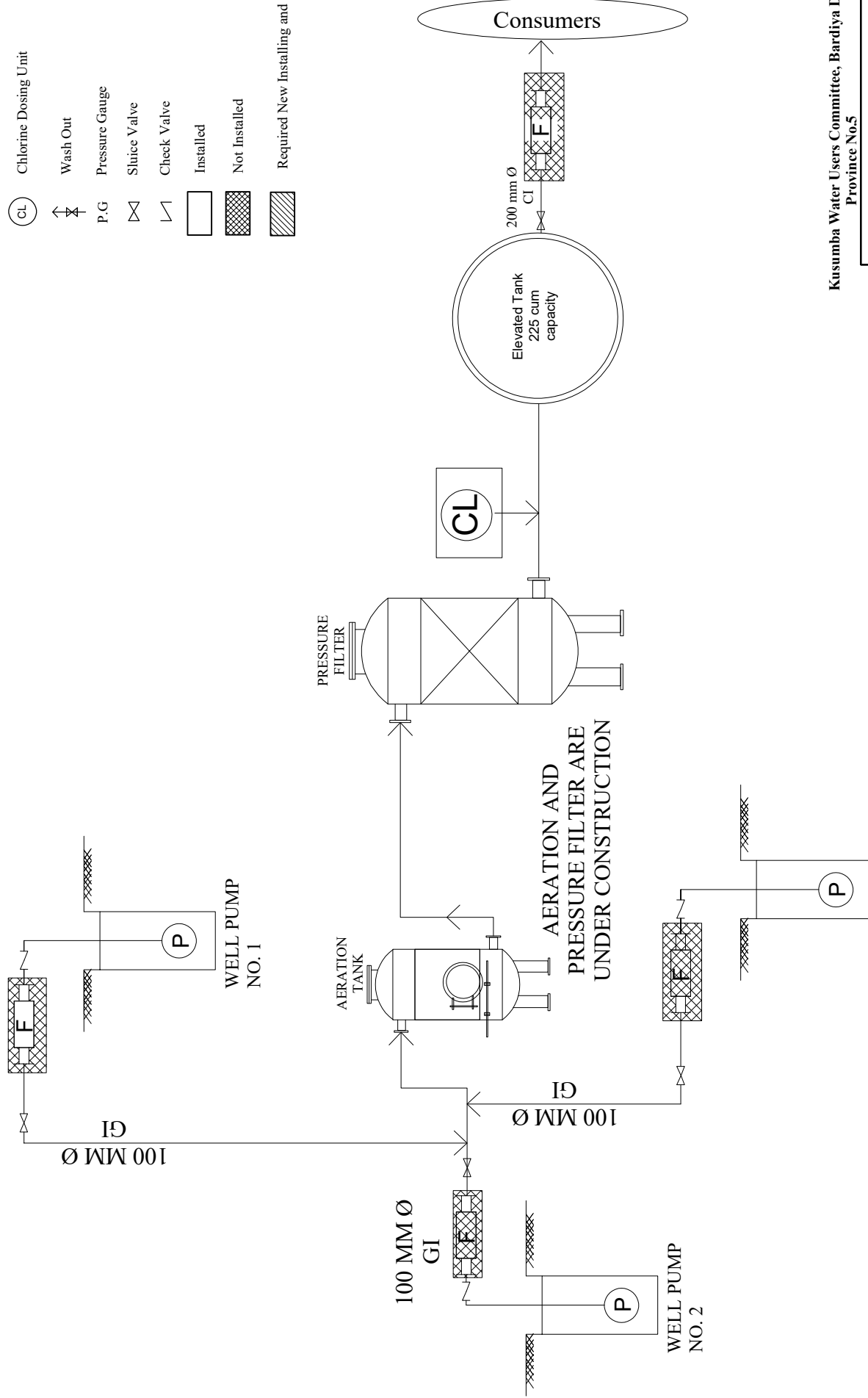
Drawing Title:
Schematic Flow Diagram Of Gulariya II
Water Users Committee
Bardiya, Nepal

Date: 11/8/2017

Scale: Not in Scale

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Kusumba Water Users Committee, Bardiya District,
Province No.5

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Kusumba
Water Users Committee
Bardiya, Nepal

Date: 11/8/2017










Scale: Not in Scale

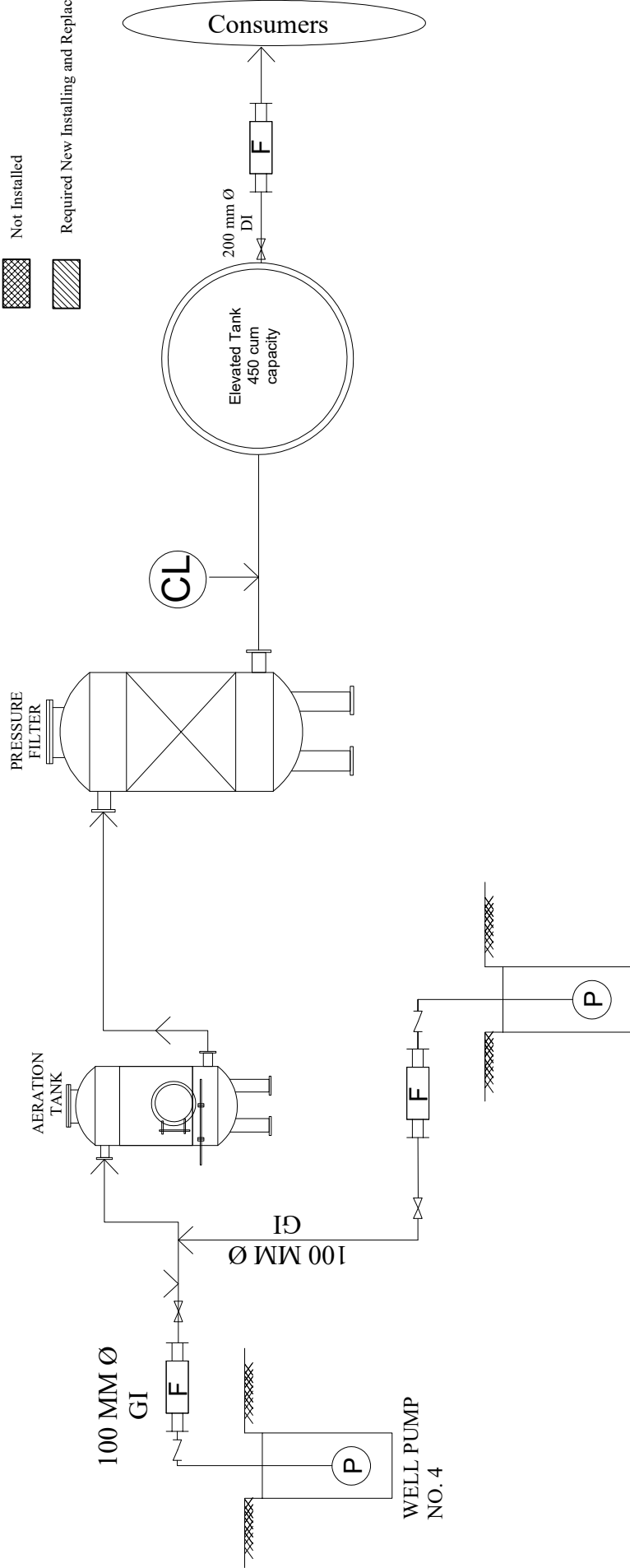
WELL PUMP
NO. 3 (Under
Construction)

Revised
Date: 22/06/2021
Date: 18/08/2019
Date: 11/2/2019

ANNEX-3-16(I)

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point











SCHEME 2 UNDER
CONSTRUCTION

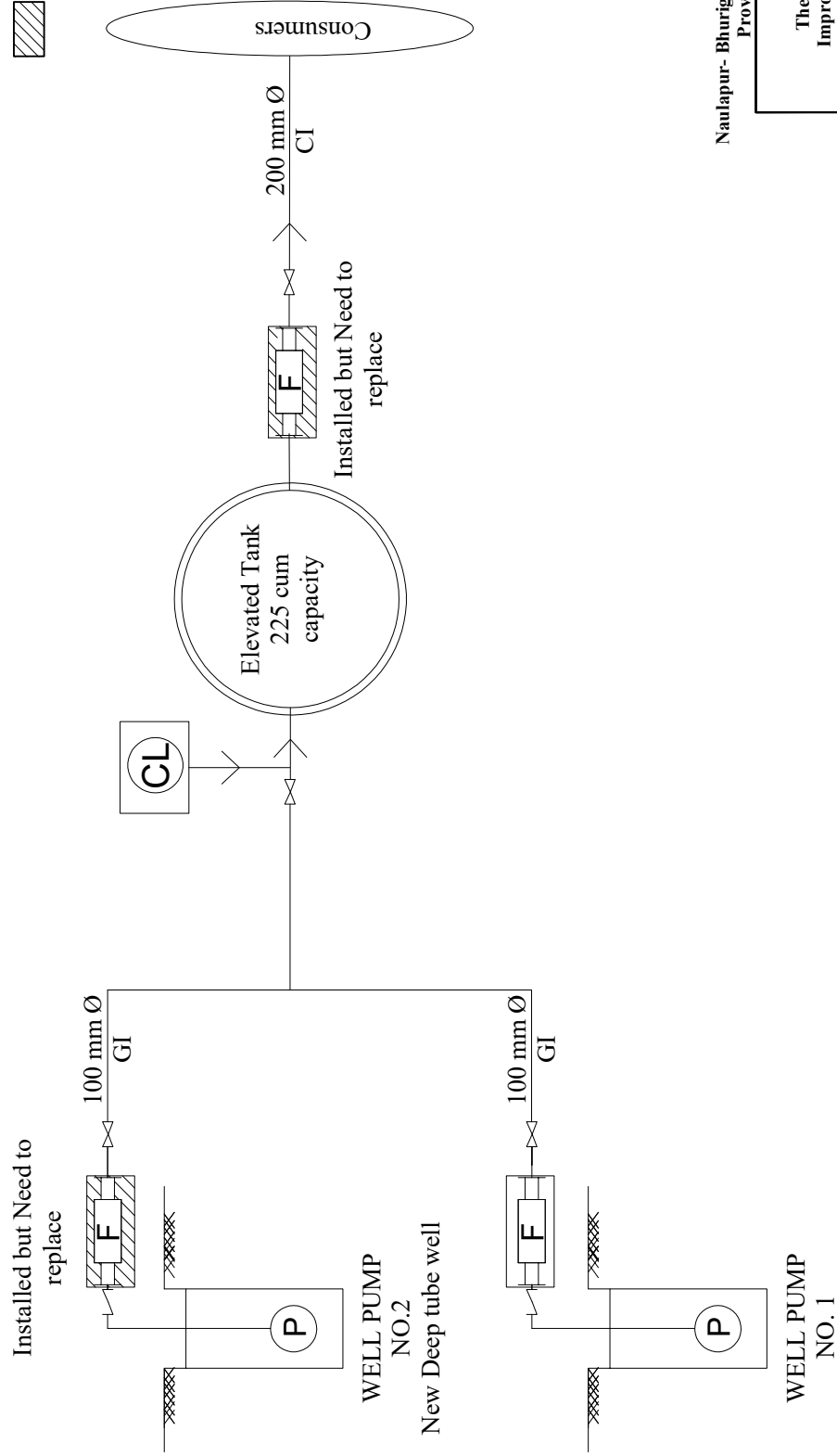
WELL PUMP
NO. 5

Kusumba Water Users Committee, Bardiya District,
Province No.5

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Kusumba Water Users Committee Bardiya, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Points



Naulapur- Bhurigaun Water Users Committee, Bardiya District, Province No.5

Project Name:
The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)










Drawing Title:
Schematic Flow Diagram Of Naulapur-Bhurigaun Water Users Committee Bardiya, Nepal

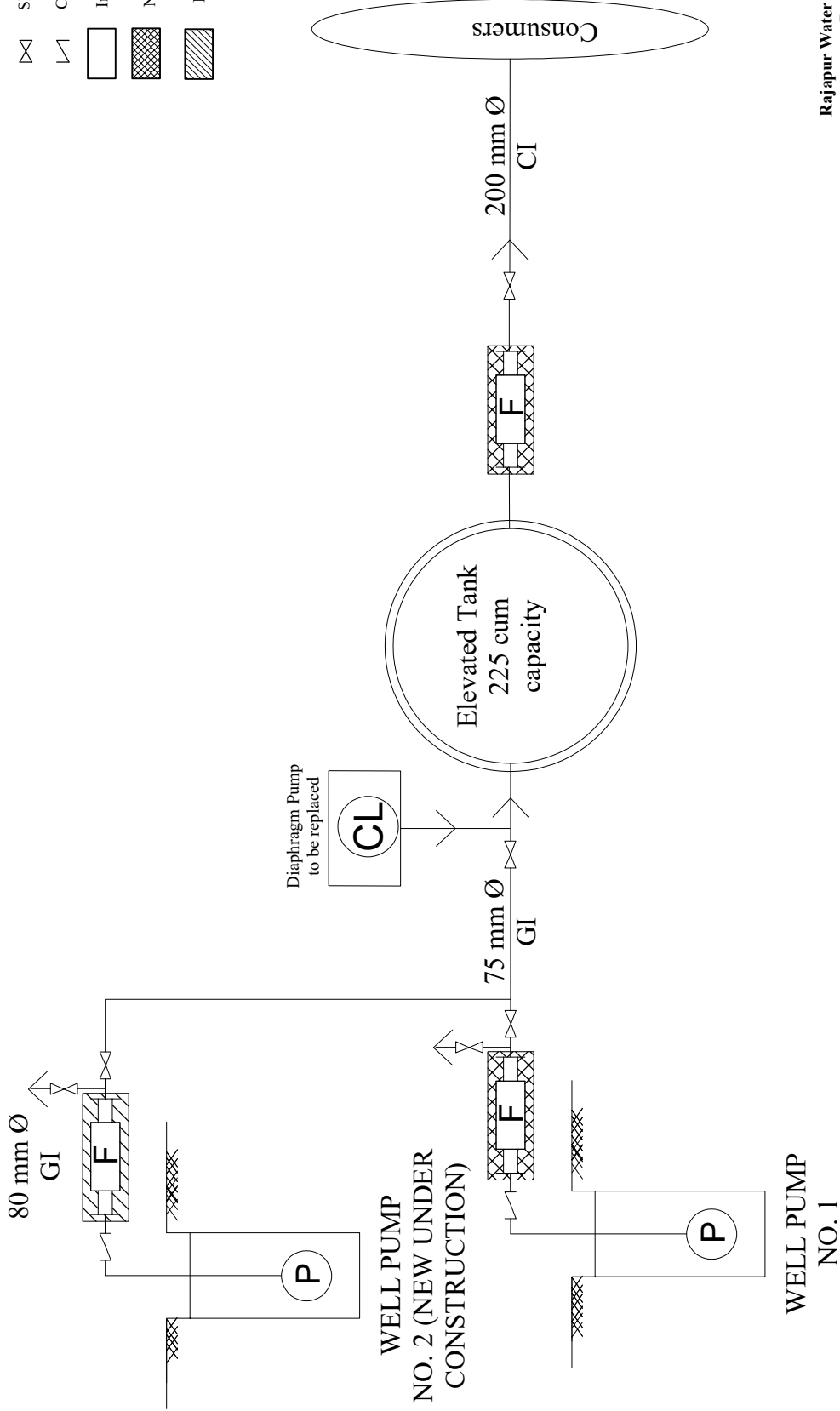
Date: 11/8/2017

Scale: Not in Scale

Revised
Date: 22/06/2021
Date: 25/03/2020
Date: 18/08/2019
Date: 11/22/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point











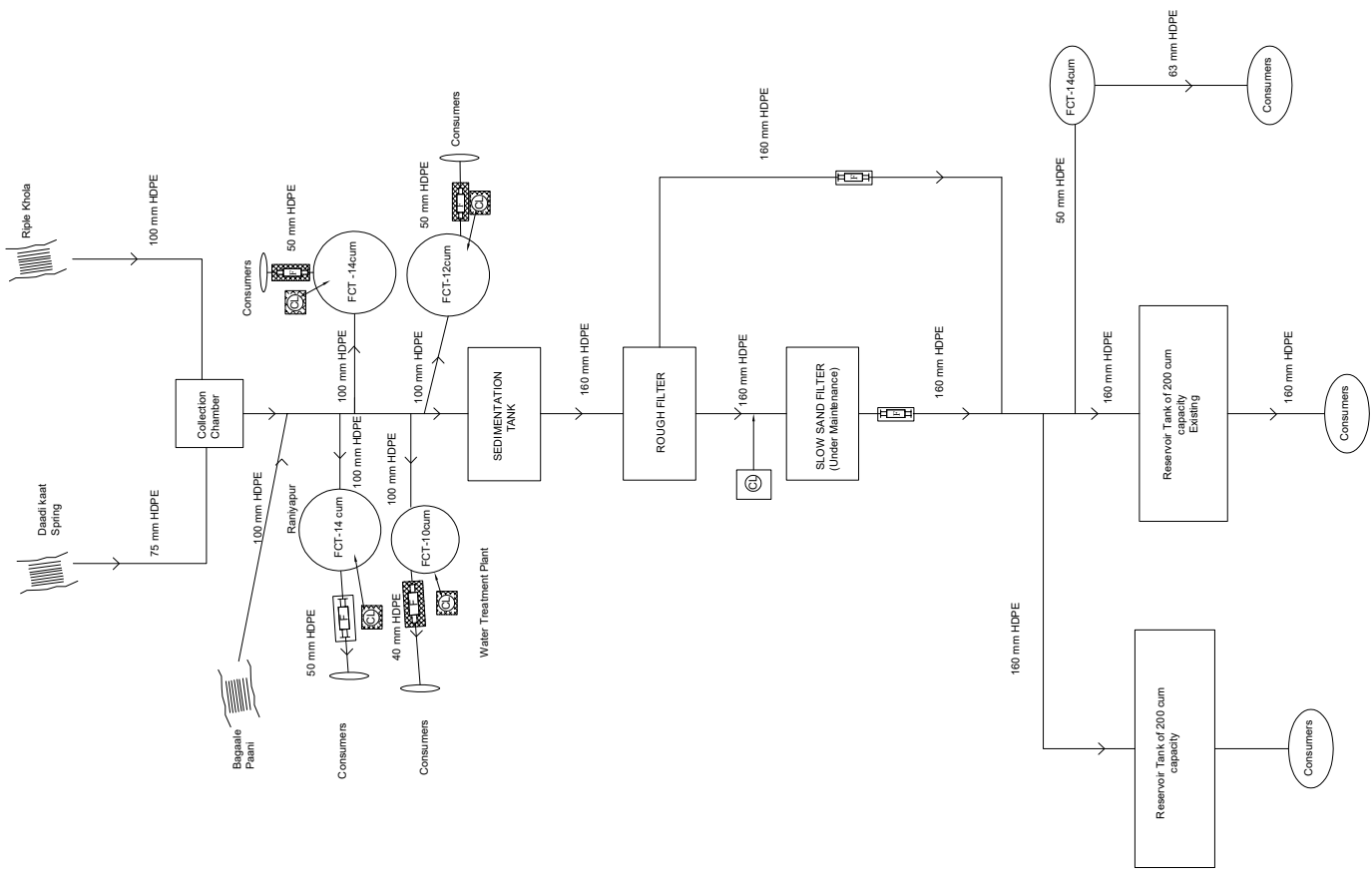
Rajapur Water Users Committee, Bardiya District,
Province No.5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Rajapur Water Users Committee Bardiya, Nepal	Date: 11/8/2017 Scale: Not in Scale

Revised
 Date: 24/06/2021
 Date: 18/08/2019
 Date: 11/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed



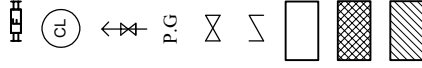
Bejhundi Water Users Committee
Dang District
Province no 5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Bejhundi Water Users Committee	Scale: Not in Scale Dang, Nepal

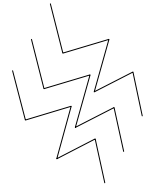
Revised Date: 22/06/2021 Date: 25/03/2020 Date: 18/08/2019 Date: 25/5/2019 Date: 11.2.2019 Date: 11/8/2017 DD/MM/YYYY
--

LEGENDS

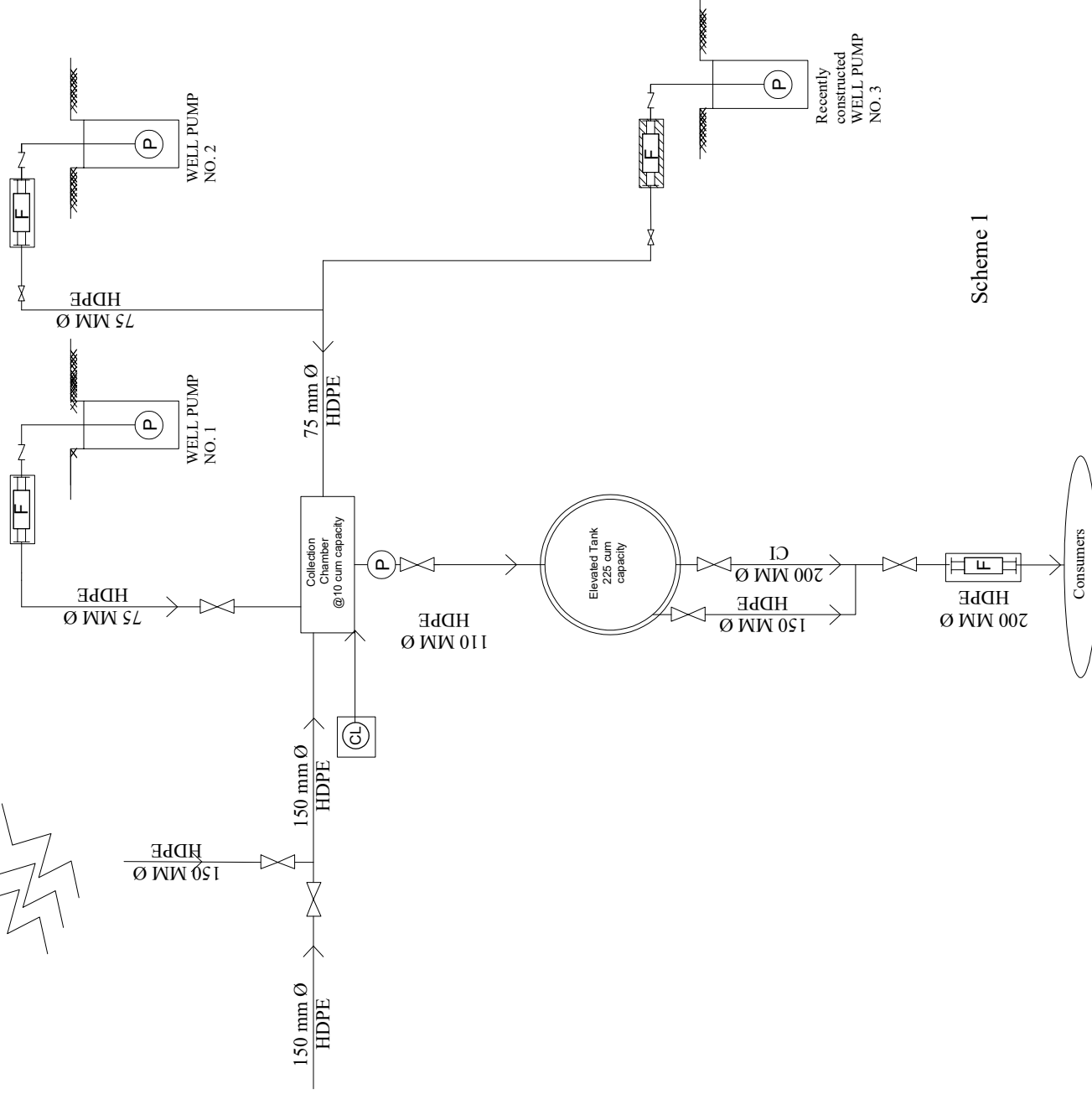
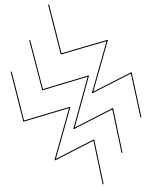
- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Spring Source



Spring Source



Recently constructed WELL PUMP NO. 3

Scheme 1

Bharatpur Water Users Committee,
Dang District, Province No.5

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Bharatpur
Water Users Committee
Dang, Nepal

Date: 11/8/2017

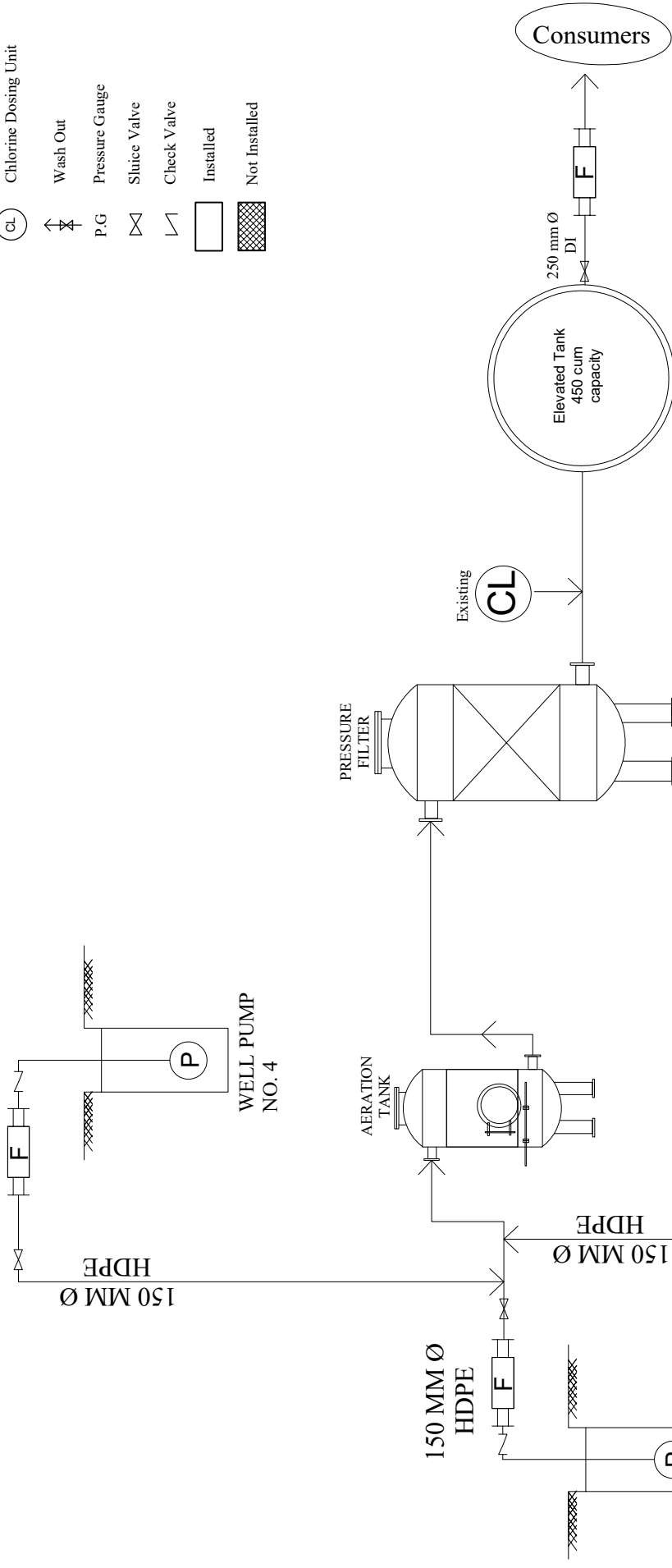
Scale: Not in Scale

Revised
Date: 22/06/2021
Date: 25/03/2020
Date: 18/08/2019
Date: 27/5/2019
Date: 11/2/2019

ANNEX-3-19(I)

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed



Scheme 2 Under construction
(Inside Office area)

Bharatpur Water Users Committee,
Dang District, Province No.5

WELL PUMP
NO. 6

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

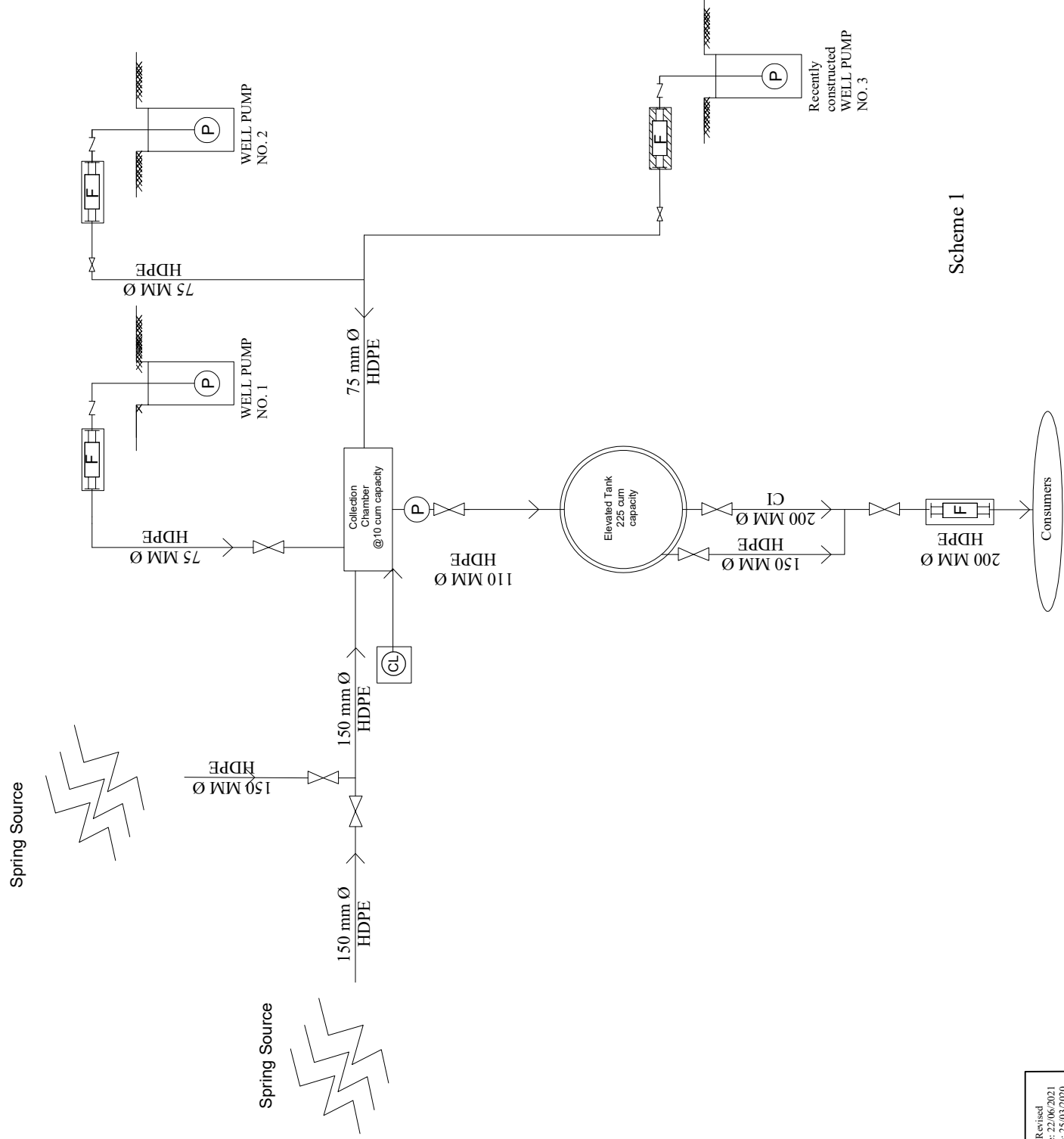
Drawing Title:
Schematic Flow Diagram Of Bharatpur
Water Users Committee
Dang, Nepal

Date: 11/8/2017

Scale: Not in Scale

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Scheme 1

ANNEX-3-19

Bharatpur Water Users Committee,
Dang District, Province No.5

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)




Drawing Title:
Schematic Flow Diagram Of Bharatpur
Water Users Committee
Dang, Nepal

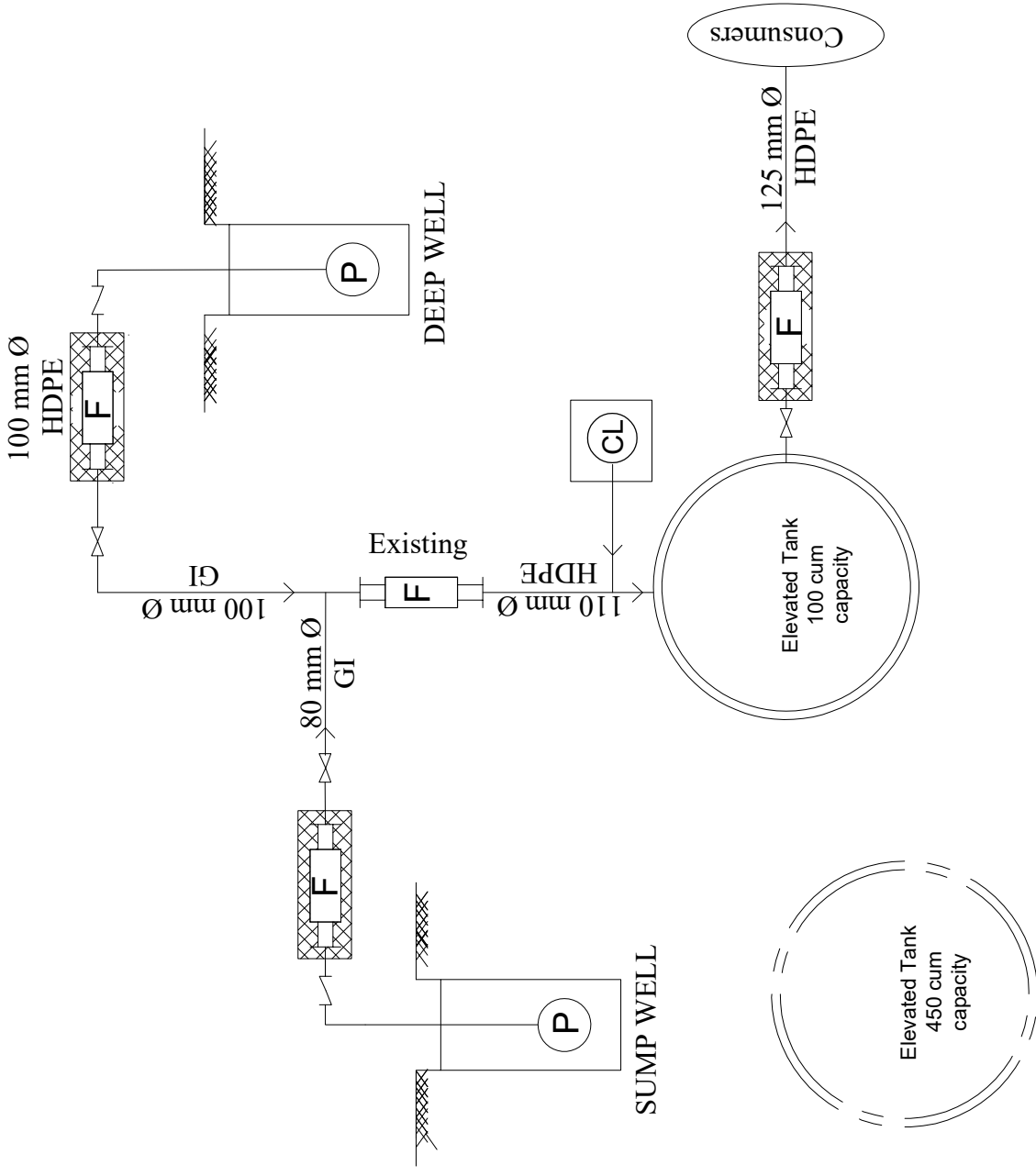
Date: 11/8/2017

Scale: Not in Scale

Revised
Date: 22/06/2021
Date: 25/03/2020
Date: 18/08/2019
Date: 27/5/2019
Date: 11/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Chaughera Water Users Committee, Dang District,
Province No.5

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Chaughera
Water Users Committee
Dang, Nepal

Date: 11/8/2017










Scale: Not in Scale

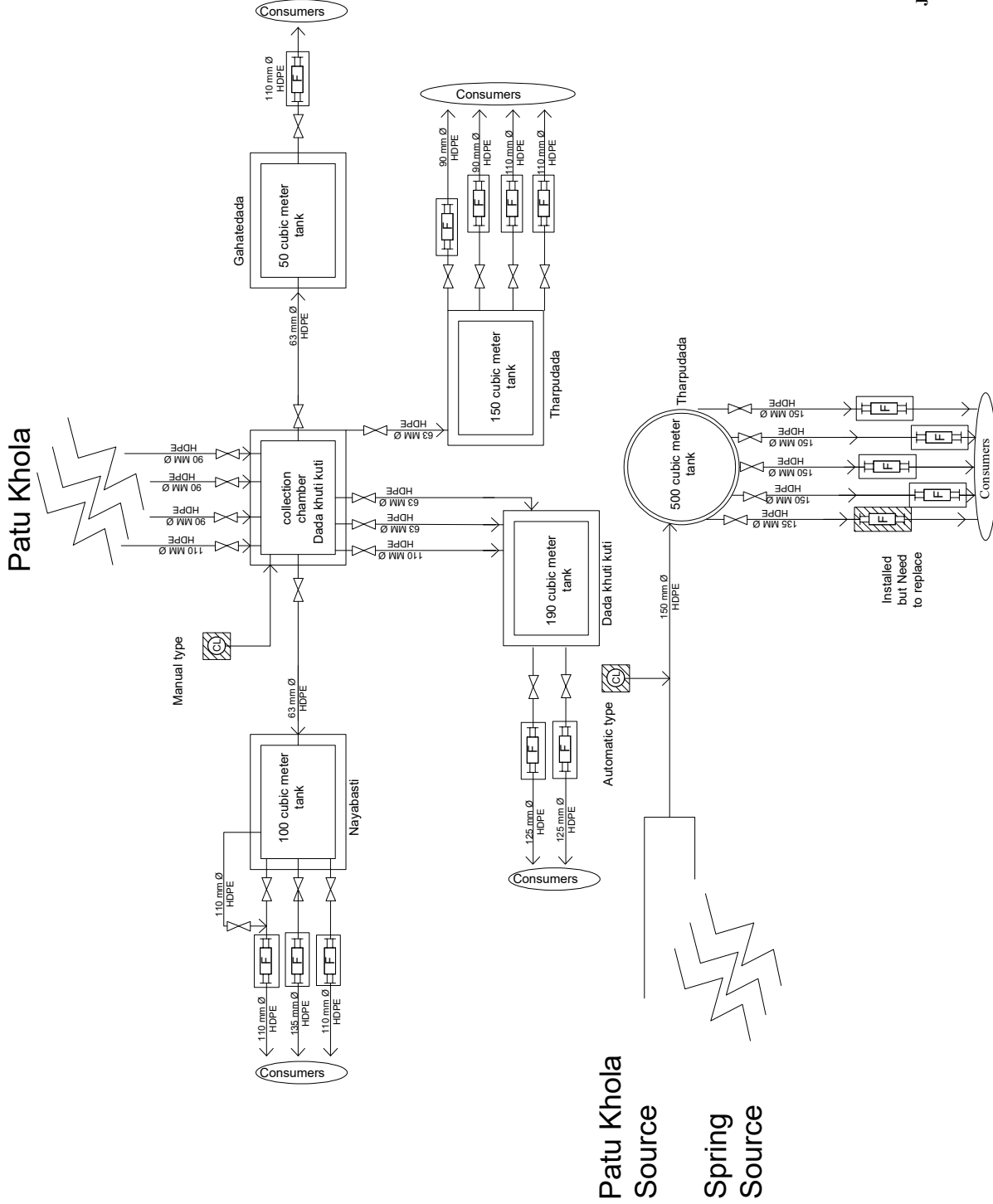
Under
Construction
(inside office)

ANNEX-3-20

Revised
Date: 22/06/2021
Date: 18/08/2019
Date: 27/5/2019
Date: 11/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Jhakredhunga Water Users Committee, Dang District,
Province No.5

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)










Drawing Title:
Schematic Flow Diagram Of Amripur
Jhakredhunga Water Users Committee
Dang, Nepal

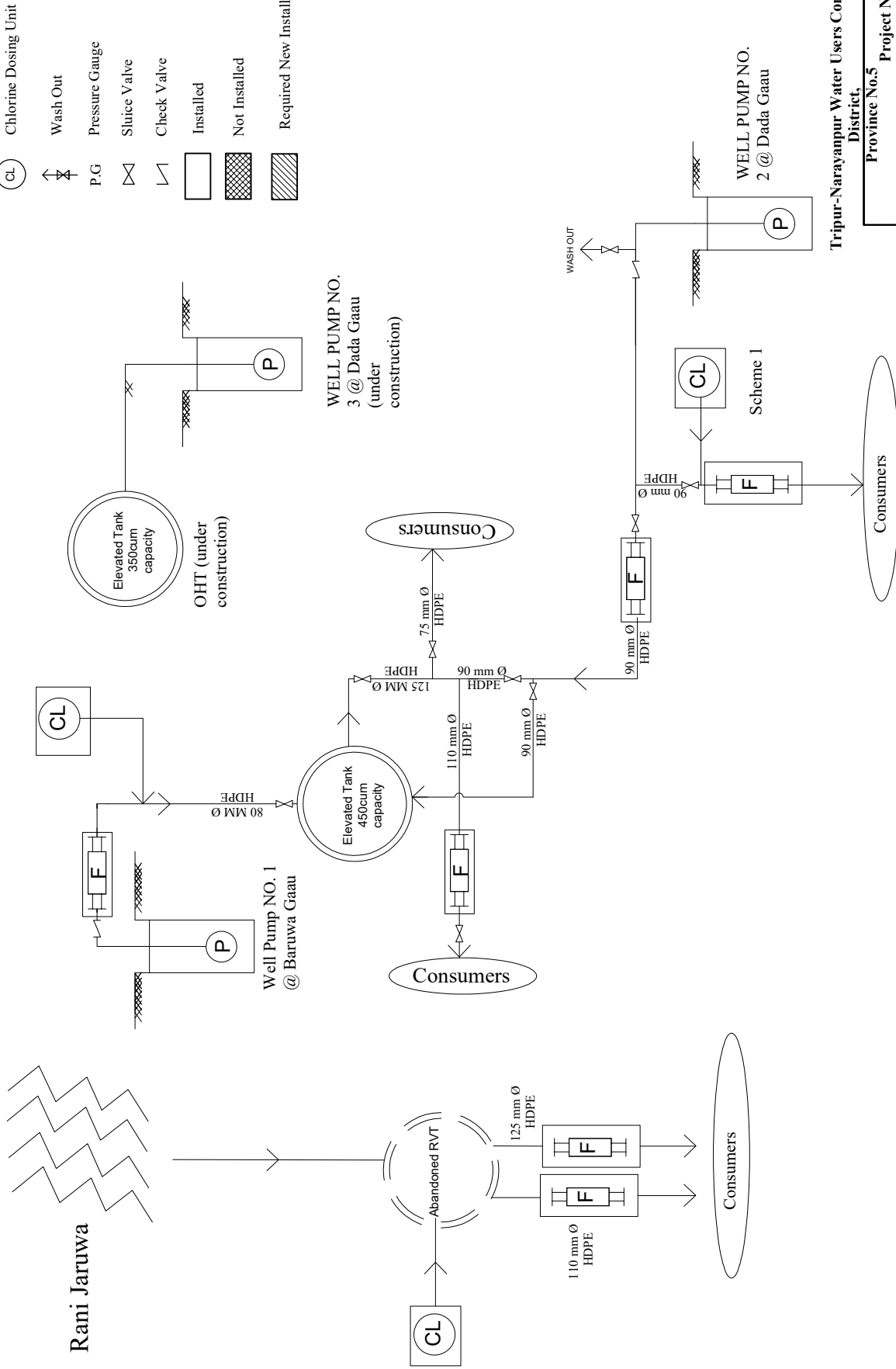
Date: 11/8/2017

Scale: Not in Scale

Revised
Date: 23/06/2021
Date: 18/08/2019
Date: 26/5/2019
Date: 11/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












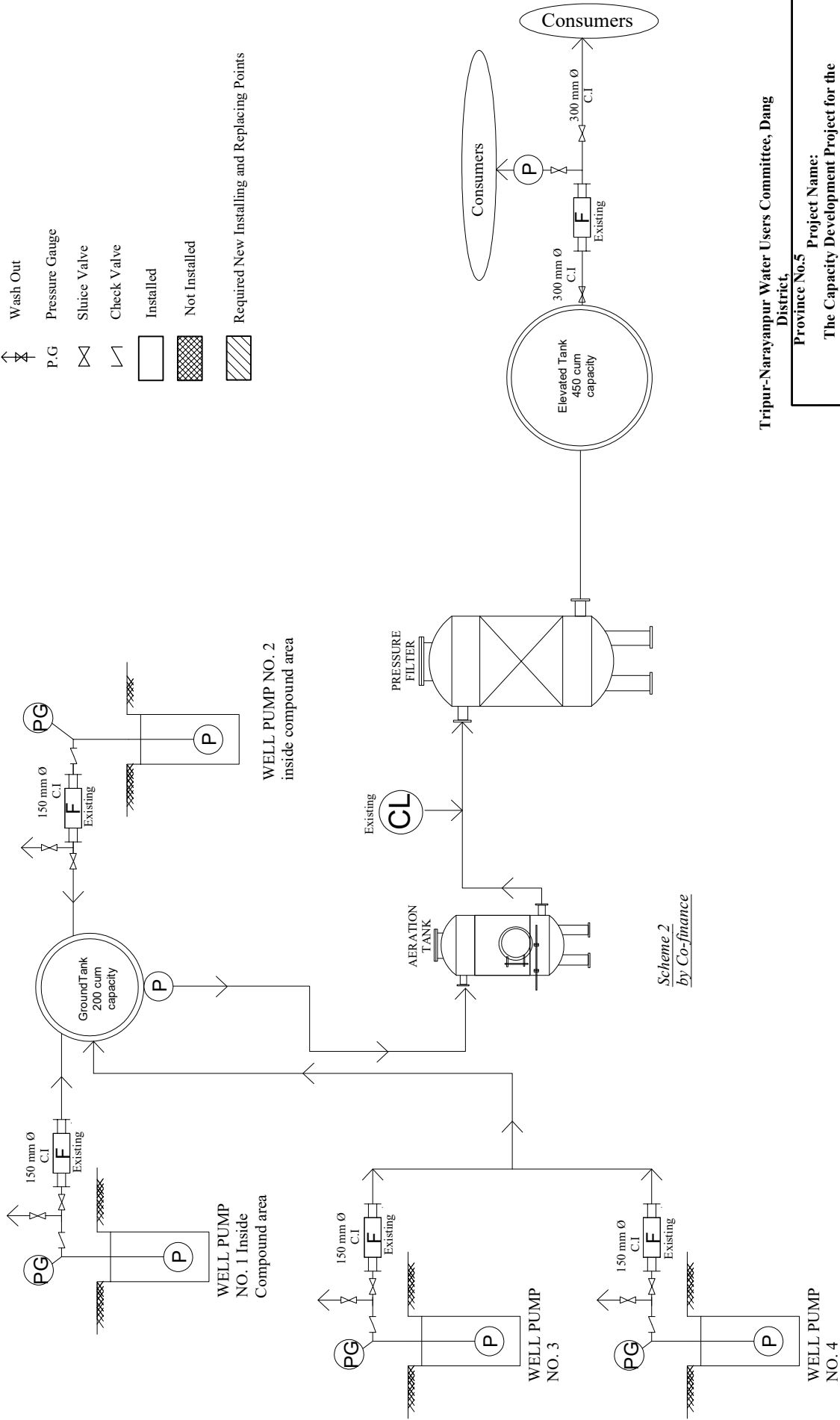
Tripur-Narayanpur Water Users Committee, Dang District, Province No.5

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Tripur-Narayanpur Water Users Committee Dang, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

<p>Revised Date: 22/06/2021 Date: 18/08/2019 Date: 26-5-2019 Date: 11/2/2019</p>

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Points

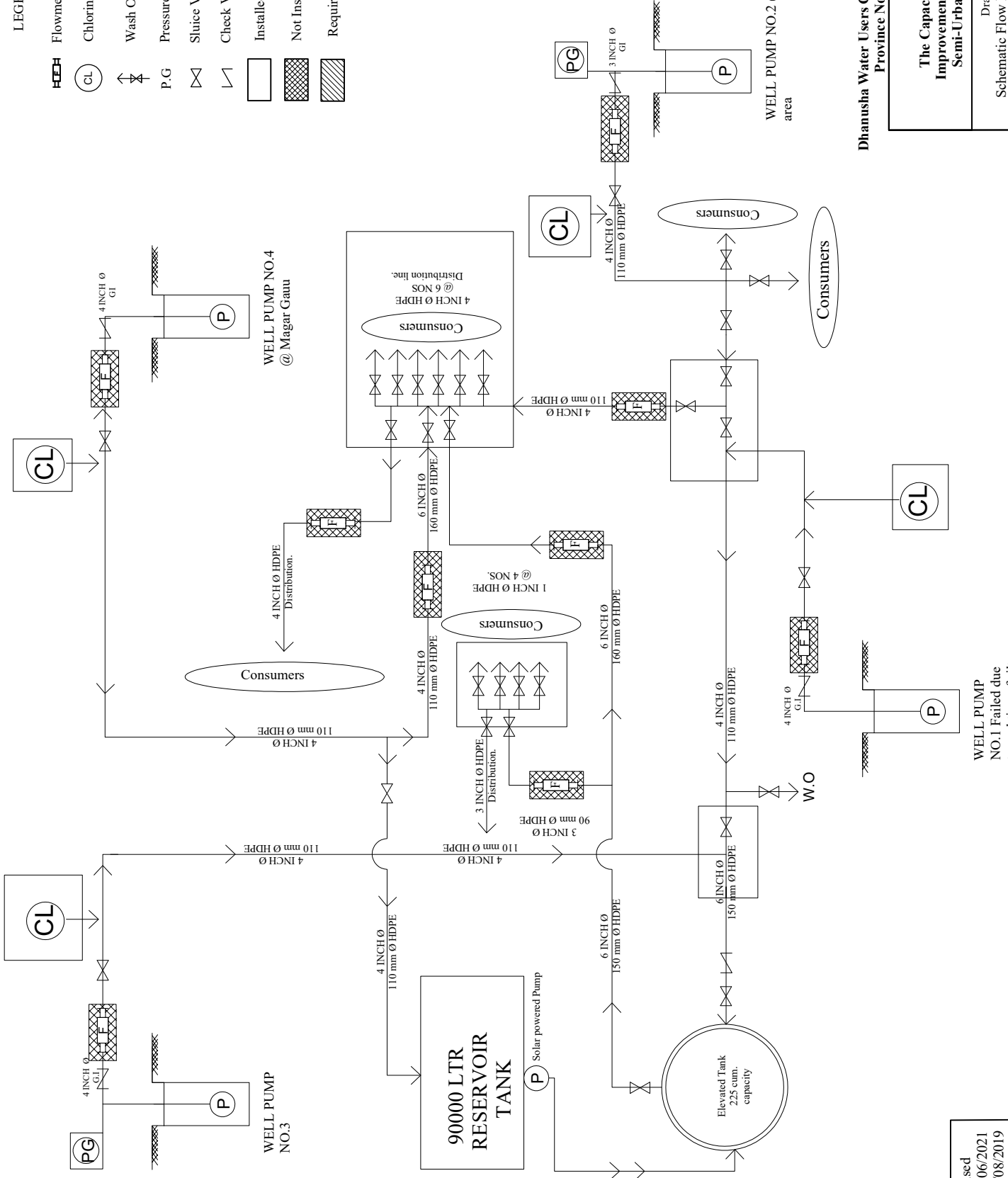


Tripur-Narayanpur Water Users Committee, Dang District.

Province No.5 Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMP II)	
Drawing Title: Schematic Flow Diagram Of Tripur-Narayanpur Water Users Committee Dang, Nepal	Date: 27/5/2019 Scale: Not in Scale

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Dhanusha Water Users Committee, Janakpur District, Province No.2

Project Name:
The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMP II)

Drawing Title:
Schematic Flow Diagram Of Dhalkebar Water Users Committee Dhanusha, Nepal

Date: 11/8/2017










Scale: Not in Scale

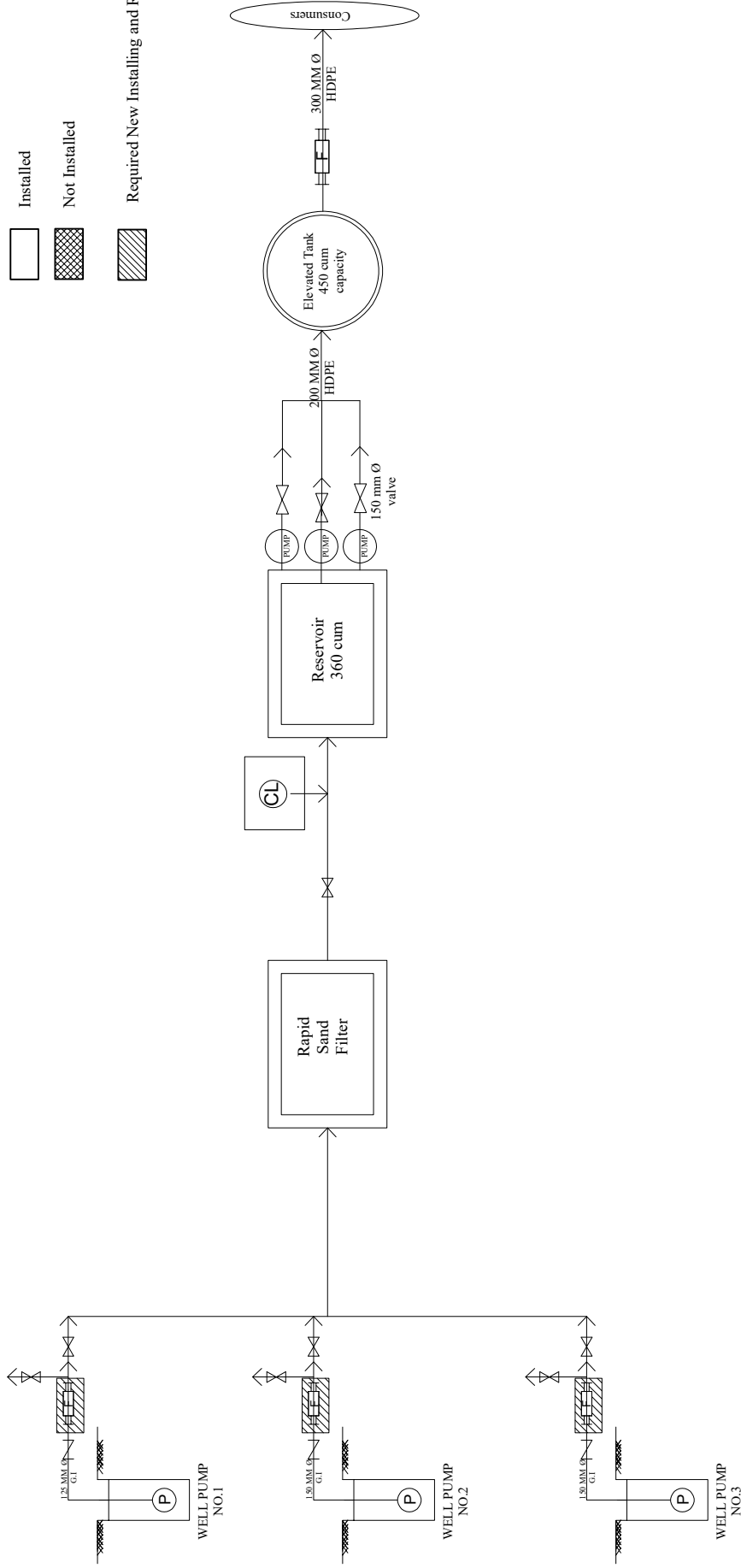
Revised
Date: 28/06/2021
Date: 18/08/2019
Date: 30/6/2019
Date: 19/2/2019
Date: 9/4/2019

ANNEX-3-37

WELL PUMP NO.1 Failed due to suction of silt

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












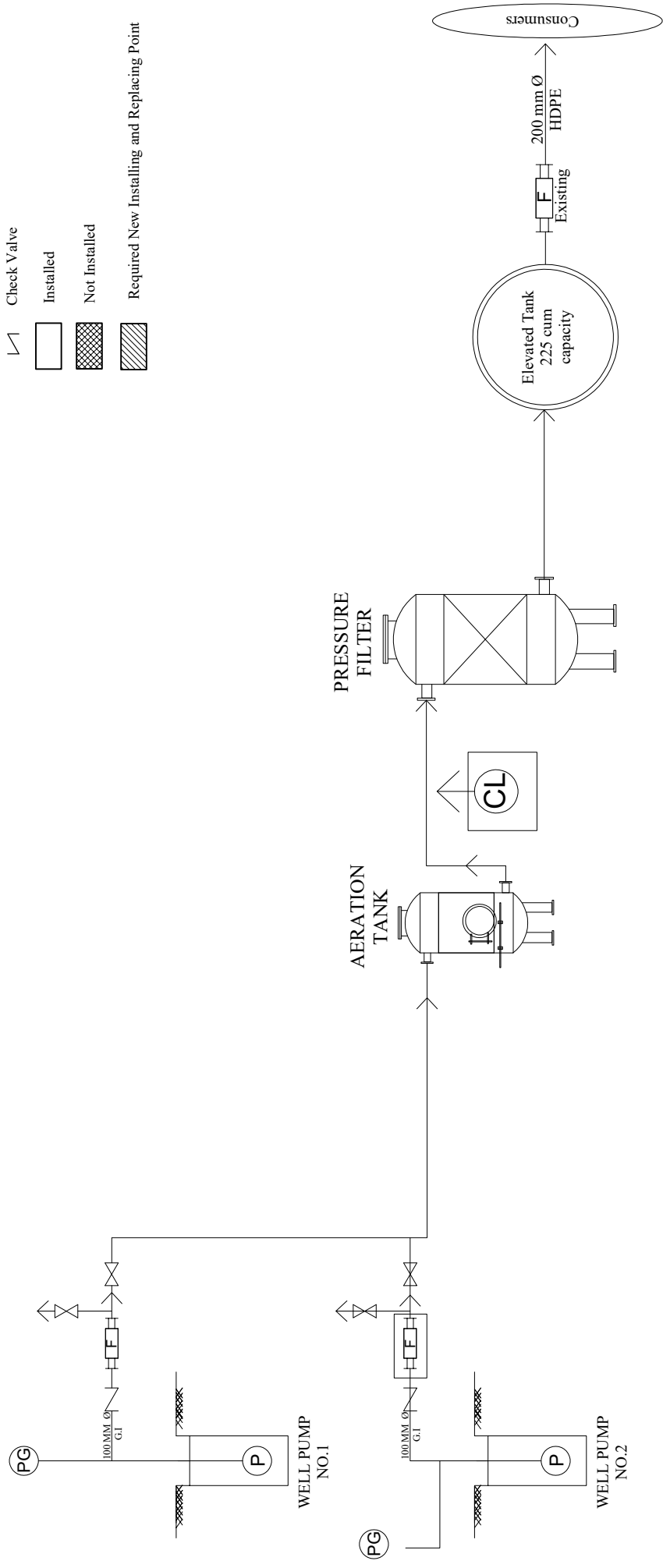
Chandragadhi I Water Users Committee, Jhapa District, Province No.1

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Chandragadhi I Water Users Committee Jhapa, Nepal	Date: 11/8/2017 Scale: Not in Scale

Revised:
Date: 21/06/2021

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



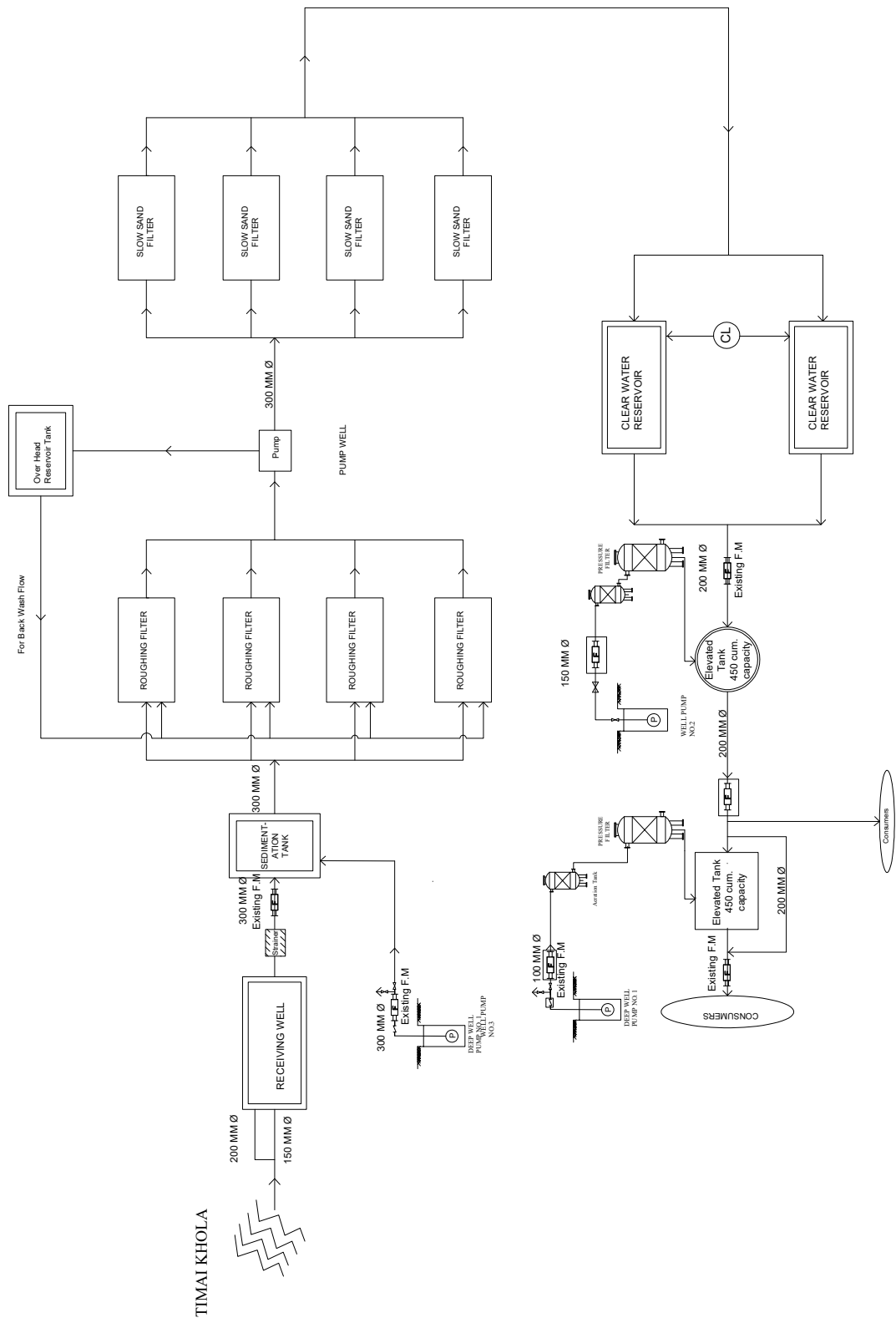
Chandragadhi II Water Users Committee, Jhapa
District, Province No.1

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Chandragadhi II Water Users Committee Jhapa, Nepal	Date: 11/8/2017 Scale: Not in Scale

Revised:
Date: 21/06/2021

LEGENDS

- HECH Flowmeter
- CL Chlorine Dosing Unit
- Wash Out
- P.G Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point












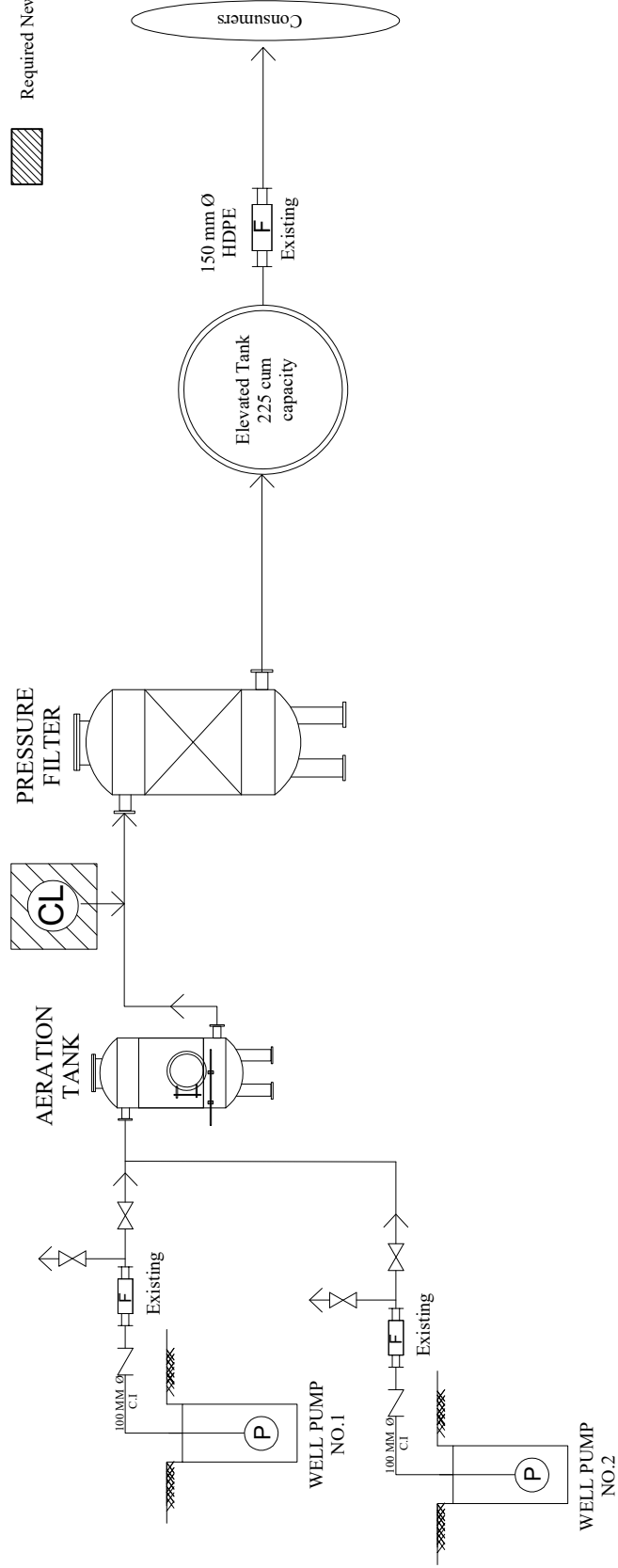
Dhulabari Water Users Committee
Jhapa District
Province no 1

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)
 Drawing Title:
 Schematic Flow Diagram Of Dhulabari
 Water Users Committee
 Jhapa, Nepal

Revised
 Date: 29/06-2021
 Date: 18-08-2019
 Date: 17-5-2019
 Date: 25/4/2019
 Date: 11.2.2019
 Date: 11/8/2017
 DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












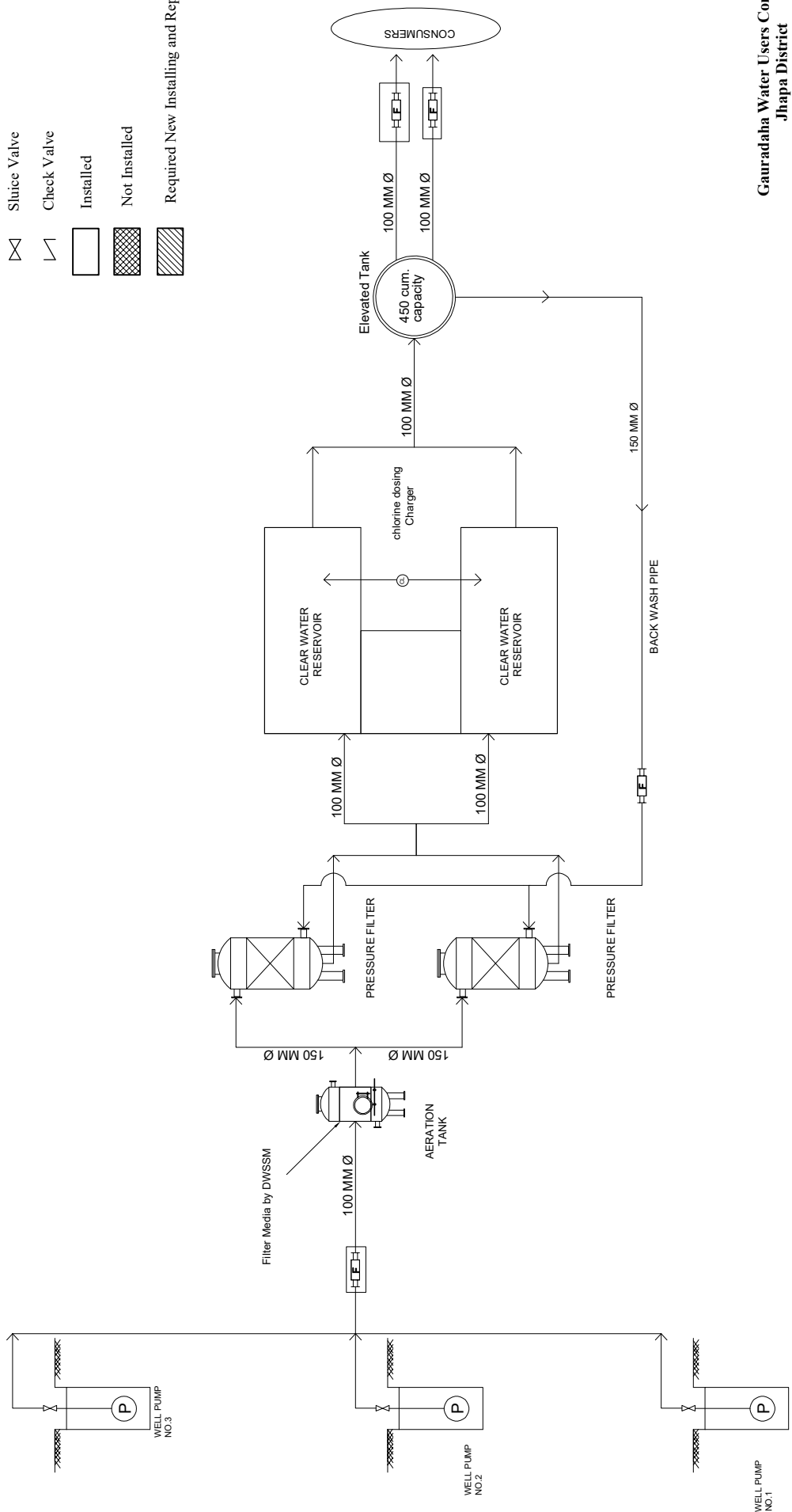
Revised:
Date: 08/08/2021
Date: 28/06/2021

Garamani Water Users Committee, Jhapa
District, Province No.1

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Garamani Water Users Committee Jhapa, Nepal	Date: 11/8/2017 Scale: Not in Scale

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












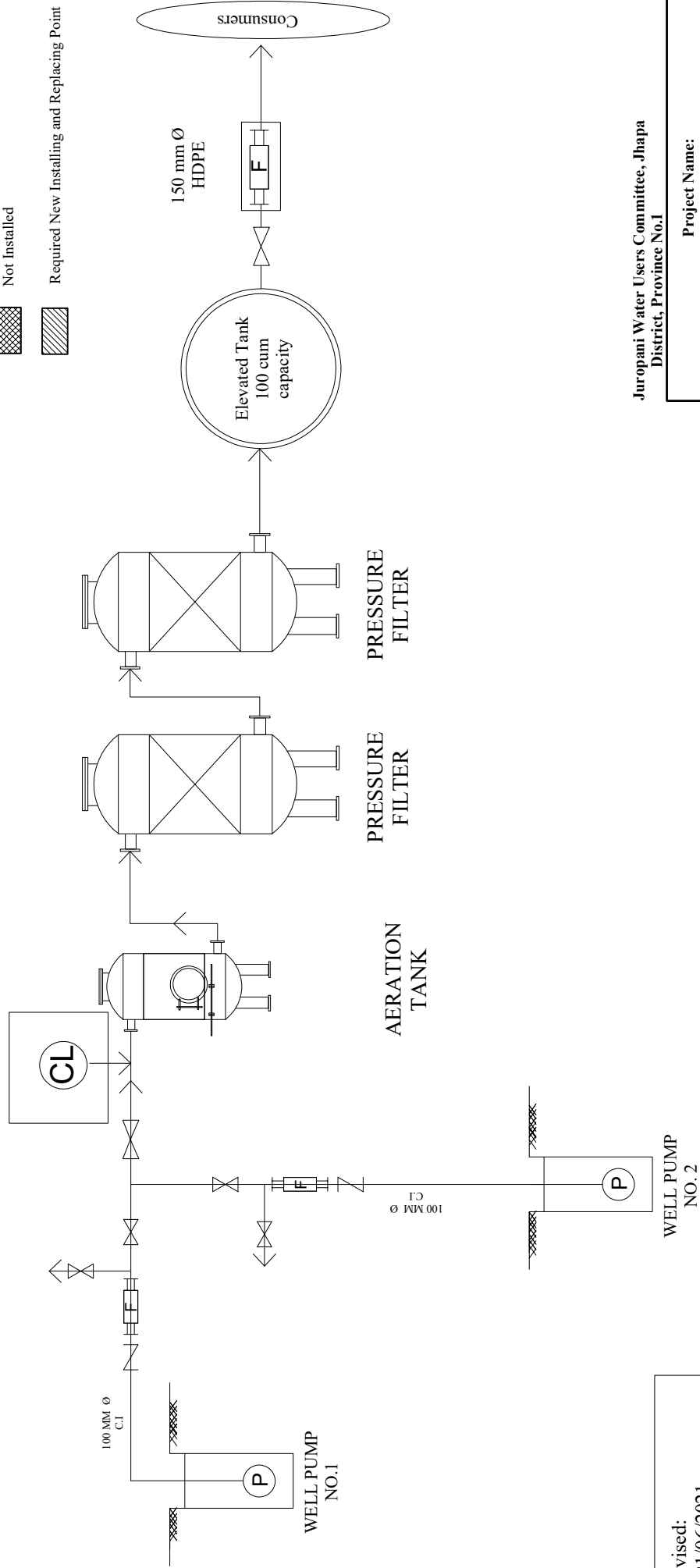
Gauradaha Water Users Committee
Jhapa District
Province no 1

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)
 Drawing Title:
 Schematic Flow Diagram Of Gauradaha
 Water Users Committee
 Jhapa, Nepal
 Scale: Not in Scale

Revised
 Date: 29/06/2021
 Date: 18/08/2019
 Date: 25/4/2019
 Date: 11/2/2019
 Date: 11/8/2017
 DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












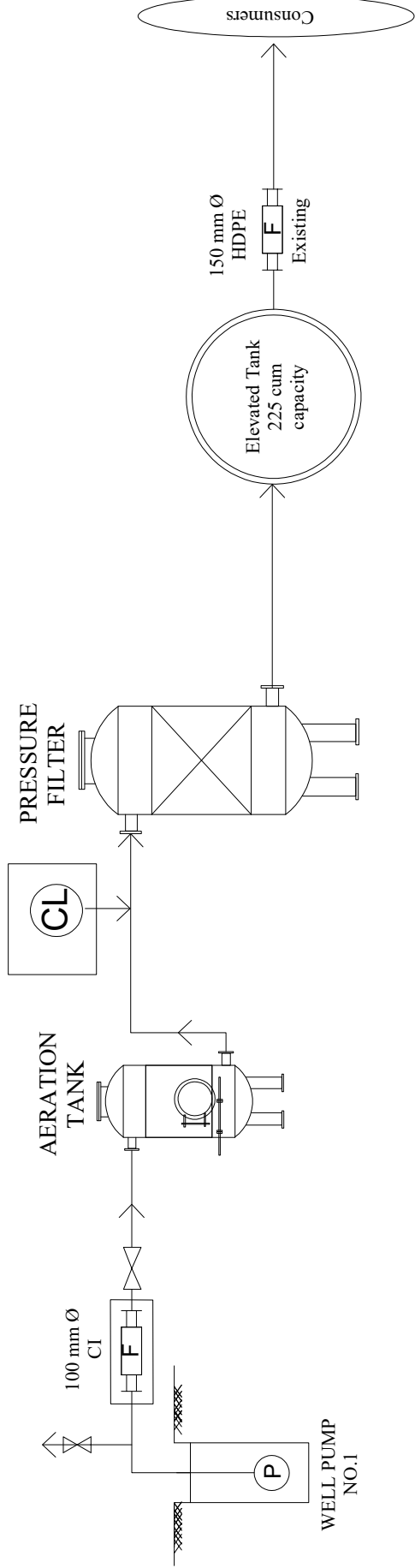
Juropani Water Users Committee, Jhapa District, Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Juropani Water Users Committee Jhapa, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised:
Date: 21/06/2021

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












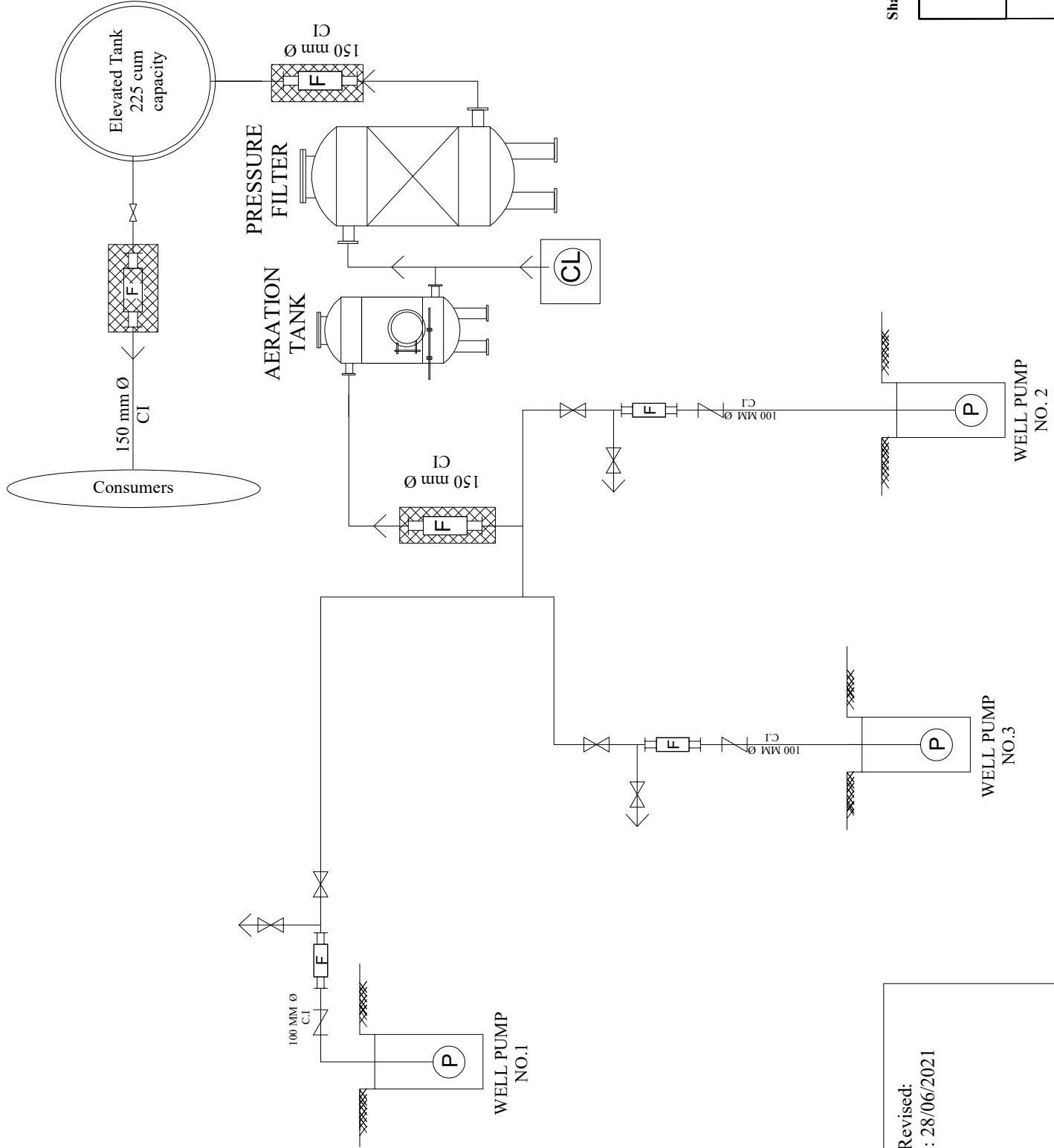
Revised:
Date: 28/06/2021

Prithvinagar Water Users Committee
Jhapa District, Province No.1

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Prithvinagar Water Users Committee Jhapa, Nepal	Date: 11/8/2017 Scale: Not in Scale

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Shani Arjun Water Users Committee, Jhapa
District, Province No.1

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Shaniarjun
Water Users Committee
Jhapa, Nepal

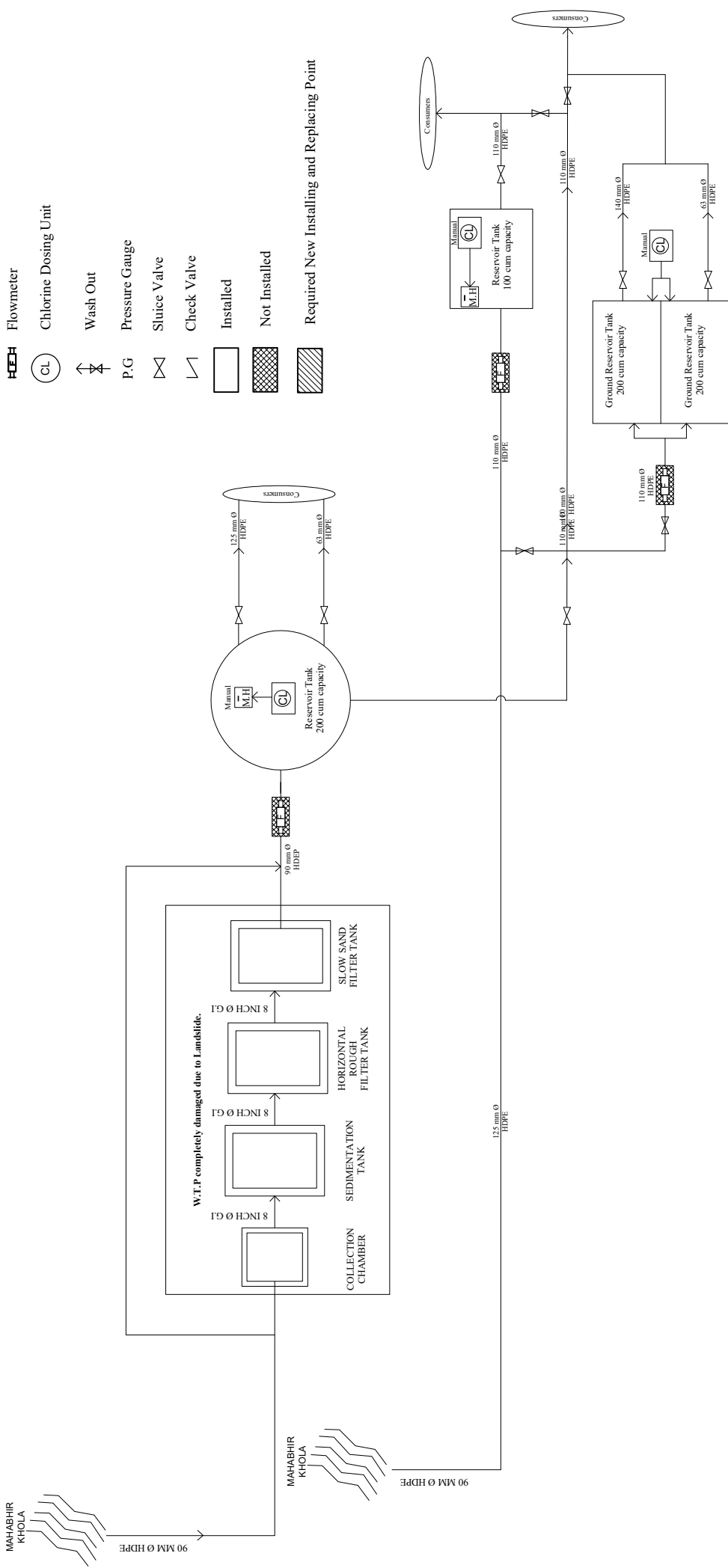
Date: 11/8/2017

Scale: Not in Scale

Revised:
Date: 28/06/2021

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- P.G
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Shivasatachhi Water Users Committee, Jhapa District, Province No. 1

Project Name:
The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)










Drawing Title:
Schematic Flow Diagram Of Shivasatachhi Water Users Committee Jhapa, Nepal

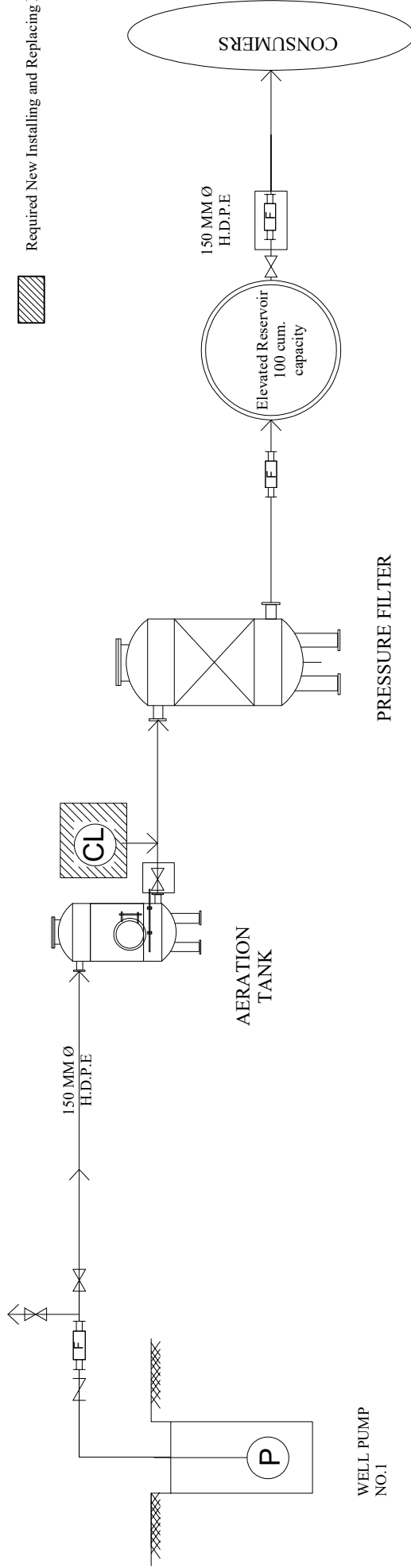
Date: 11/8/2017

Scale: Not in Scale

Revised
Date: 28/06/2021
Date: 18/08/2019
Date: 19/5/2019
Date: 26/4/2019
Date: 19/2/2019
Date: 11/8/2017

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












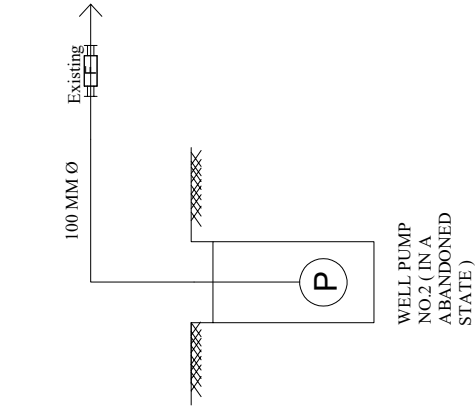
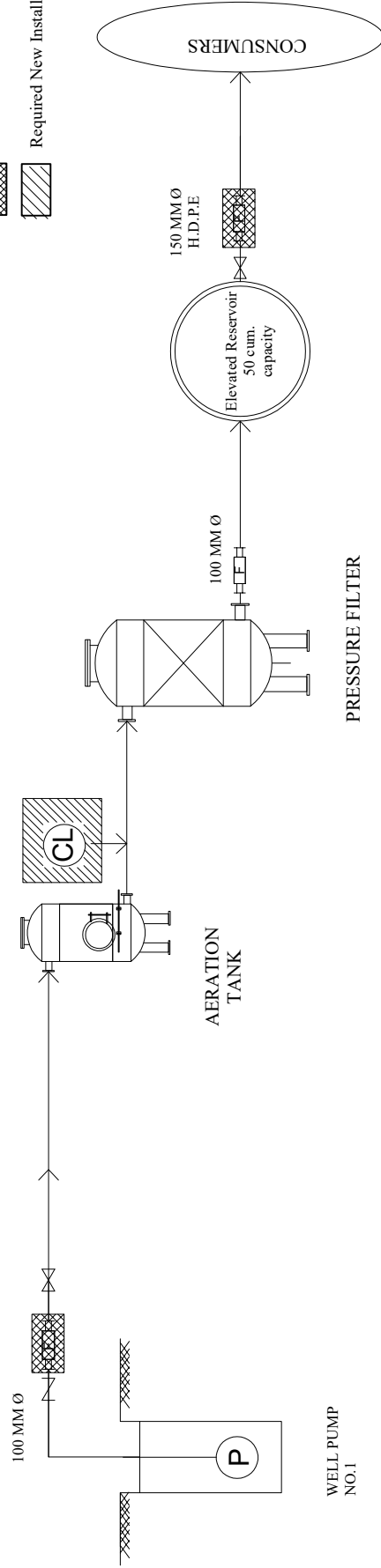
Topgachhi I Water Users Committee, Jhapa District,
Province No.1

Revised:
Date: 28/06/2021

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Topgachhi I Water Users Committee Jhapa, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Points












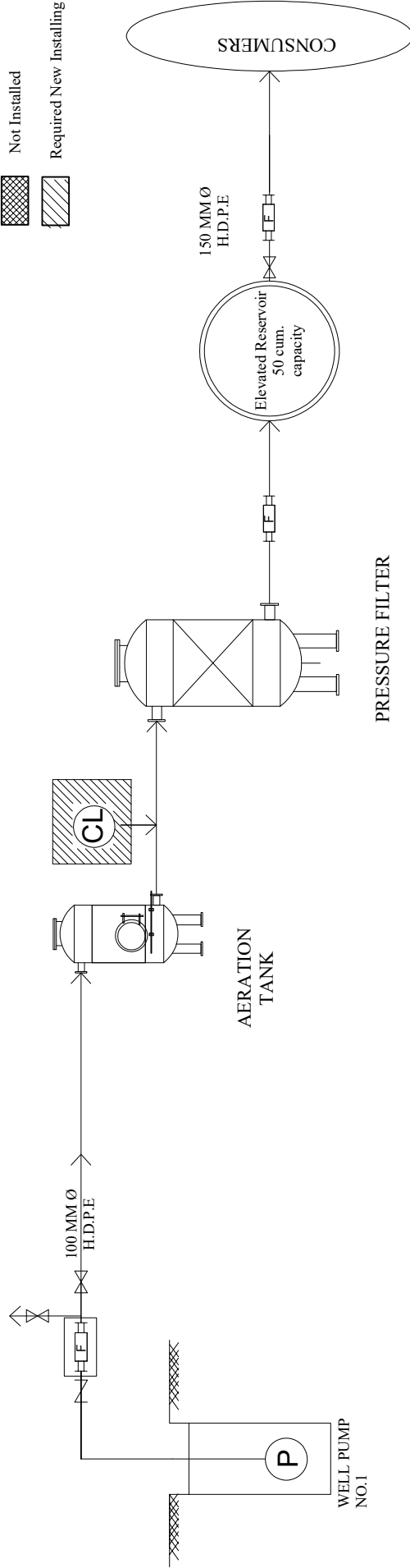
Revised:
Date: 21/06/2021

Toppagachi II Water Users Committee, Jhapa District, Province No.1

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Toppagachi II Water Users Committee Jhapa, Nepal	Date: 11/8/2017 Scale: Not in Scale

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Points



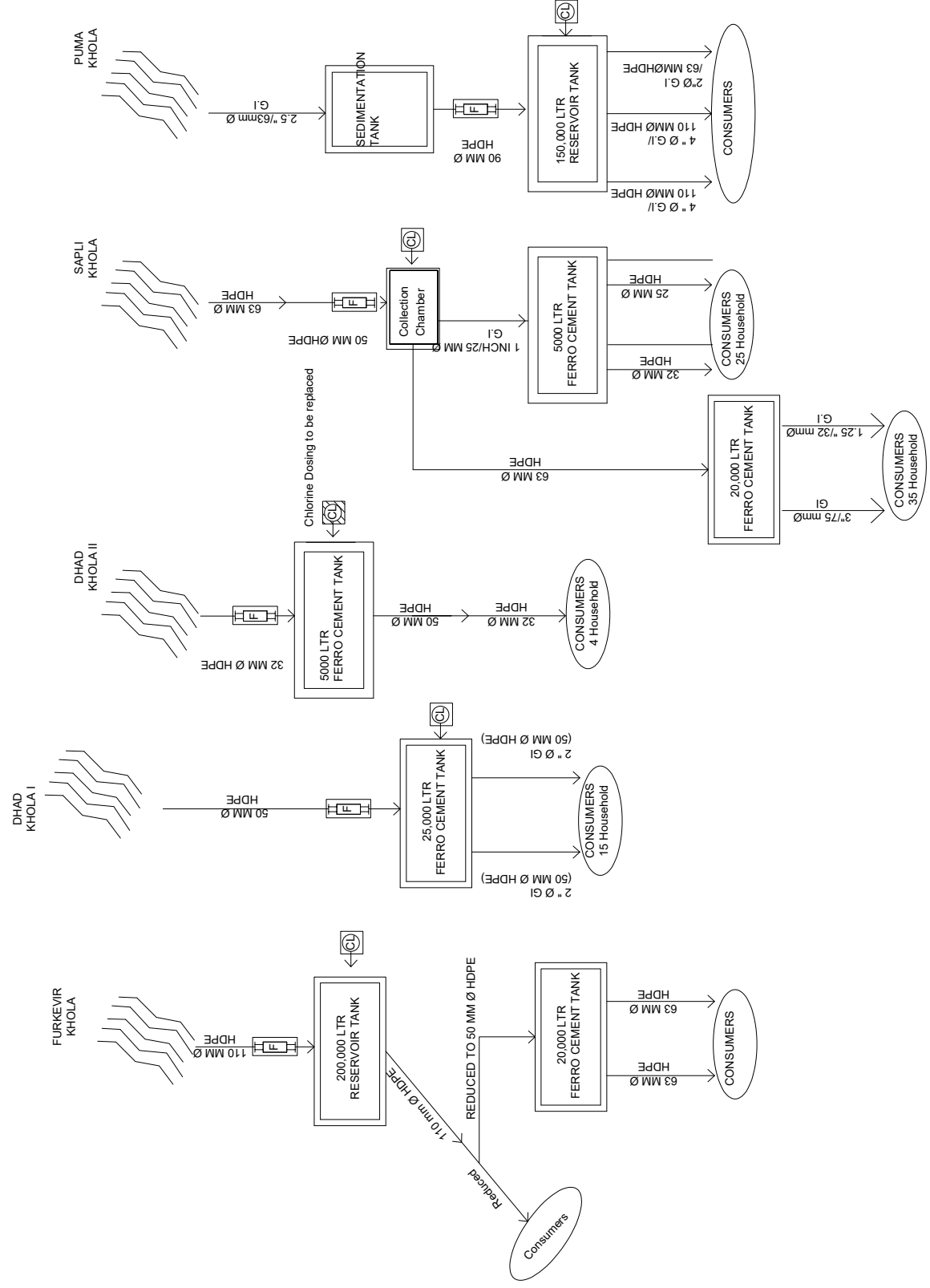
Topgachhi III Water Users Committee, Morang District,
Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Topgachhi III Water Users Committee Jhapa, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised:
Date: 21/06/2021

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point












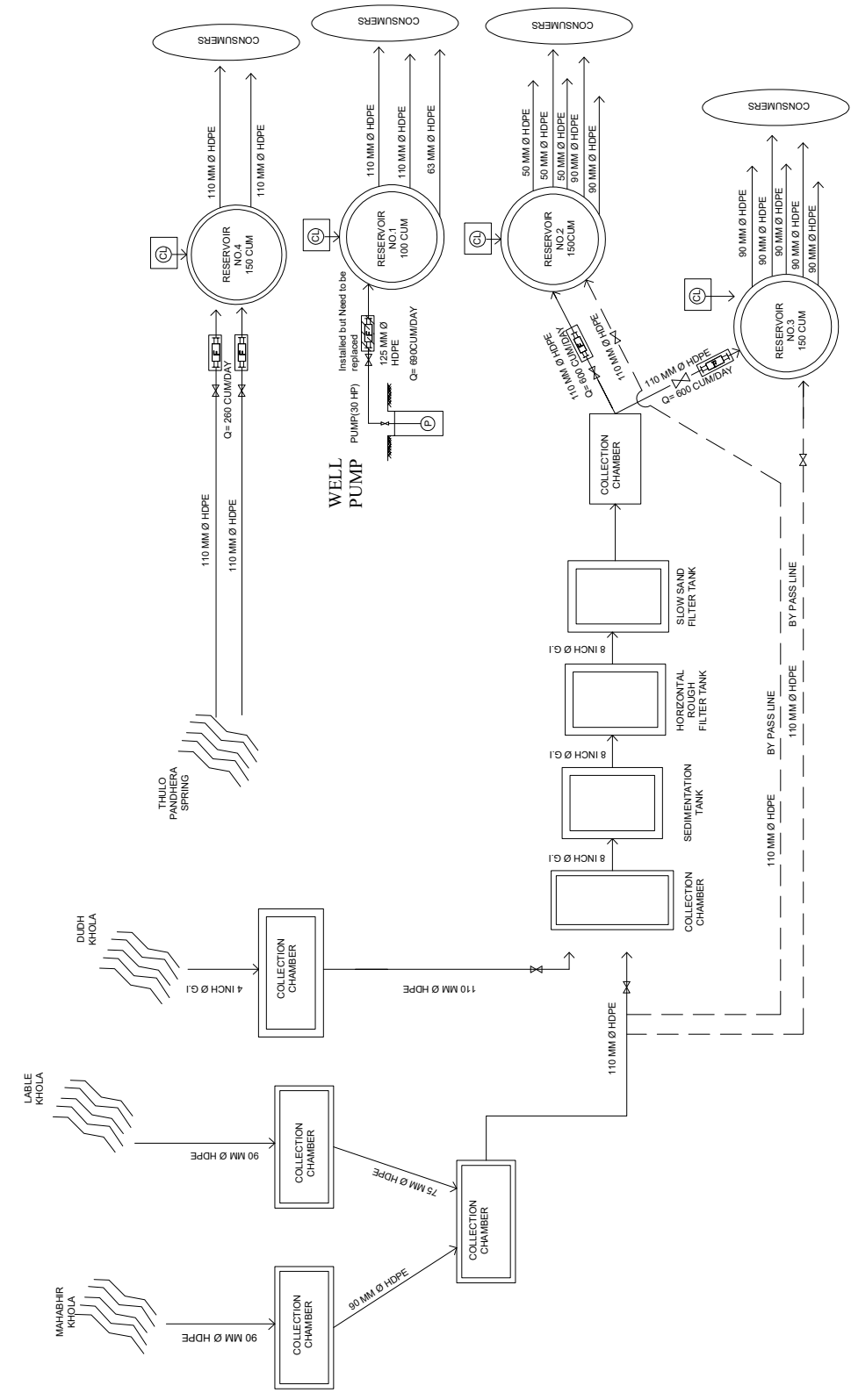
Besisahar (Rural) Water Users Committee
Lamjung District
Gandaki Province

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)
 Drawing Title:
 Schematic Flow Diagram Of Besisahar (Rural)
 Water Users Committee
 Lamjung, Nepal
 Scale: Not in Scale

Revised
 Date: 22/06/2021
 Date: 18/08/2019
 Date: 25/4/2019
 Date: 11.2.2019
 Date: 11/8/2017
 DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



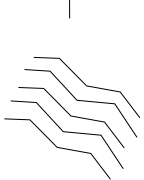
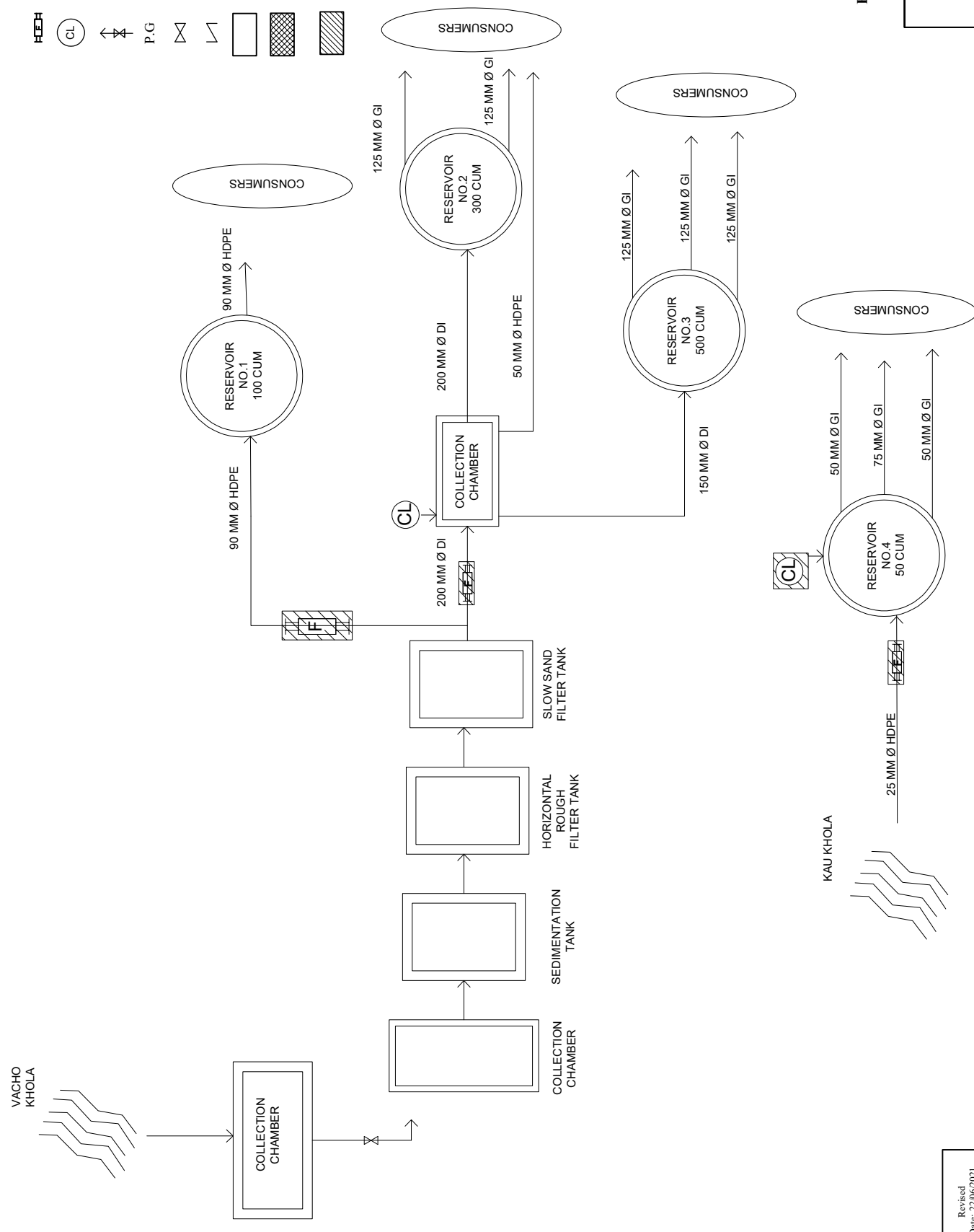
Besisahar (Urban) Water Users Committee
Lamjung District
Gandaki Province

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Besisahar (Urban) Water Users Committee Lamjung, Nepal	
Scale: Not in Scale	

Revised
Date: 21/06/2021
Date: 18/08/2019
Date: 25/4/2019
Date: 11.2.2019
Date: 11/8/2017
DD/MM/YYYY

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



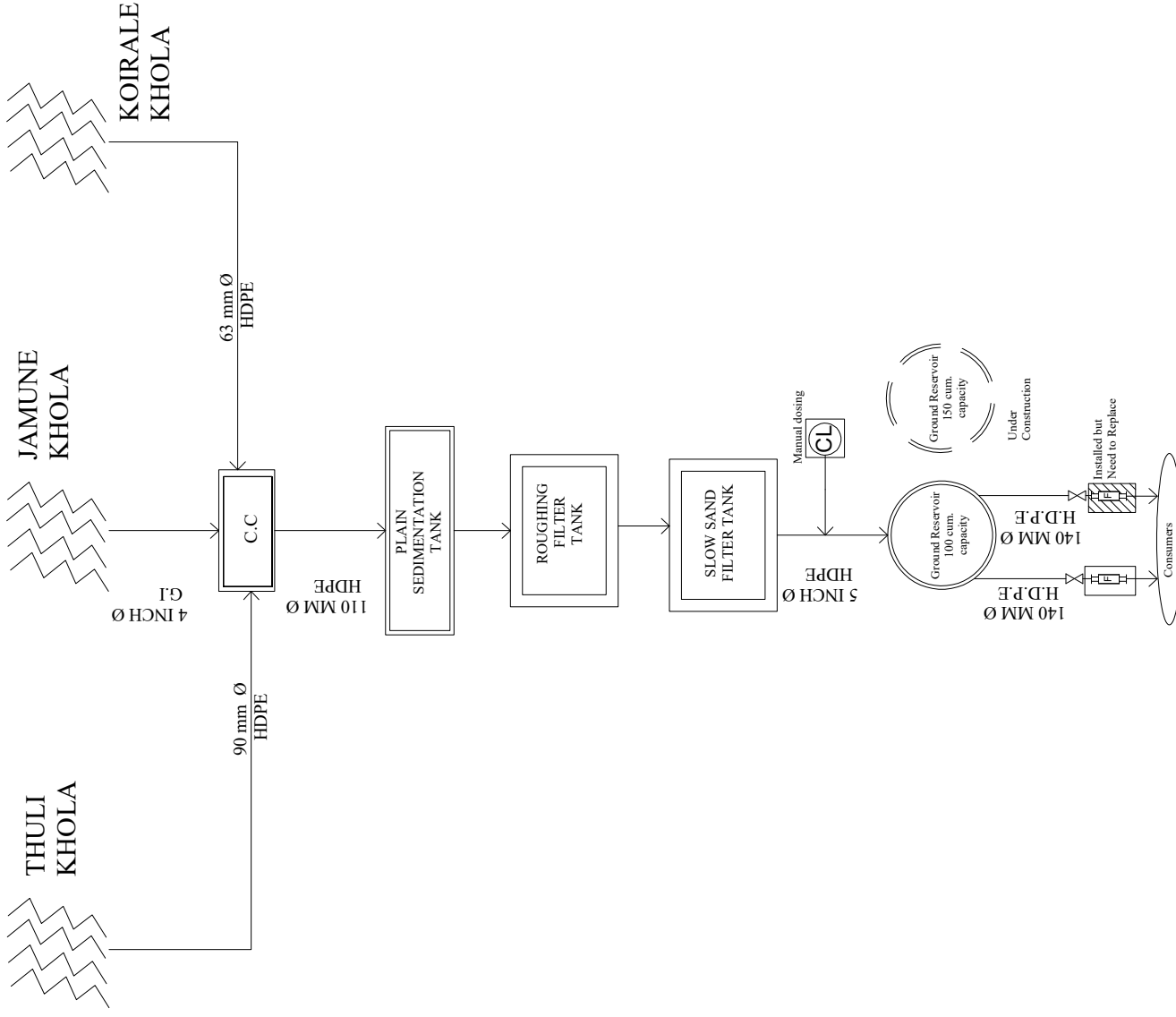
Besisahar (Rural) Water Users Committee
Lamjung District
Gandaki Province

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)
 Drawing Title:
 Schematic Flow Diagram Of Besisahar
 Water Users Committee
 Lamjung, Nepal
 Scale: Not in Scale

Revised
 Date: 22/06/2021
 Date: 18/08/2019
 Date: 25/4/2019
 Date: 11/2/2019
 Date: 11/8/2017
 DD/MM/YYYY

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Bhotewodar Water Users Committee, Lamjung District,
Gandaki Province

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

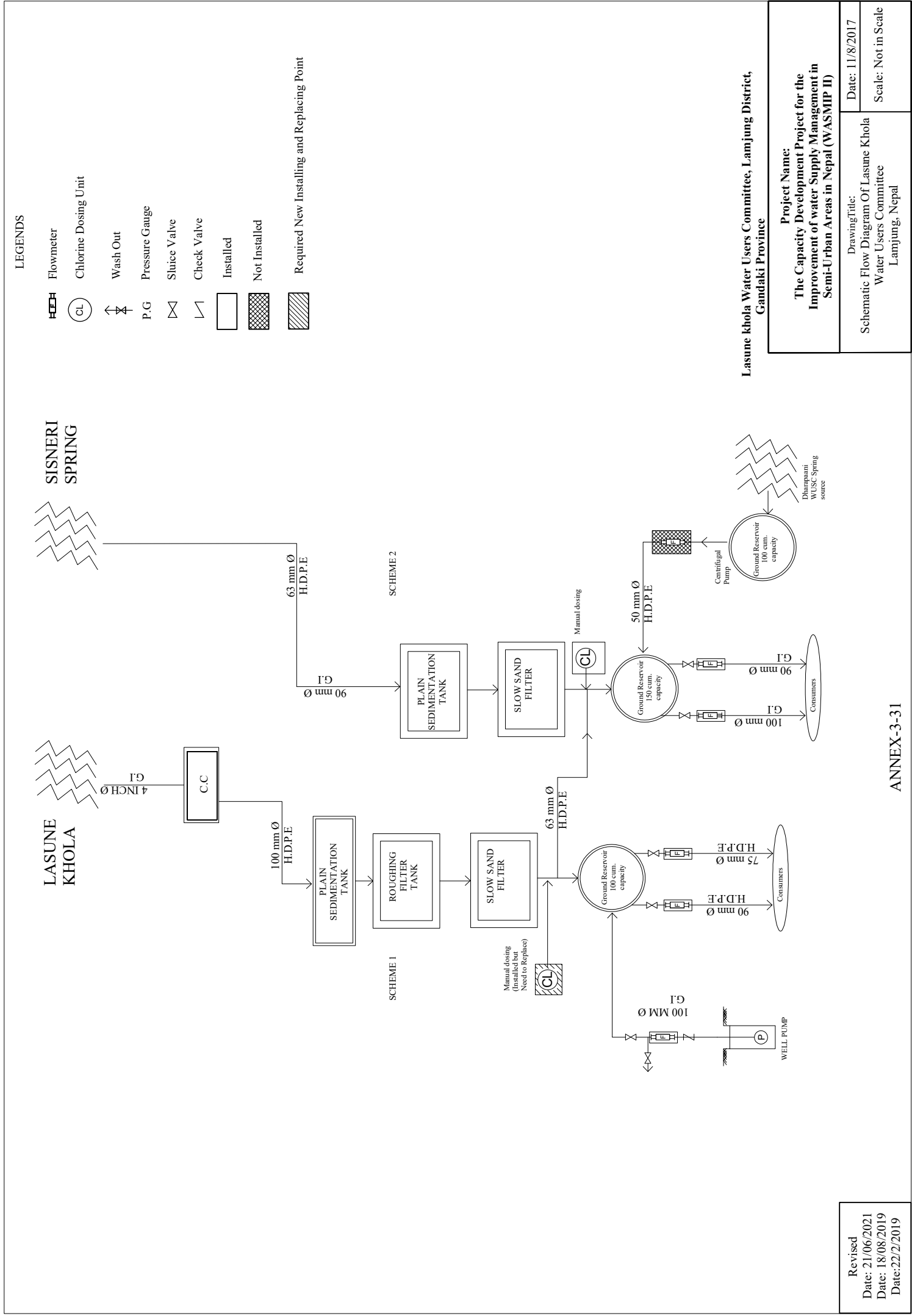
Drawing Title:
Schematic Flow Diagram Of Bhotewodar
Water Users Committee
Lamjung, Nepal

Date: 11/8/2017

Scale: Not in Scale

Revised
Date: 21/06/2021
Date: 18/08/2019
Date: 22/2/2019

ANNEX-3-30



LEGENDS

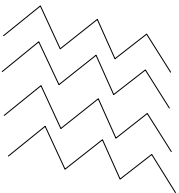
- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

Lasune khola Water Users Committee, Lamjung District,
Gandaki Province

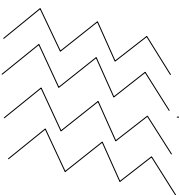
<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Lasune Khola Water Users Committee Lamjung, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised
Date: 21/06/2021
Date: 18/08/2019
Date: 22/2/2019

KIRINCHE
KHOLA

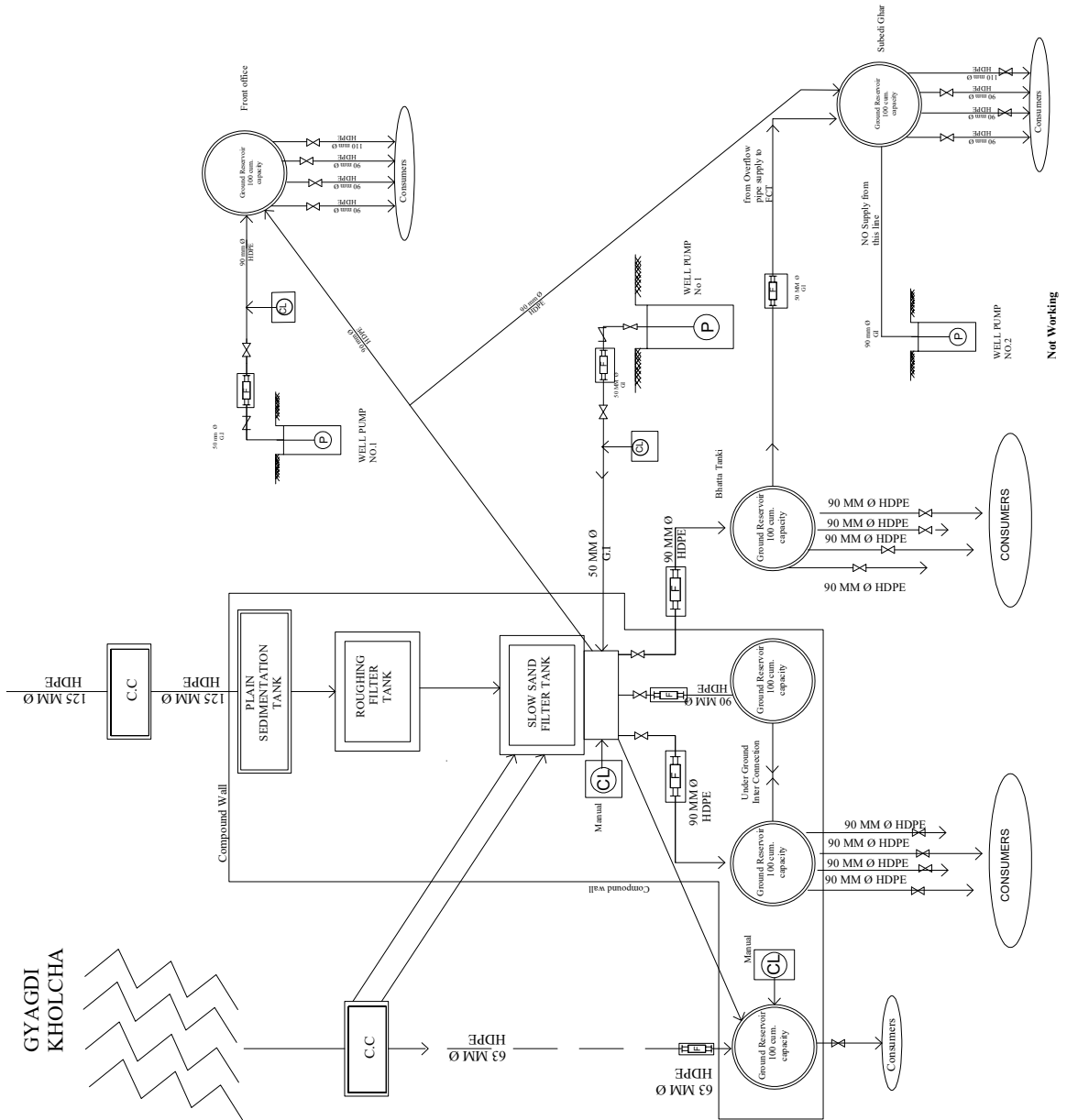


GYAGDI
KHOLCHA



LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point
- Abandoned pipeline



Sundar Bazar Water Users Committee, Lamjung
District, Gandaki Province

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Sundarbazar
Water Users Committee
Lamjung, Nepal

Date: 11/8/2017

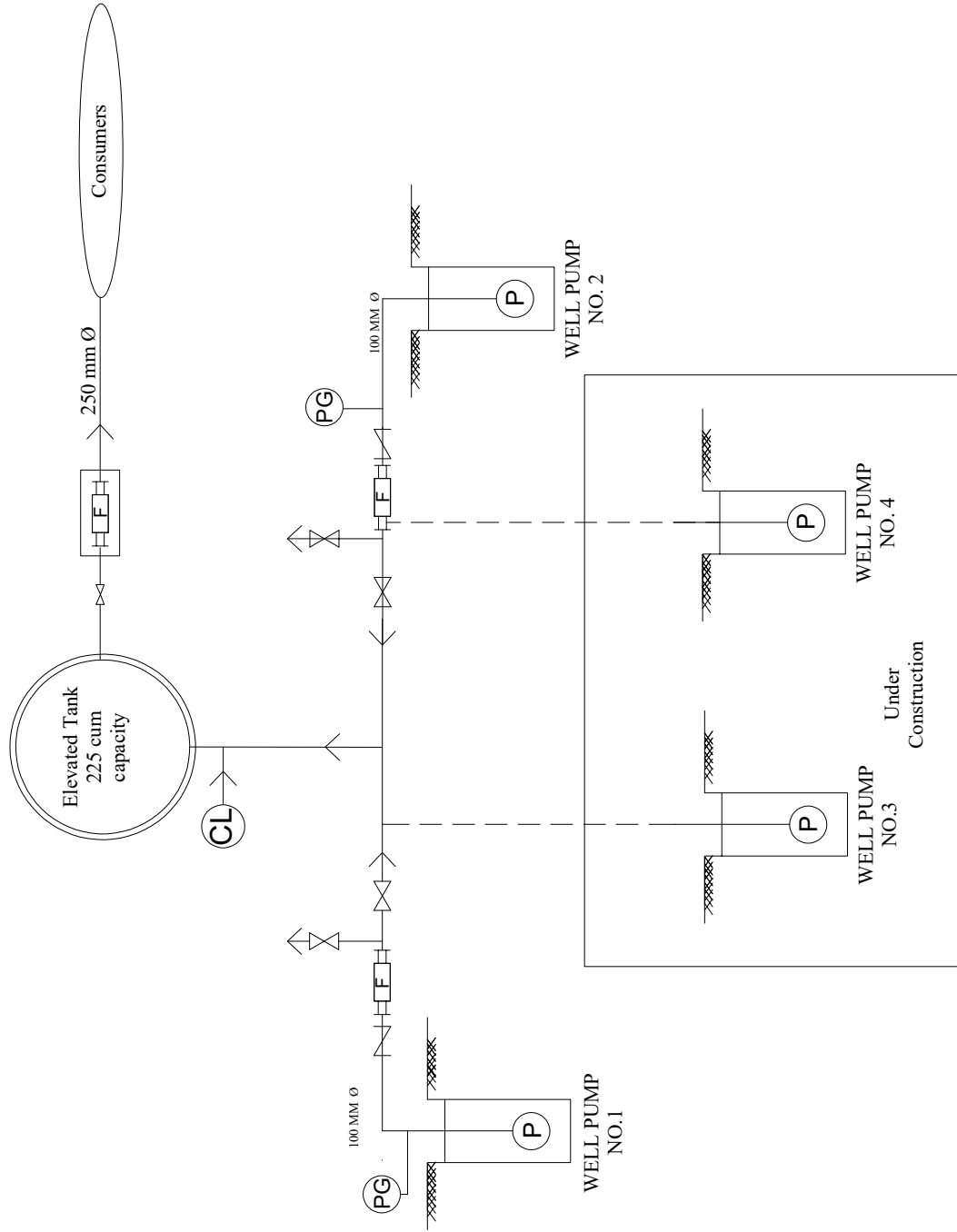
Scale: Not in Scale

Revised
Date: 21/06/2021
Date: 18/08/2019
Date: 22/2/2019

ANNEX-3-29

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

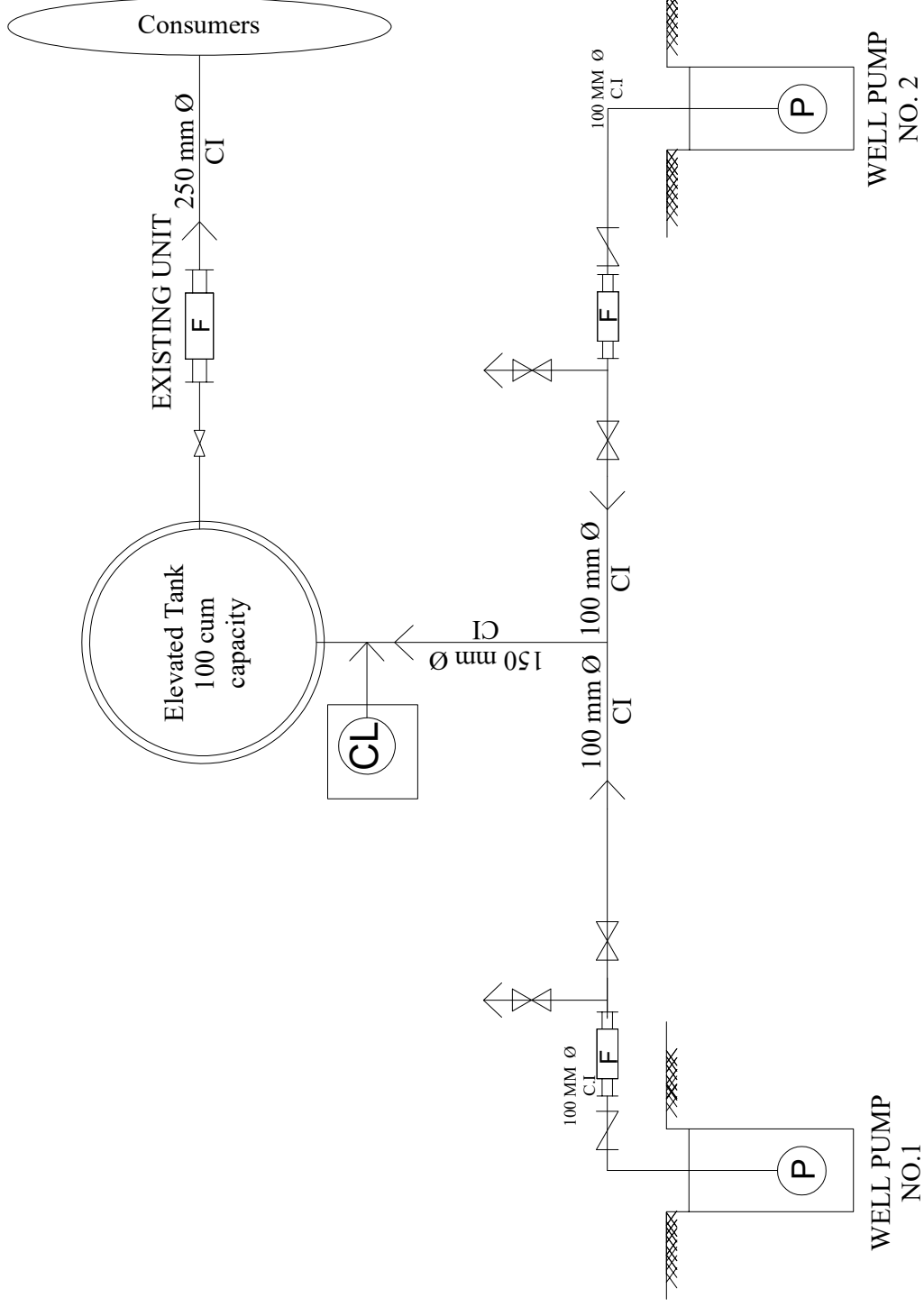
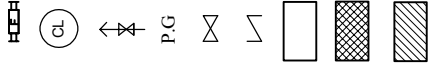


Bayerban Water Users Committee, Morang District,
Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Bayerban Water Users Committee Morang, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point












Itahara Water Users Committee,
Morang District, Province No.1

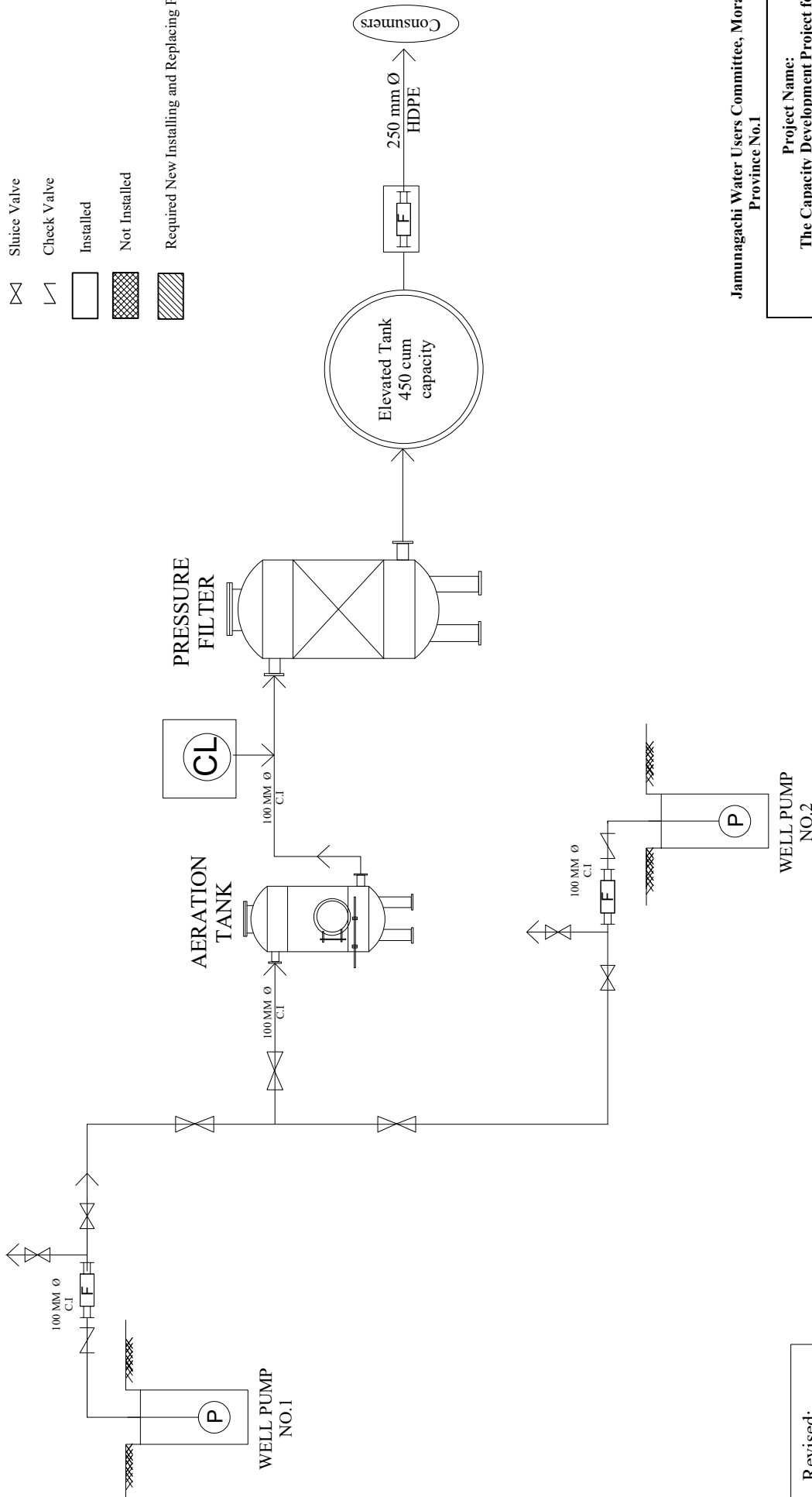
Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Itahara
Water Users Committee
Morang, Nepal

Date: 11/8/2017
Scale: Not in Scale

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



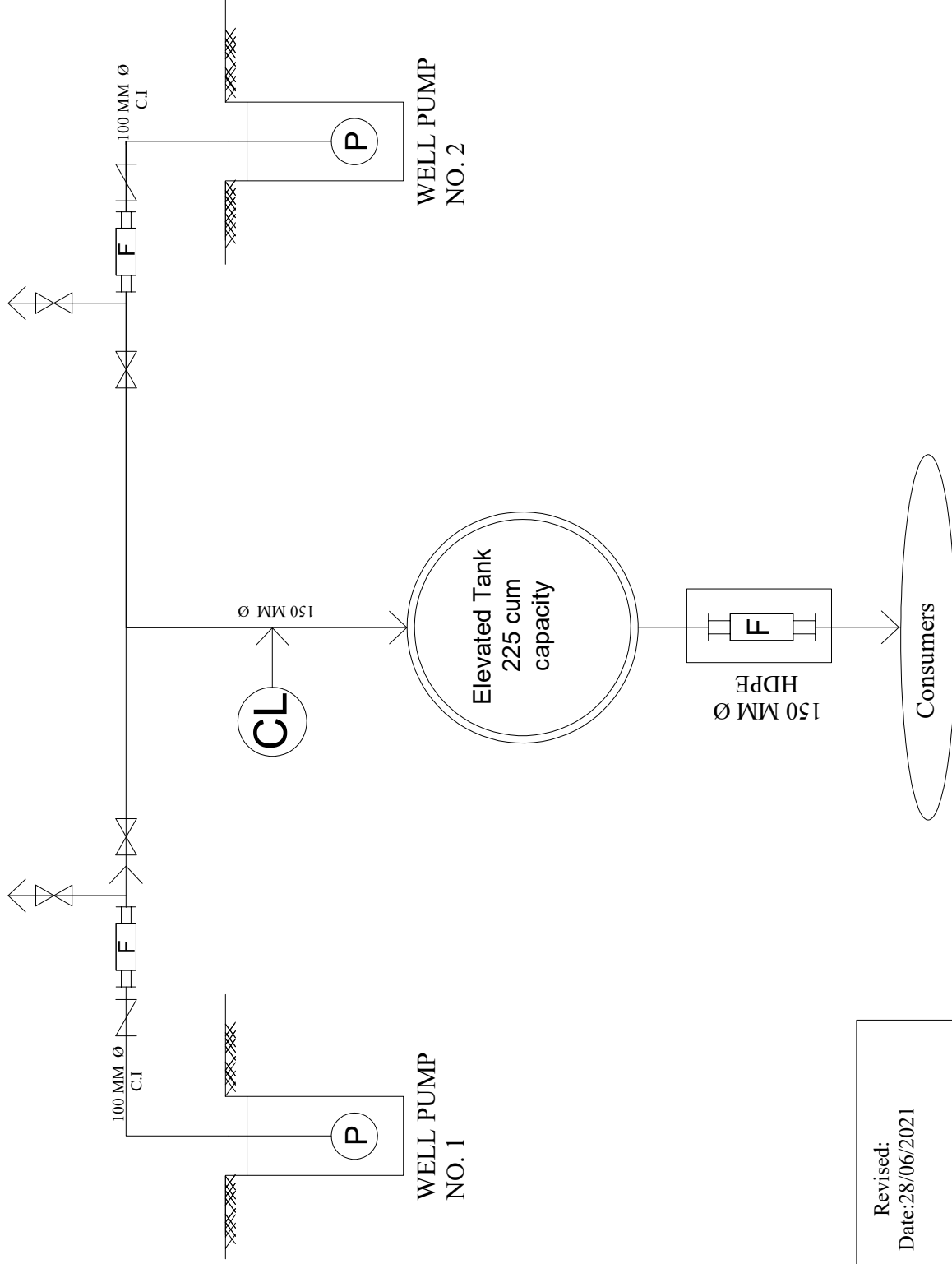
Jamunagachi Water Users Committee, Morang District,
Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Jamunagachi Water Users Committee Morang, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised:
Date: 28/06/2021

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Revised:
Date:28/06/2021

Jhorahat Water Users Committee, Morang District,
Province No.1

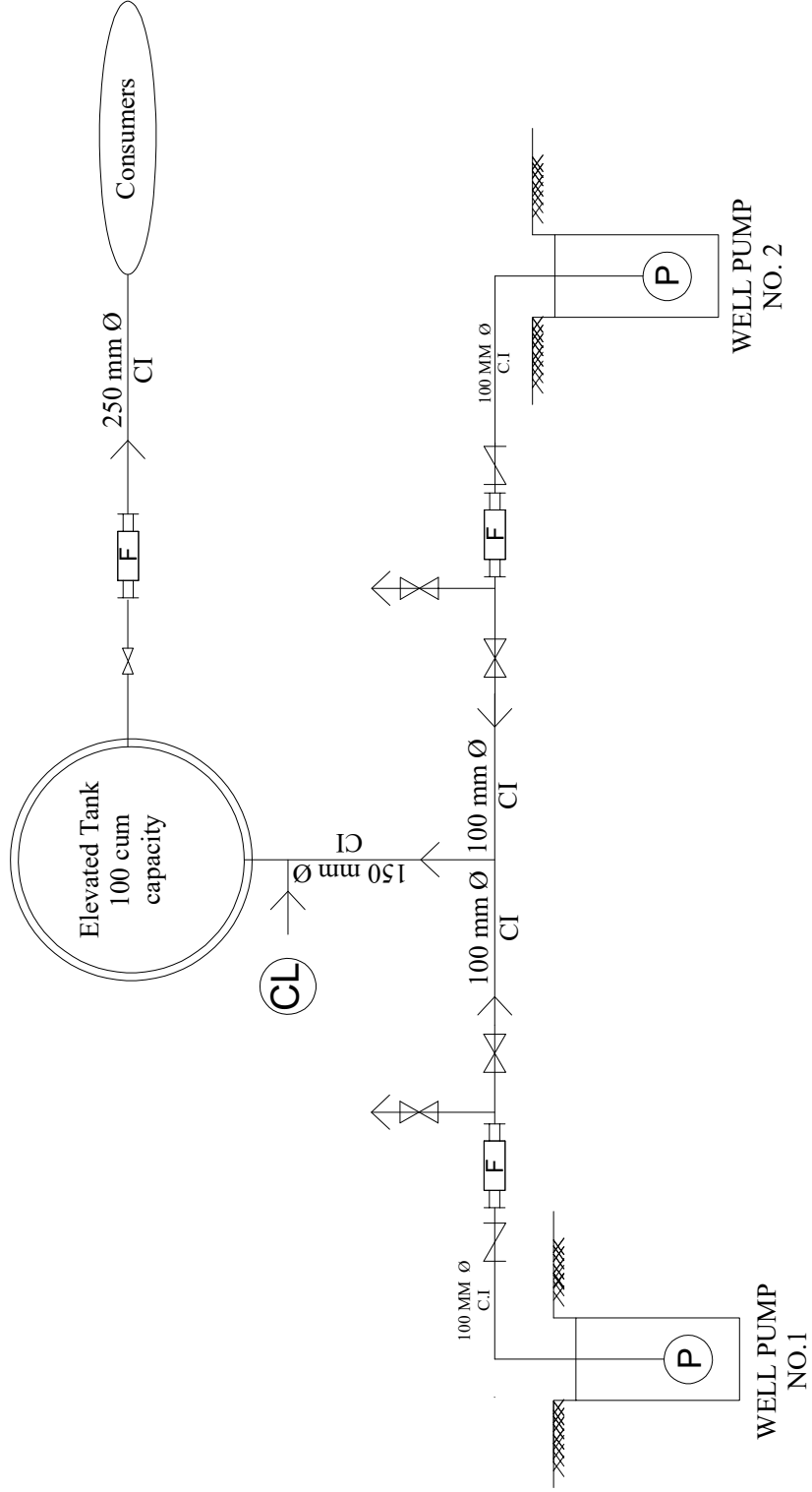
Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMP II)

Drawing Title:
Schematic Flow Diagram Of Jhorahat
Water Users Committee
Morang, Nepal

Date: 11/8/2017
Scale: Not in Scale

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point












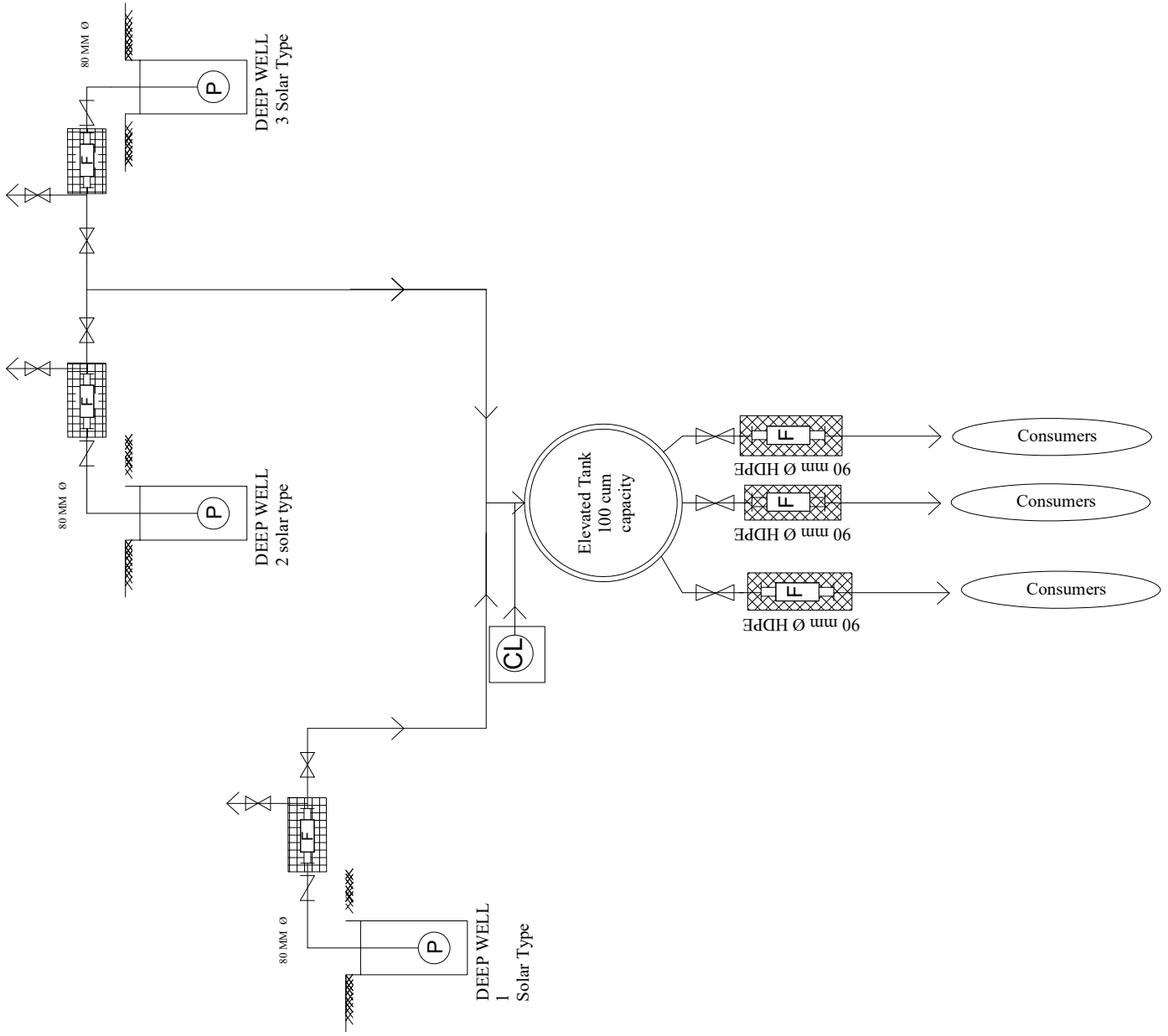
Katahari Water Users Committee, Morang District,
Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Katahari Water Users Committee Morang, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised:
Date:28/06/2021

LEGENDS

- Flowmeter 
- Chlorine Dosing Unit 
- Wash Out 
- Pressure Gauge 
- Sluice Valve 
- Check Valve 
- Installed 
- Not Installed 
- Required New Installing and Replacing Point 



Itahara Water Users Committee,
Morang District, Province No.1

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

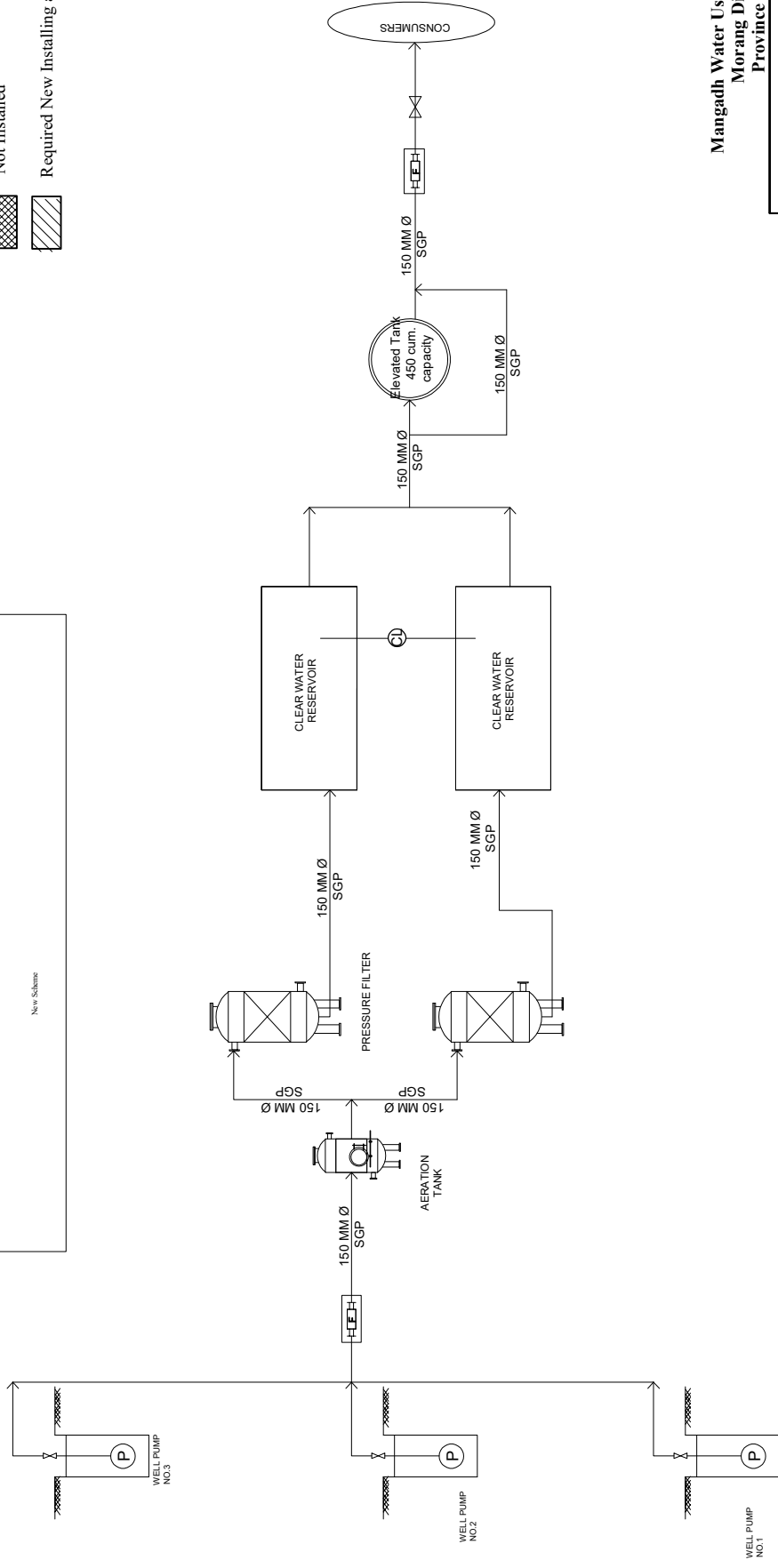
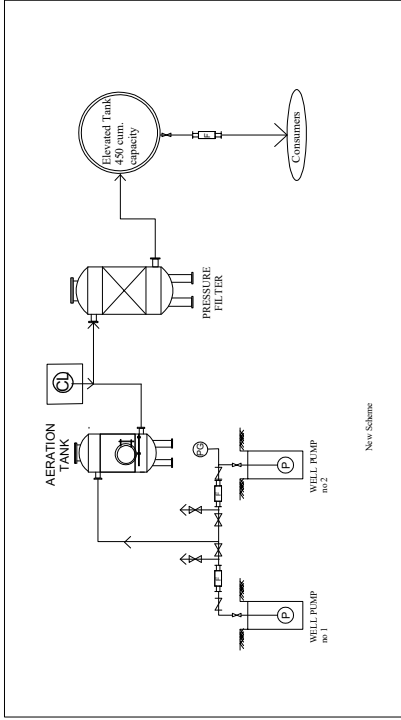
Drawing Title:
Schematic Flow Diagram Of Madhumalla
Water Users Committee
Morang, Nepal

Date: 11/8/2017
Scale: Not in Scale

Revised:
Date: 28/06/2021

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point












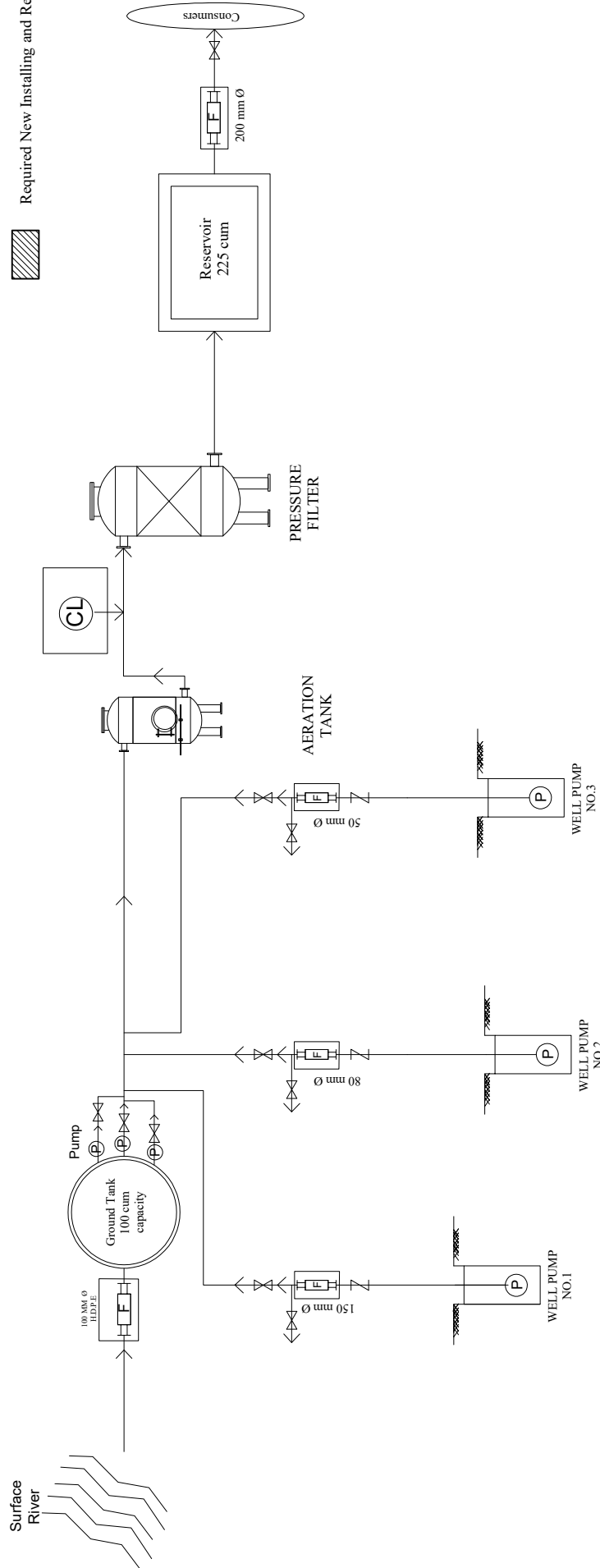
Mangadh Water Users Committee
Morang District
Province no 1

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)
 Drawing Title:
 Schematic Flow Diagram Of Mangadh
 Water Users Committee
 Morang, Nepal
 Scale: Not in Scale

Revised
 Date: 29/06/2021
 Date: 18/08/2019
 Date: 25/4/2019
 Date: 11.2.2019
 Date: 11/8/2017
 DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












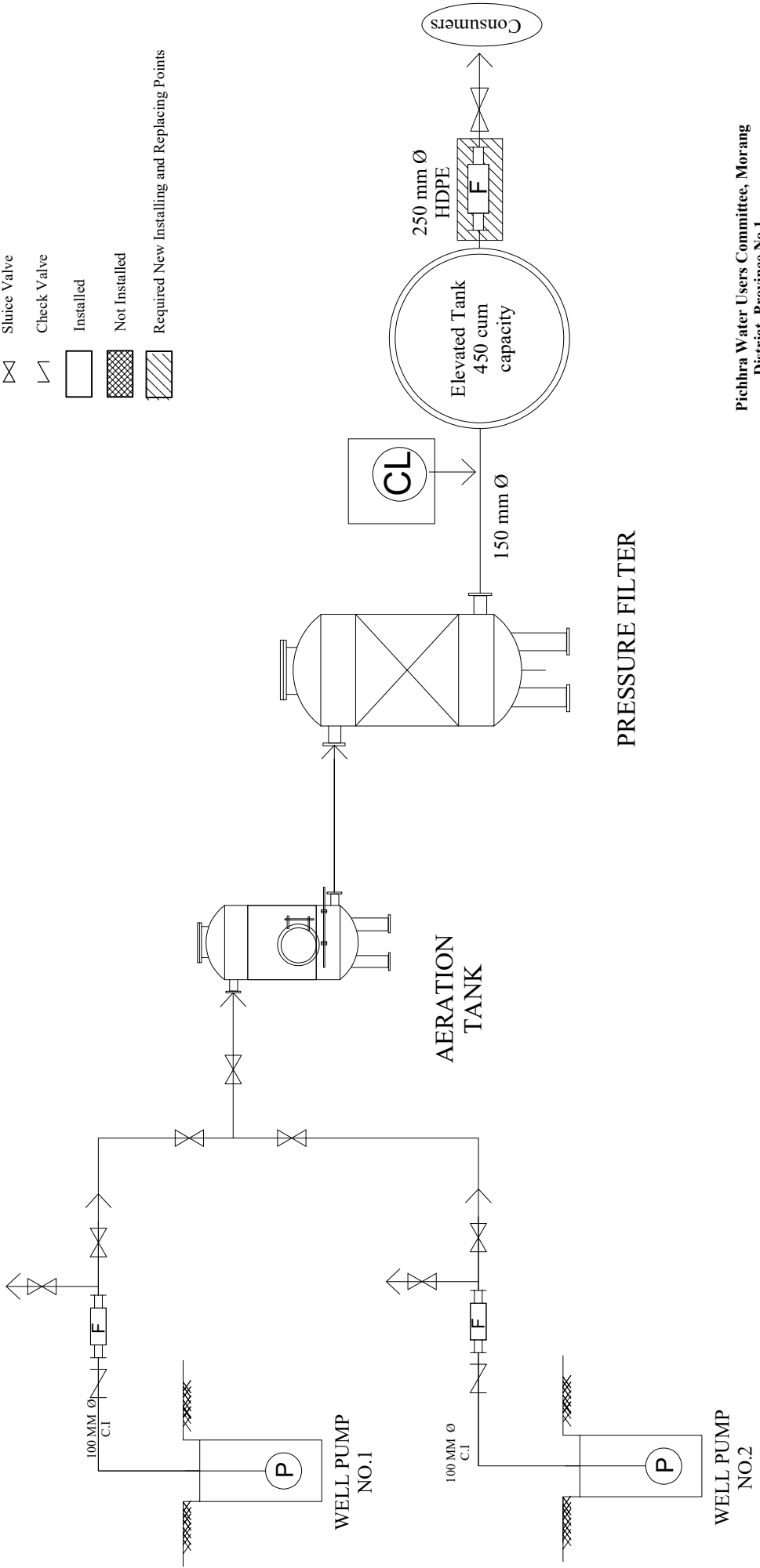
Pathri-Sanischare Water Users Committee
 Morang District
 Province No.1

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Pathri- Sanischare Water Users Committee Morang, Nepal	Date: 11/8/2017 Scale: Not in Scale

Revised:
Date: 29/06/2021

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Slitice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Points












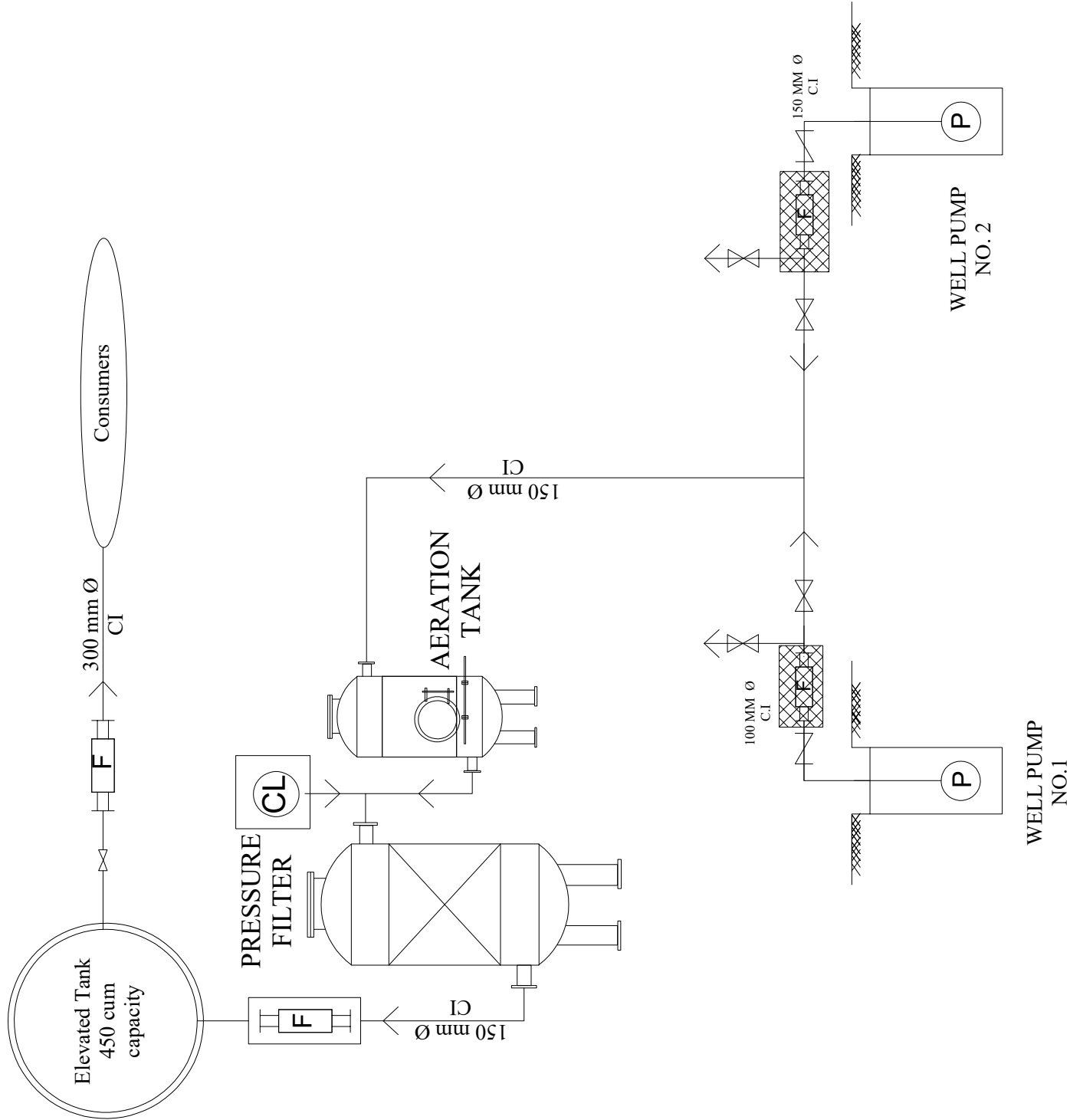
Revised:
Date: 28/06/2021

Pichhra Water Users Committee, Morang
District, Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Pichhra Water Users Committee Morang, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Rangeli Water Users Committee, Morang
District, Province No.1

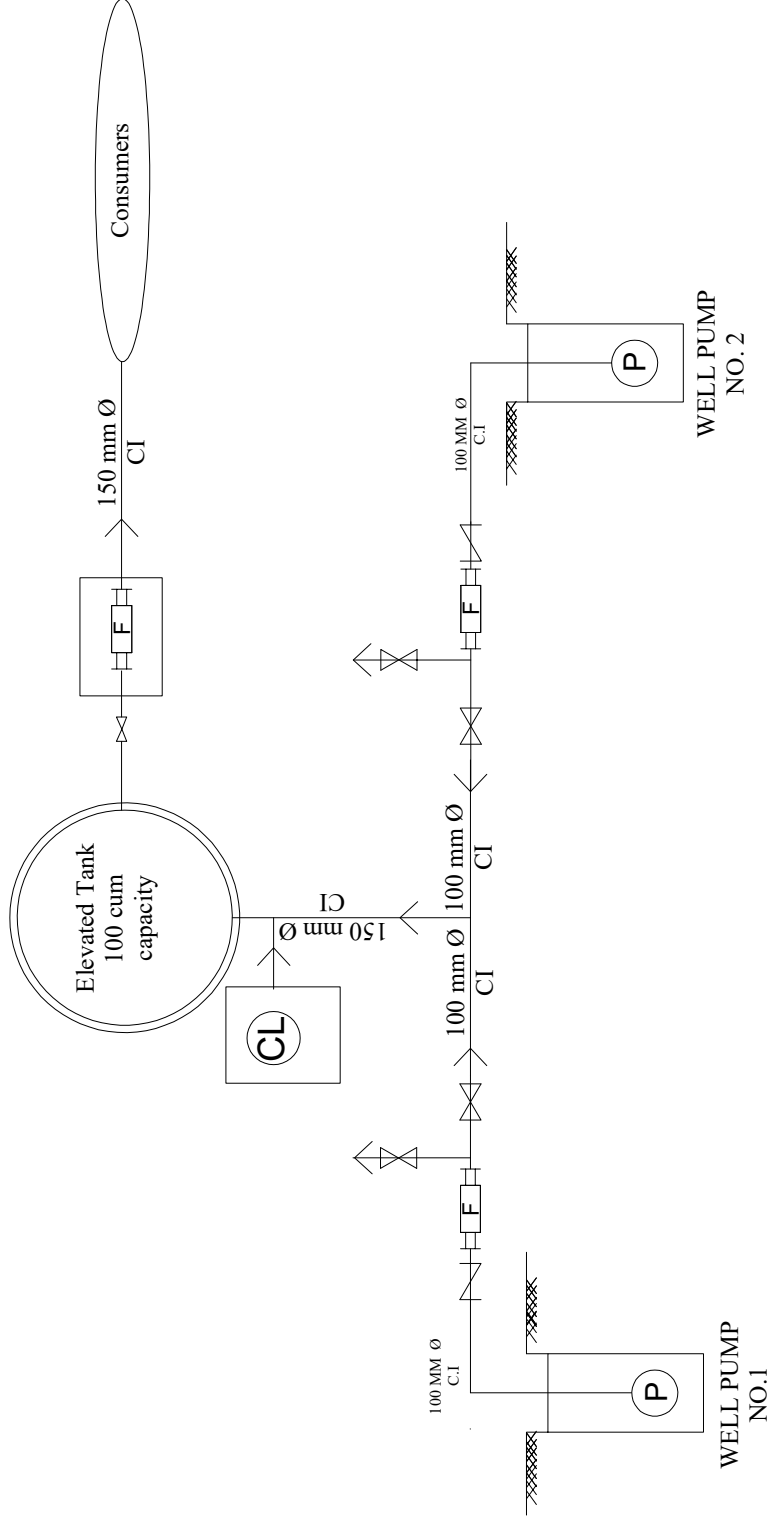
Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)		Date: 11/8/2017
Drawing Title: Schematic Flow Diagram Of Rangeli Water Users Committee Morang, Nepal		Scale: Not in Scale

WELL PUMP
NO.1

WELL PUMP
NO.2

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



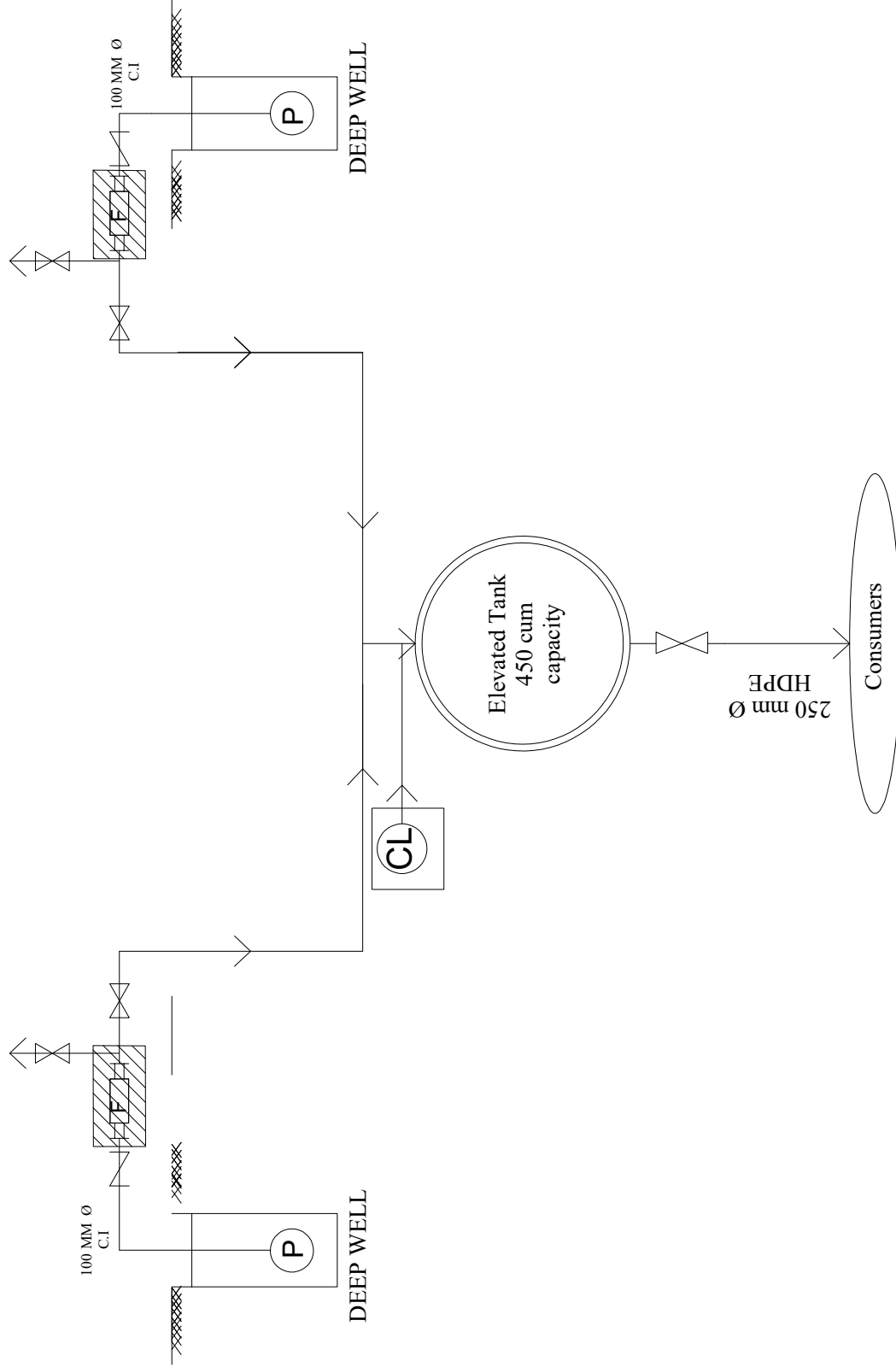
Sorabhag-Karsiya Water Users Committee, Morang District,
Province No.1

Revised:
Date: 25/06/2021

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Sorabhag-Karsiya Water Users Committee Morang, Nepal	Date: 11/8/2017 Scale: Not in Scale

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Points



Tankisnuwari Water Users Committee
Morang District Province No.1

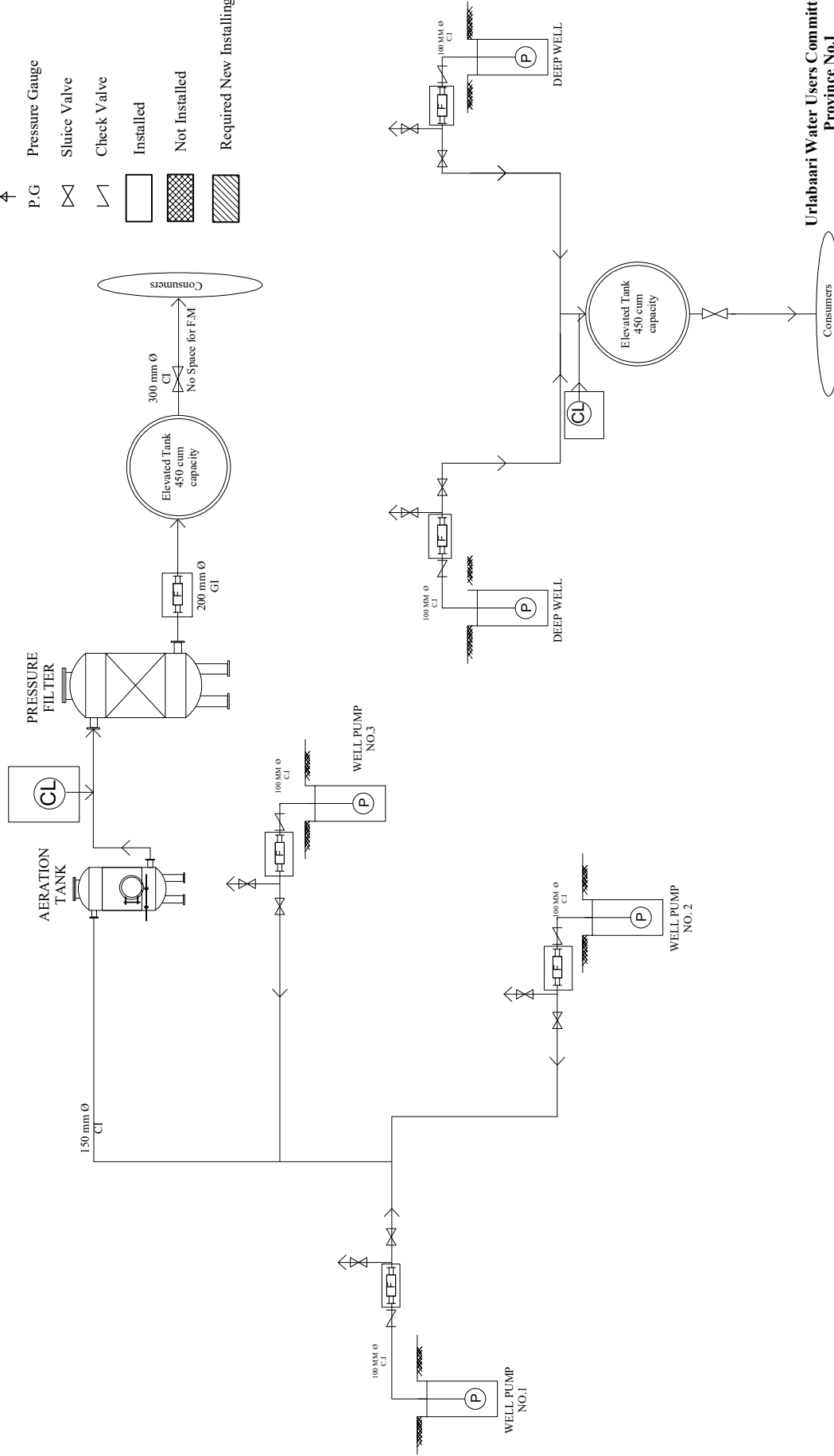
Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Tankisnuwari
Water Users Committee
Morang, Nepal

Date: 11/8/2017
Scale: Not in Scale

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

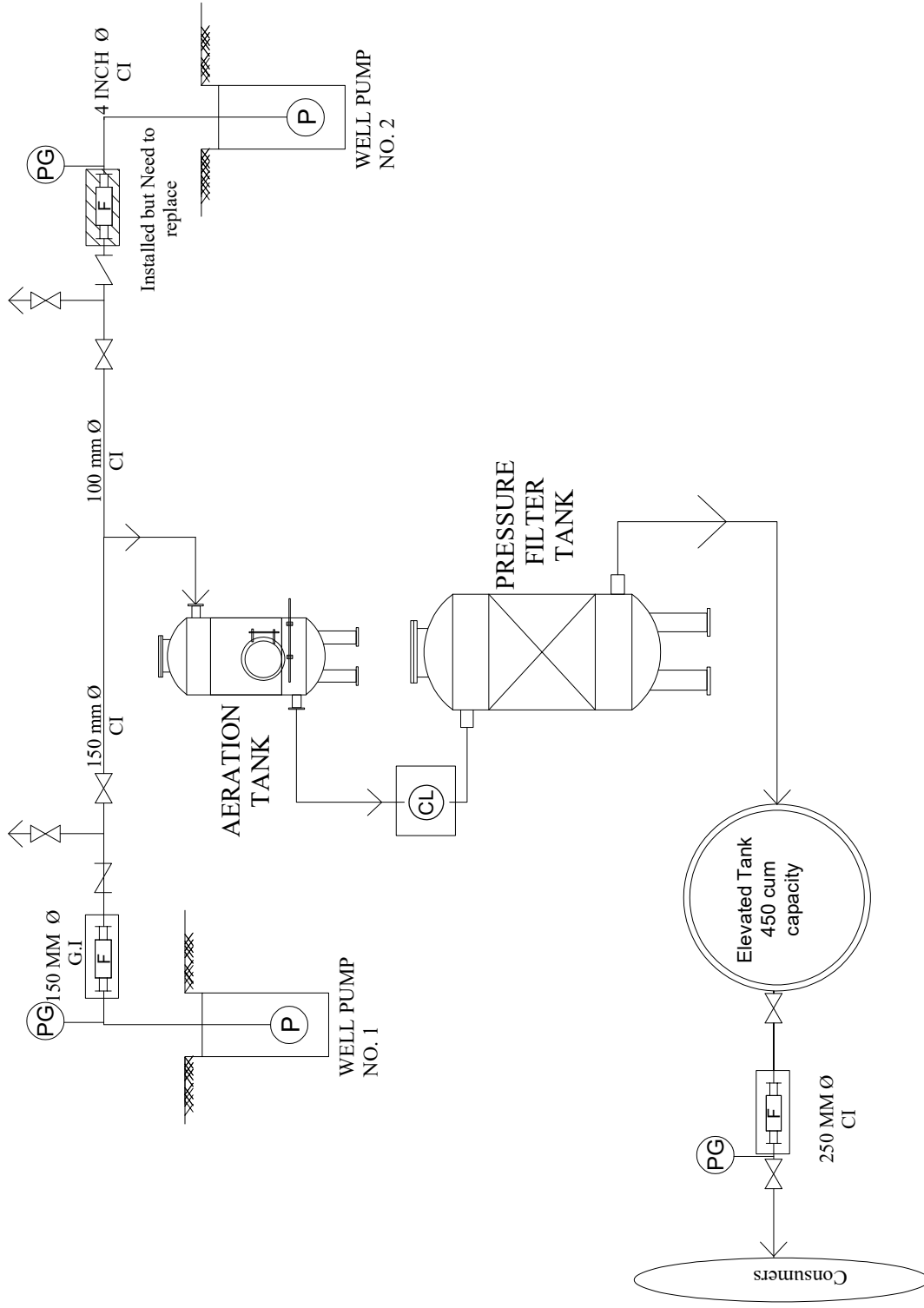


Uurlabaari Water Users Committee, Morang District,
Province No.1

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Uurlabaari Water Users Committee Morang, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

LEGENDS

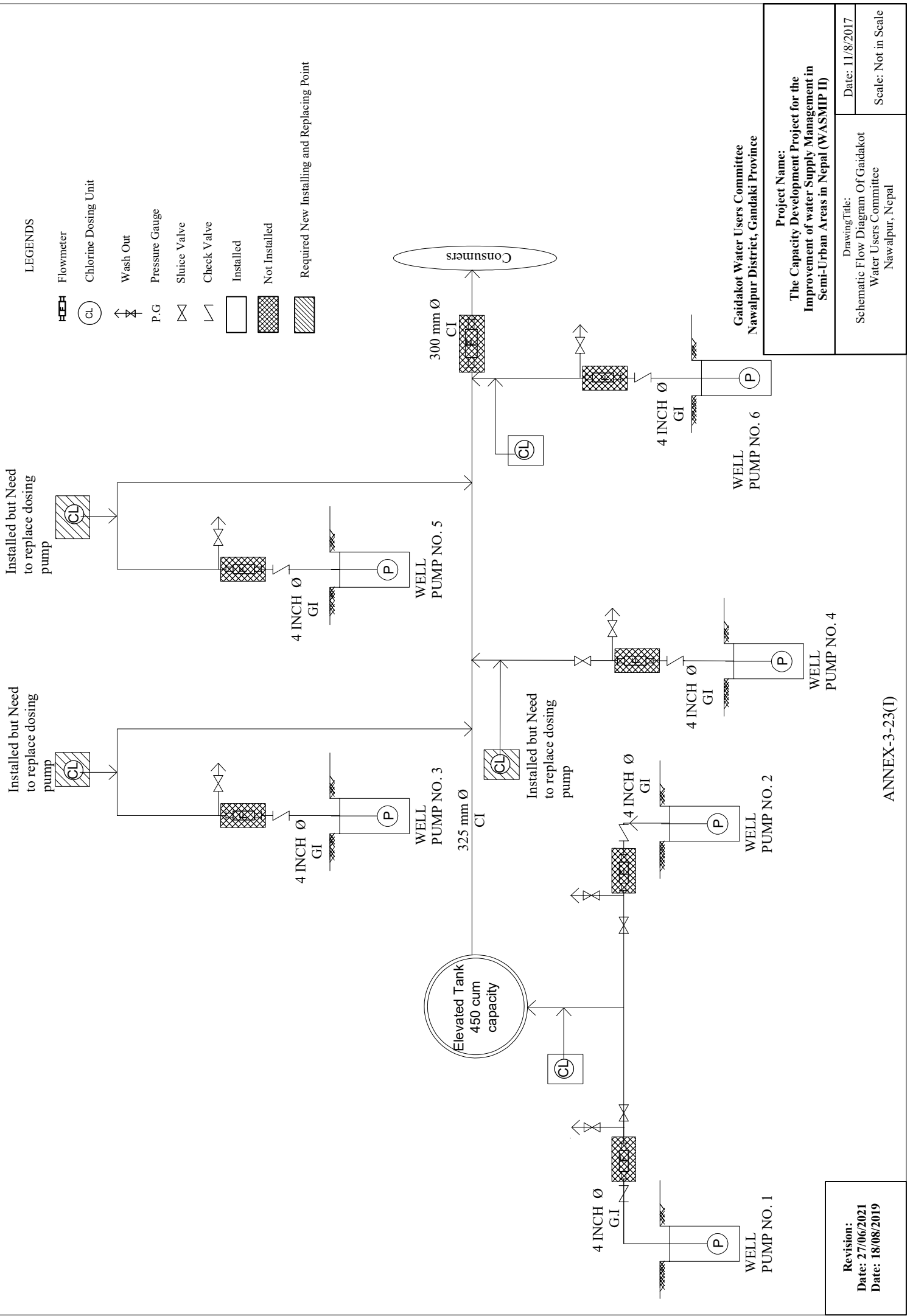
- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Agauli Water Users Committee
 Nawalpur District
 Gandaki Province

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Agauli Water Users Committee Nawalpur, Nepal</p>	<p>Scale: Not in Scale</p>

<p>Revised Date: 22/06/2021</p>	<p>Date: 18/08/2019</p>
<p>Date: 23/4/2019</p>	<p>Date: 19/2/2019</p>
<p>Date: 11/8/2017</p>	



LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

Installed but Need to replace dosing pump

Installed but Need to replace dosing pump

Installed but Need to replace dosing pump

Project Name:
 The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

Client:
 Gaidakot Water Users Committee
 Nawalpur District, Gandaki Province

Drawing Title:
 Schematic Flow Diagram Of Gaidakot Water Users Committee
 Nawalpur, Nepal

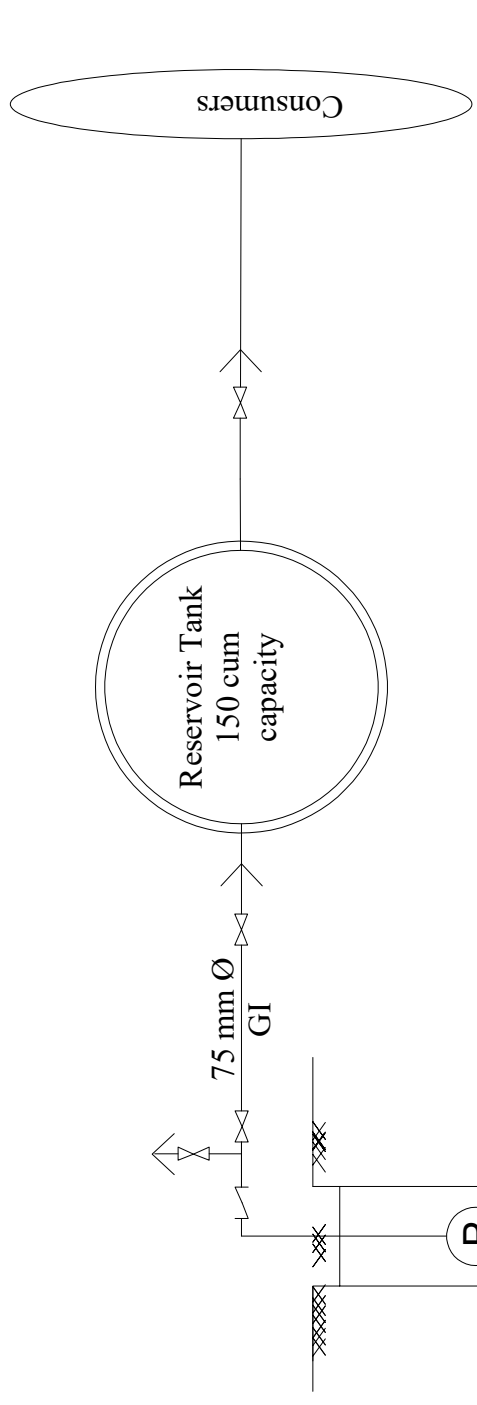
Date: 11/8/2017

Scale: Not in Scale

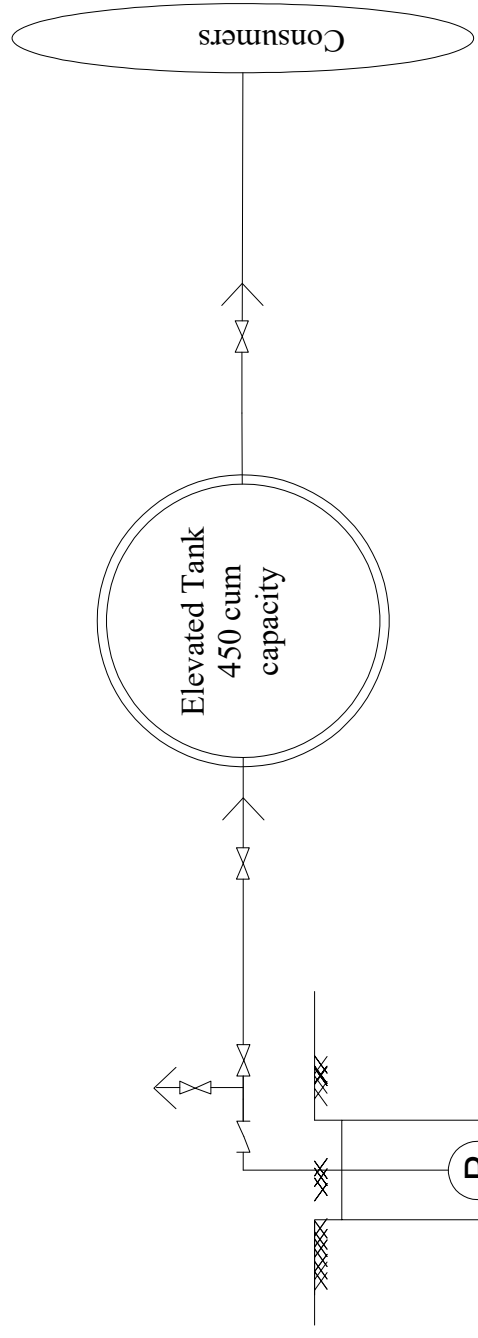
Revision:
 Date: 27/06/2021
 Date: 18/08/2019

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



TATRIBAS AREA
Under Construction



TRINETRA AREA
Under Construction

Gaidakot Water Users Committee
Nawalpur District, Gandaki Province

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Gaidakot
Water Users Committee
Nawalpur, Nepal

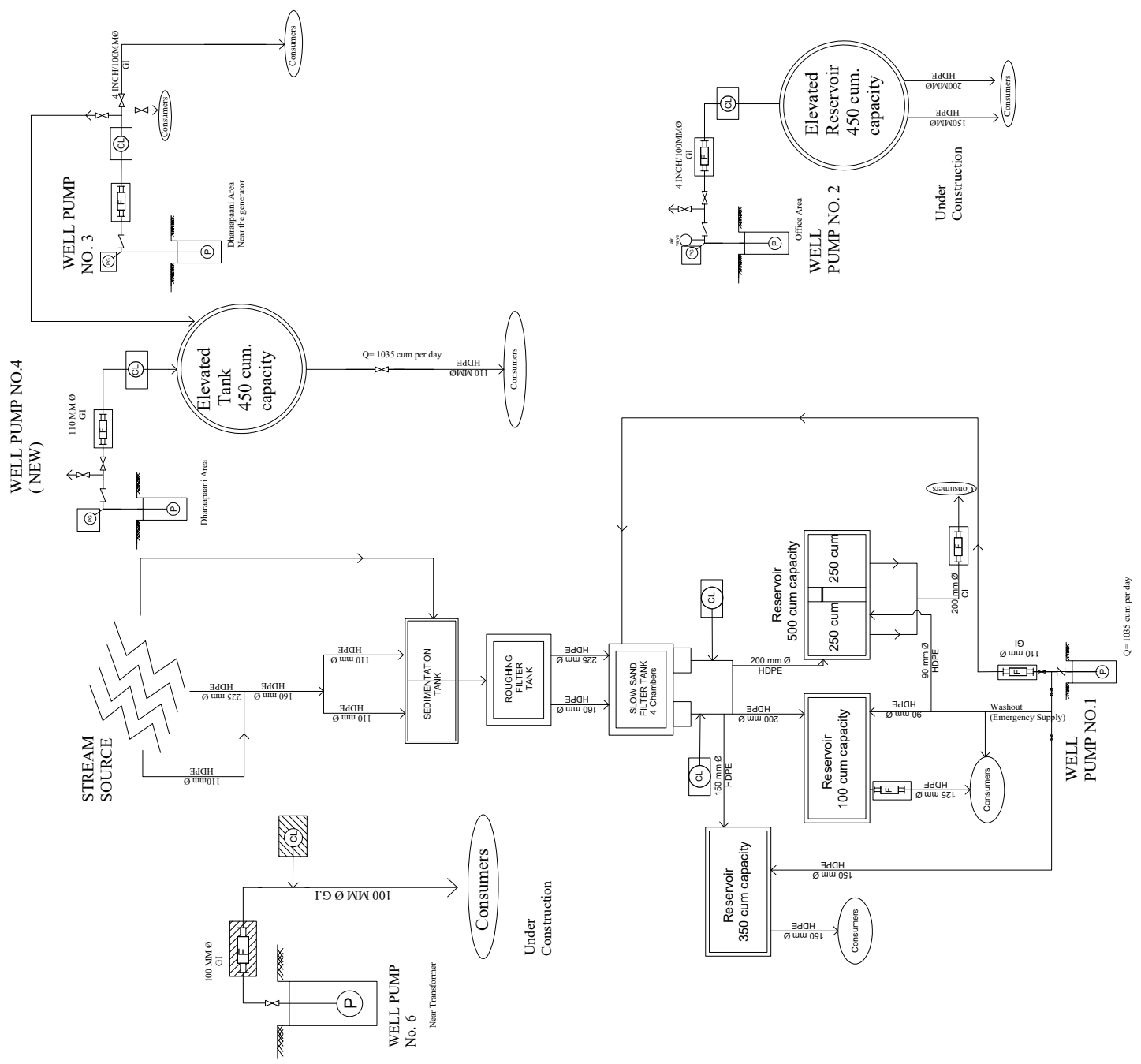
Date: 11/8/2017

Scale: Not in Scale

Revision:
Date: 27/06/2021
Date: 18/08/2019

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

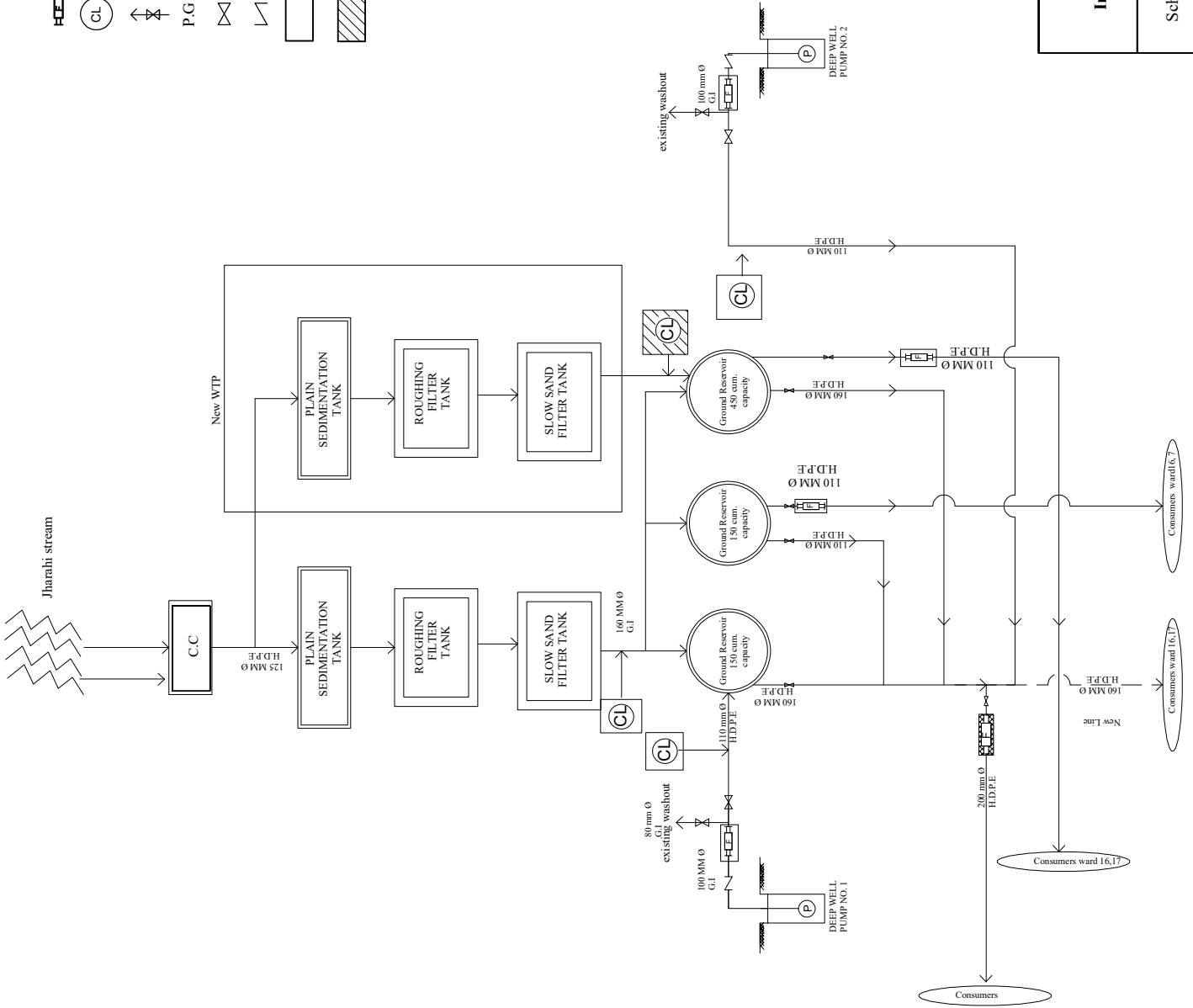


Pragatinagar Water Users Committee
Nawalpur District
Gandaki Province

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMP II)
 Drawing Title:
 Schematic Flow Diagram Of Pragatinagar
 Water Users Committee
 Nawalpur, Nepal

Revised
 Date: 22/06/2021
 Date: 18-08-2019
 Date: 25/4/2019
 Date: 11.2.2019
 Date: 11/8/2017
 DD/MM/YYYY

- LEGENDS**
- Flowmeter
 - Chlorine Dosing Unit
 - Wash Out
 - Pressure Gauge
 - Sluice Valve
 - Check Valve
 - Installed
 - Required New Installing and Replacing Point



Rajahar Water Users Committee
 Nawalpur District
 Gandaki Province

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)

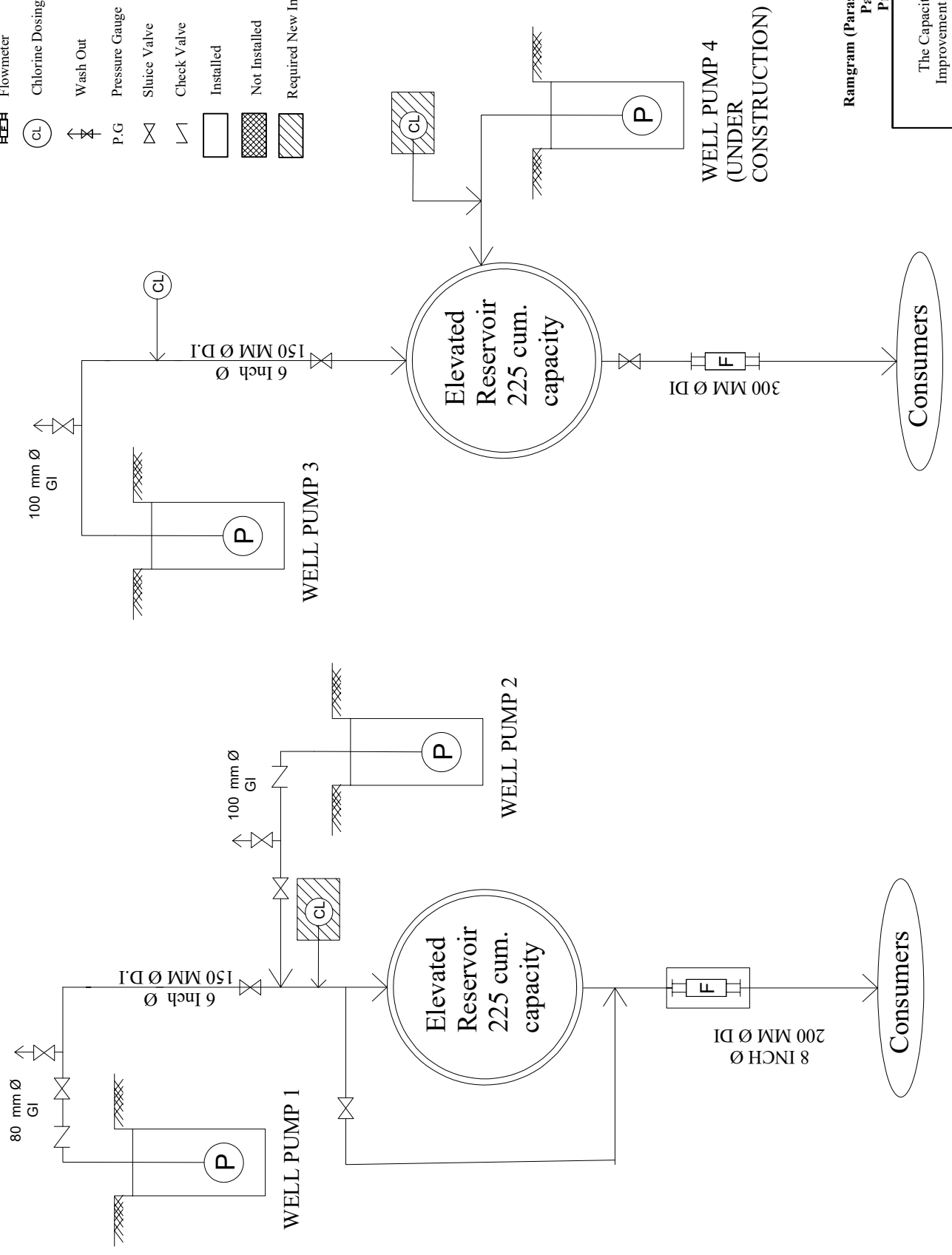
Drawing Title:
 Schematic Flow Diagram Of Rajahar
 Water Users Committee
 Nawalpur, Nepal

Scale: Not in Scale

Revised Date: 2021/06/28
Date: 18/08/2019
Date: 23/4/2019
Date: 19.2.2019
Date: 11/8/2017

LEGENDS

- Flowmeter**
- Chlorine Dosing Unit**
- Wash Out**
- Pressure Gauge**
- Sluice Valve**
- Check Valve**
- Installed**
- Not Installed**
- Required New Installing and Replacing Points**



Ramgram (Parasi) Water Users Committee
Parasi District
Province no 5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMP II)	
Drawing Title: Schematic Flow Diagram Of Parasi Water Users Committee	Scale: Not in Scale

Consumers

TEMPLE SIDE

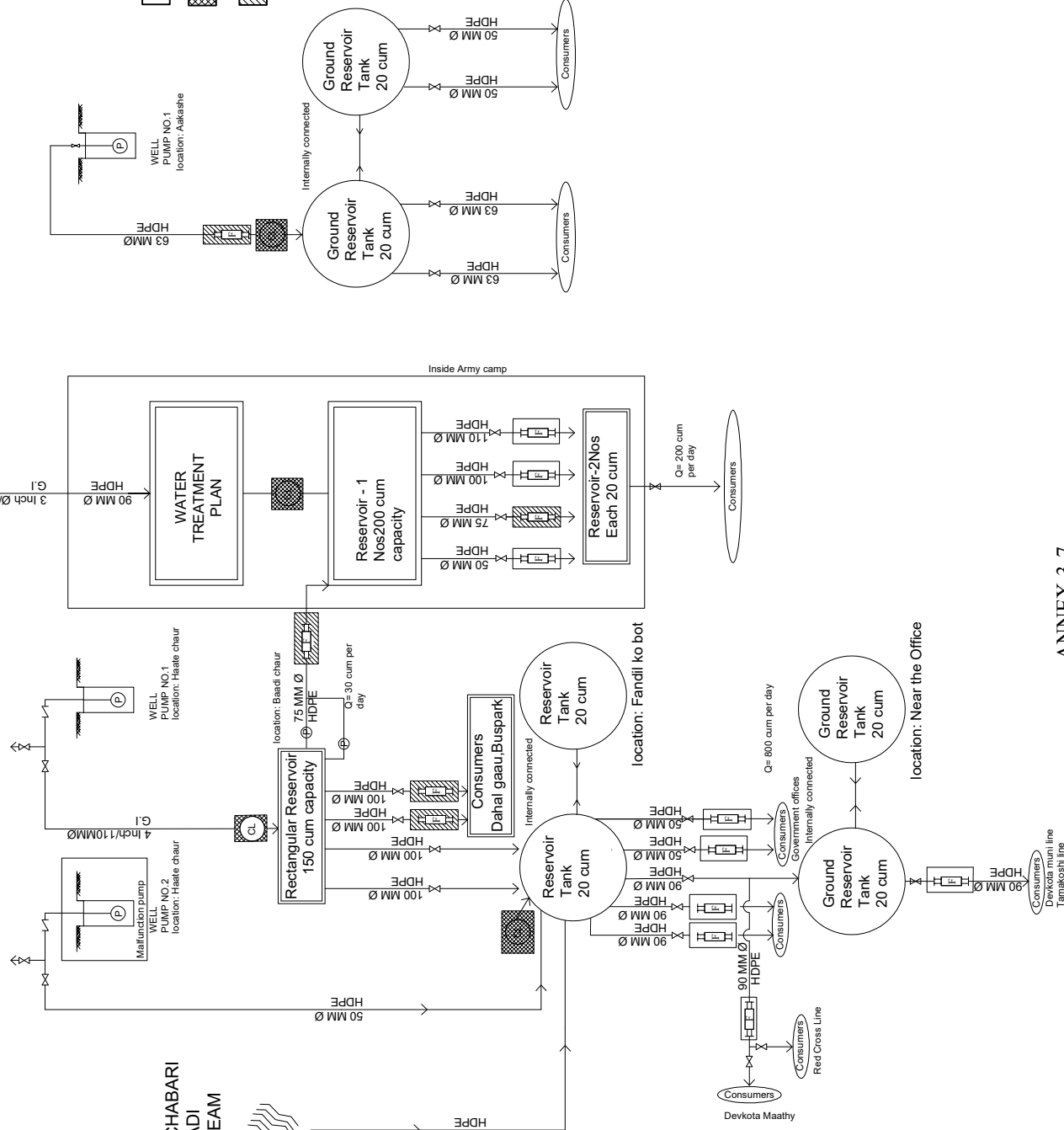
Consumers

INSIDE OFFICE

Revised
Date: 25/06/2021
Date: 25/05/2020
Date: 18/06/2019
Date: 25/4/2019
Date: 11/2/2019
Date: 11/8/2017
DD/MM/YYYY

BHALUA
KHOLA
(SPRING) +
LAMAPATE
STREAM

MACHABARI
+ SADI
STREAM



LEGENDS

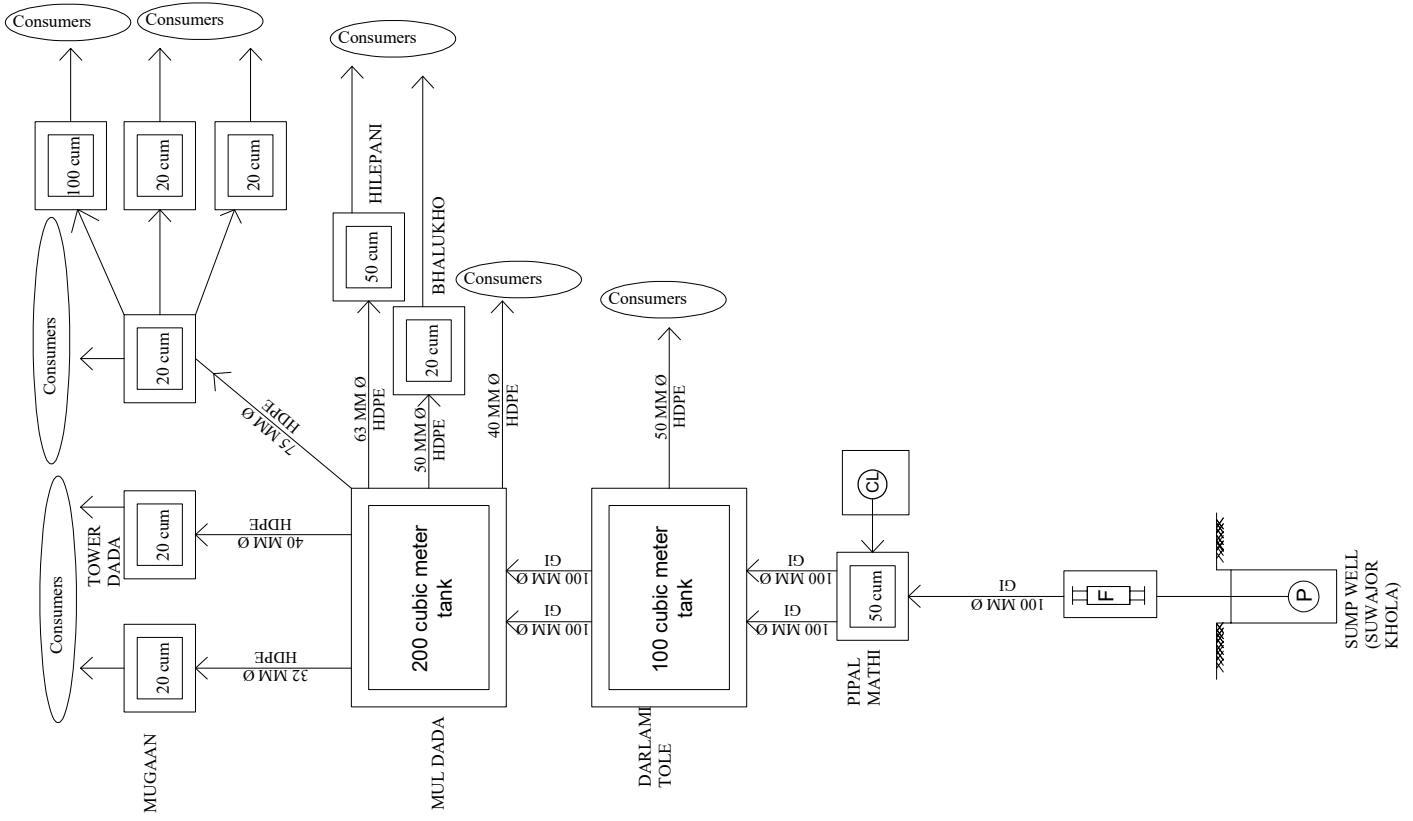
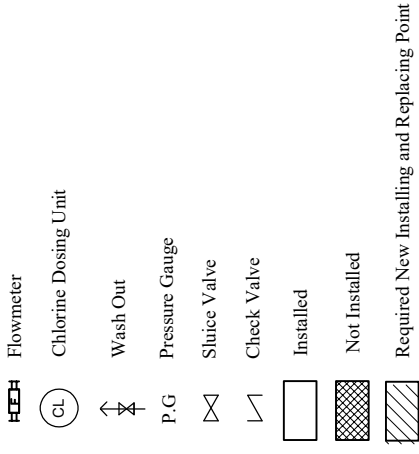
- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point

Manthali Water Users Committee
Ramechhap District
Province no 3

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)
Drawing Title:
Schematic Flow Diagram Of Manthali
Water Users Committee
Ramechhap, Nepal
Scale: Not in Scale

Revised
Date: 22/06/2021
Date: 16/01/2020
Date: 18/08/2019
Date: 13/5/2019
Date: 25/4/2019
Date: 11.2.2019
Date: 11/8/2017
DD/MM/YYYY

LEGENDS



Ramechhap Water Users Committee, Ramechhap District,
Province no 3

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

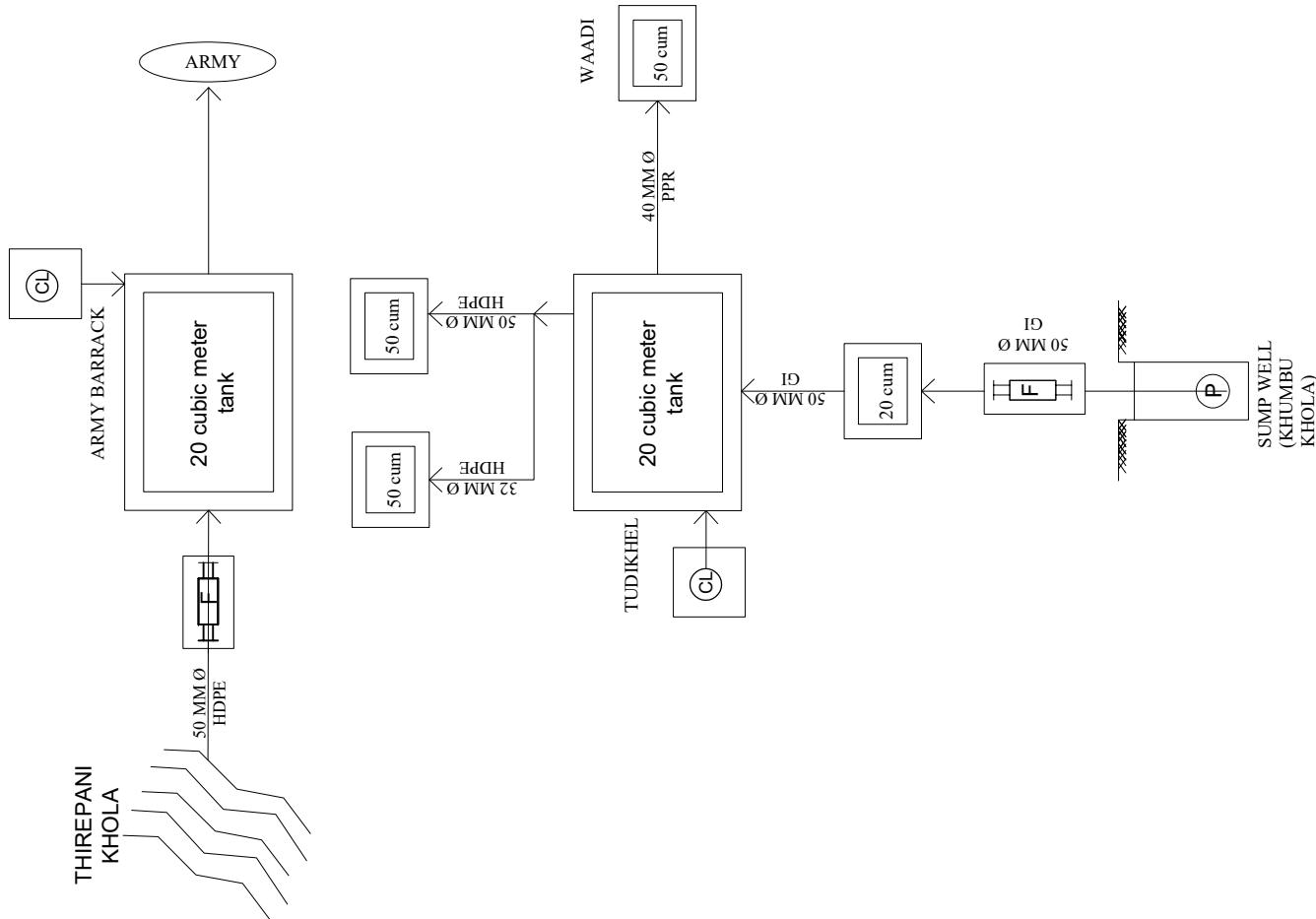
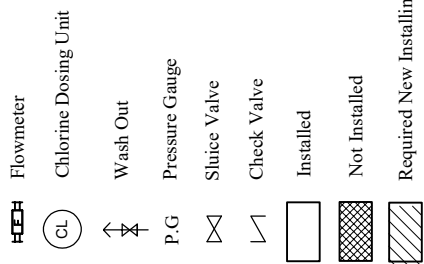
Drawing Title:
Schematic Flow Diagram Of Ramechhap
Water Users Committee
Ramechhap, Nepal

Date: 11/8/2017

Scale: Not in Scale

Revised
Date: 22/06/2021
Date: 25/05/2020
Date: 18/06/2019
Date: 11/2/2019










LEGENDS

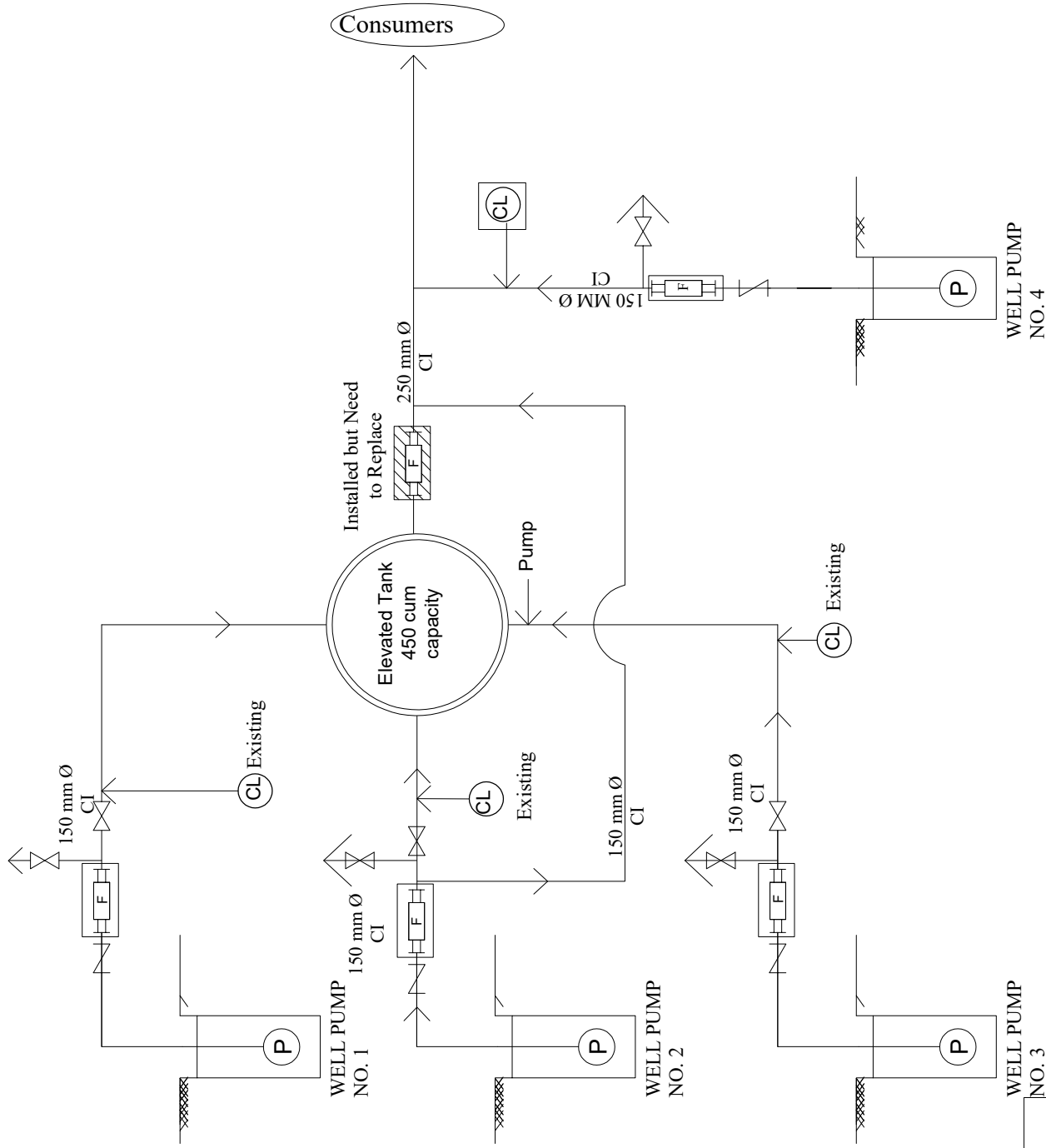


**Ramechhap Water Users Committee,
Ramechhap District, Province No.3**

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Ramechhap Water Users Committee Ramechhap, Nepal	Date: 11/8/2017 Scale: Not in Scale

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Anandban Water Users Committee, Rupandehi District,
Province No.5










Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

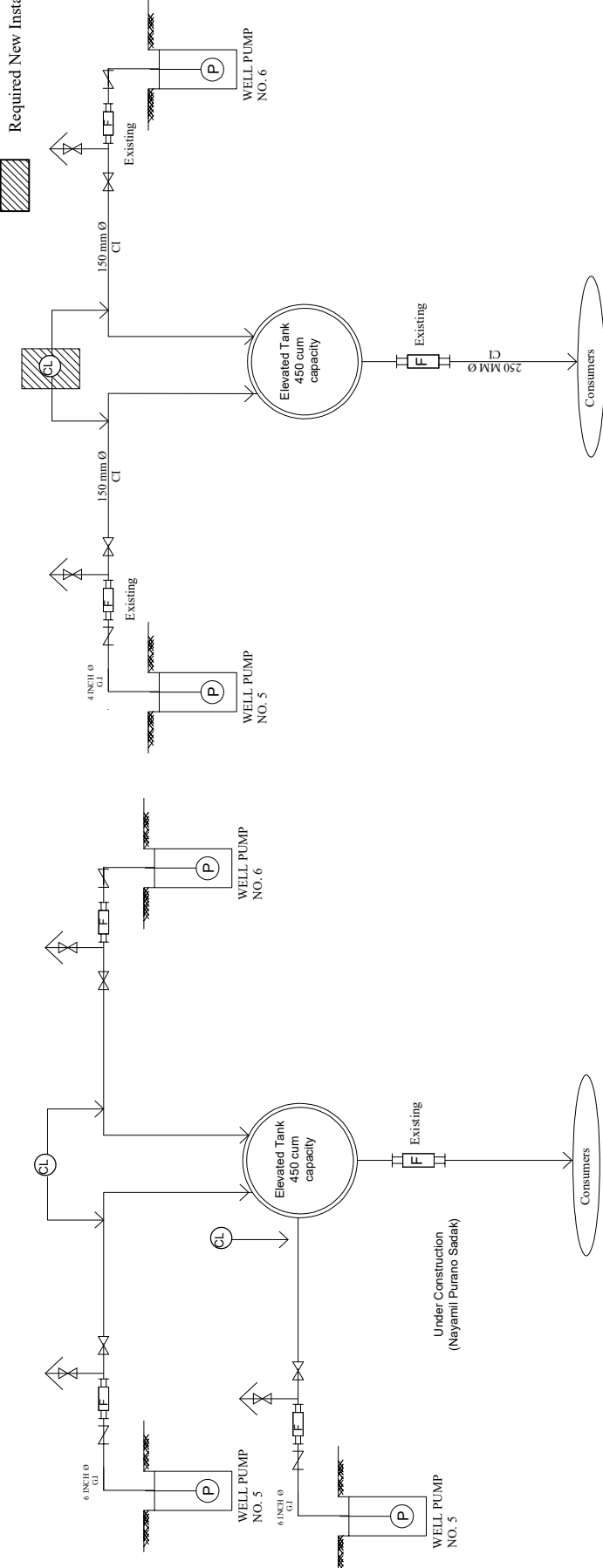
Drawing Title:
Schematic Flow Diagram Of Anandban
Water Users Committee
Rupandehi, Nepal

Date: 11/8/2017
Scale: Not in Scale

Revised:
Date: 2021/06/25

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G.
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



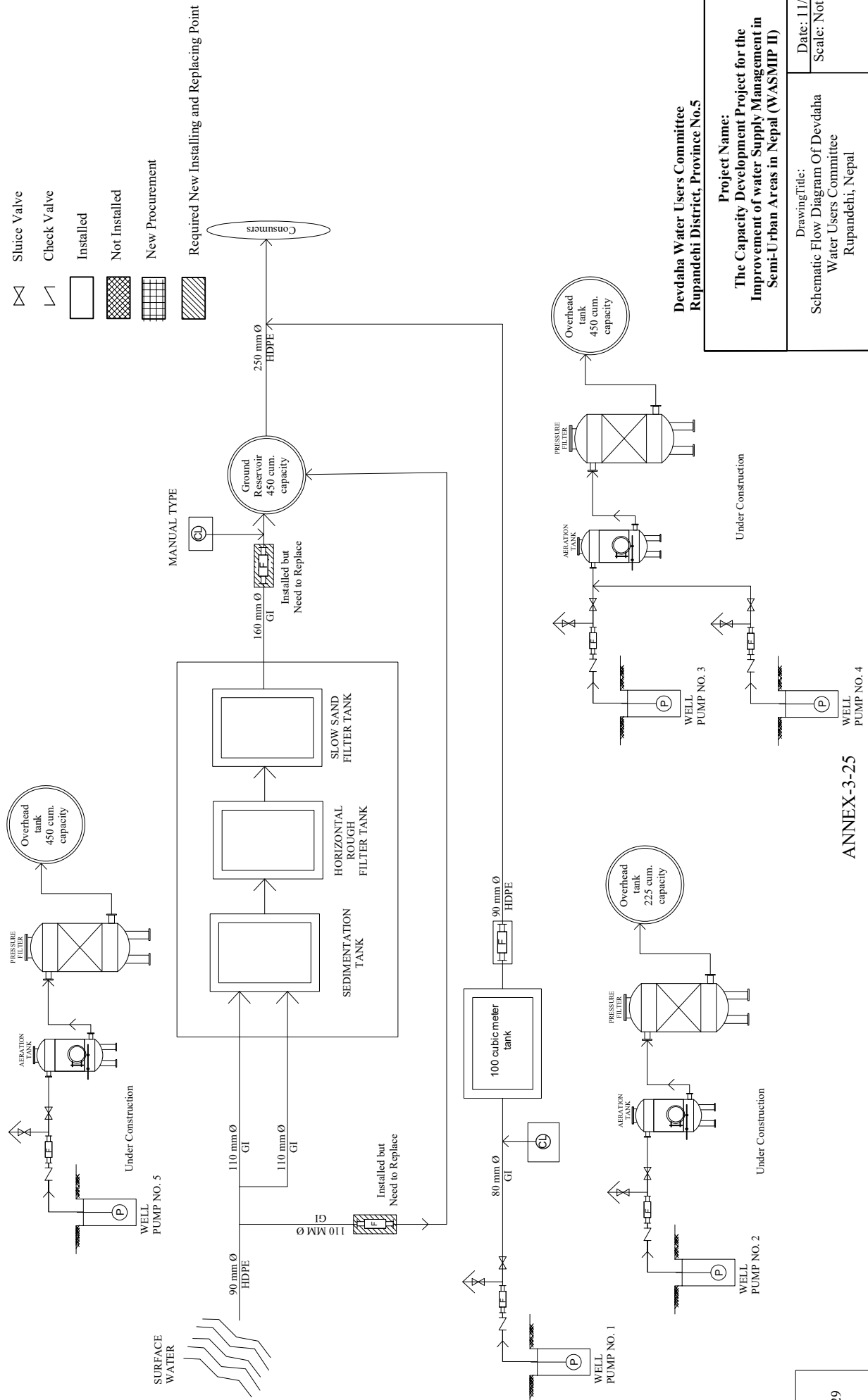
Anandban Water Users Committee, Rupandehi District, Province No.5

<p>Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>	
<p>Drawing Title: Schematic Flow Diagram Of Anandban Water Users Committee Rupandehi, Nepal</p>	<p>Date: 11/8/2017 Scale: Not in Scale</p>

Revised:
Date: 2021/06/22

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- New Procurement
- Required New Installing and Replacing Point



**Devdaha Water Users Committee
Rupandehi District, Province No.5**

**Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)**

Drawing Title:
**Schematic Flow Diagram Of Devdaha
Water Users Committee
Rupandehi, Nepal**










Date: 11/8/2017

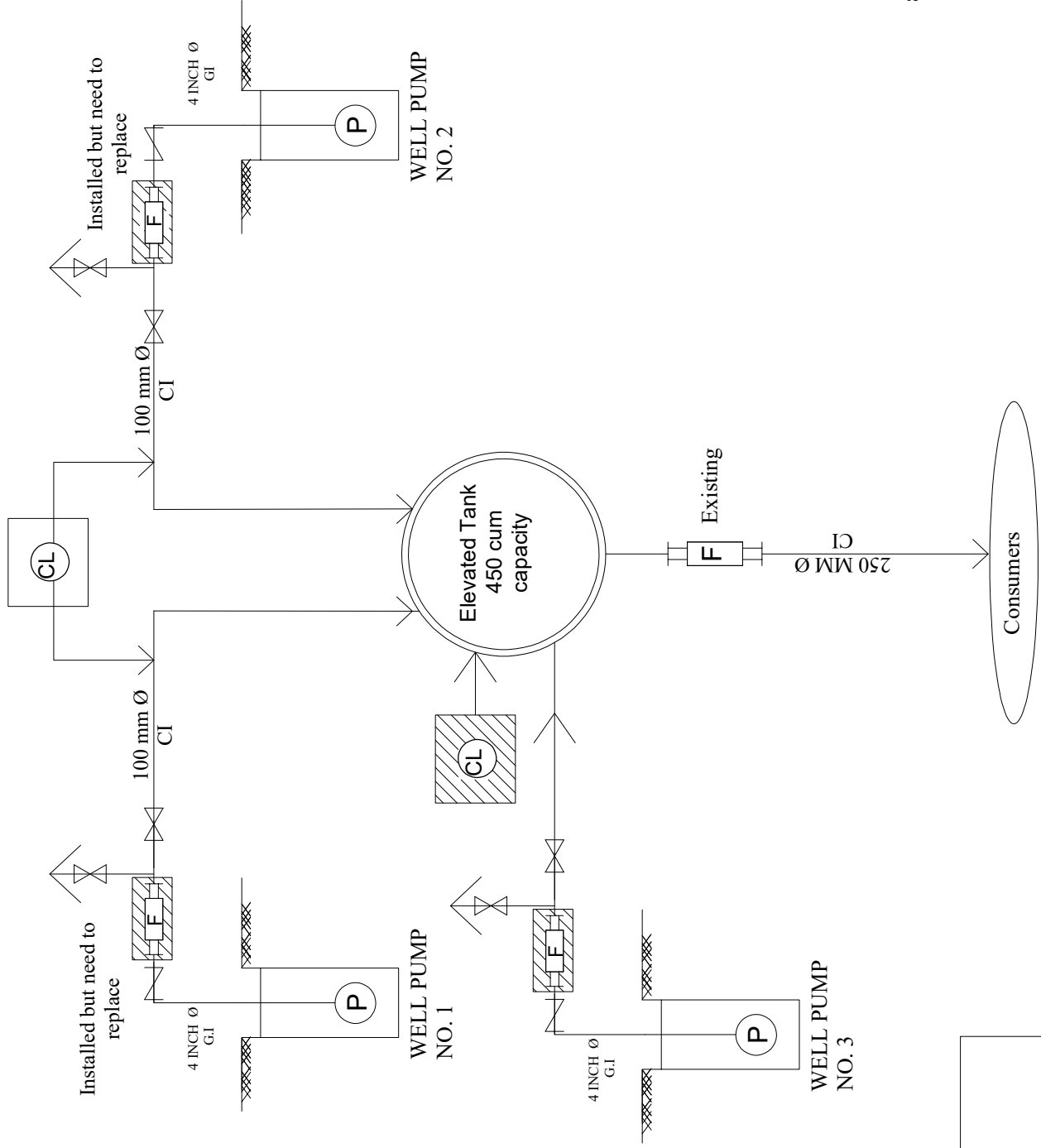
Scale: Not in Scale

ANNEX-3-25

Revised:
Date: 2021/06/29

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












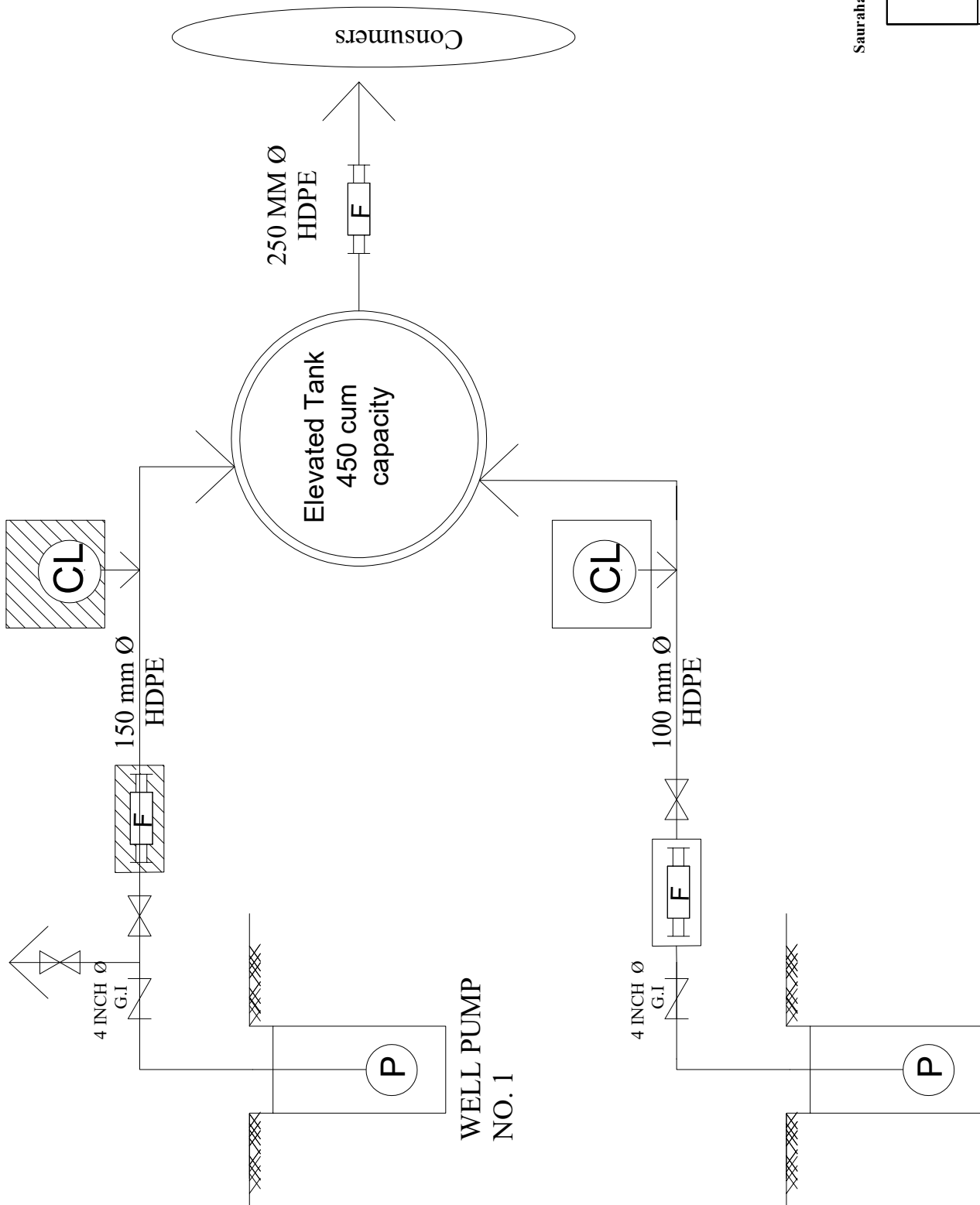
Sainamaina Water Users Committee, Rupandehi District, Province No.5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Sainamaina Water Users Committee Rupandehi, Nepal	Date: 11/8/2017 Scale: Not in Scale

Revised:
Date: 2021/06/22

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Points



Sauraha-Farsatkar Water Users Committee, Rupandehi District,
Province No.5

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Sauraha
Farsatkar Water Users Committee
Rupandehi, Nepal

Date: 11/8/2017
Scale: Not in Scale

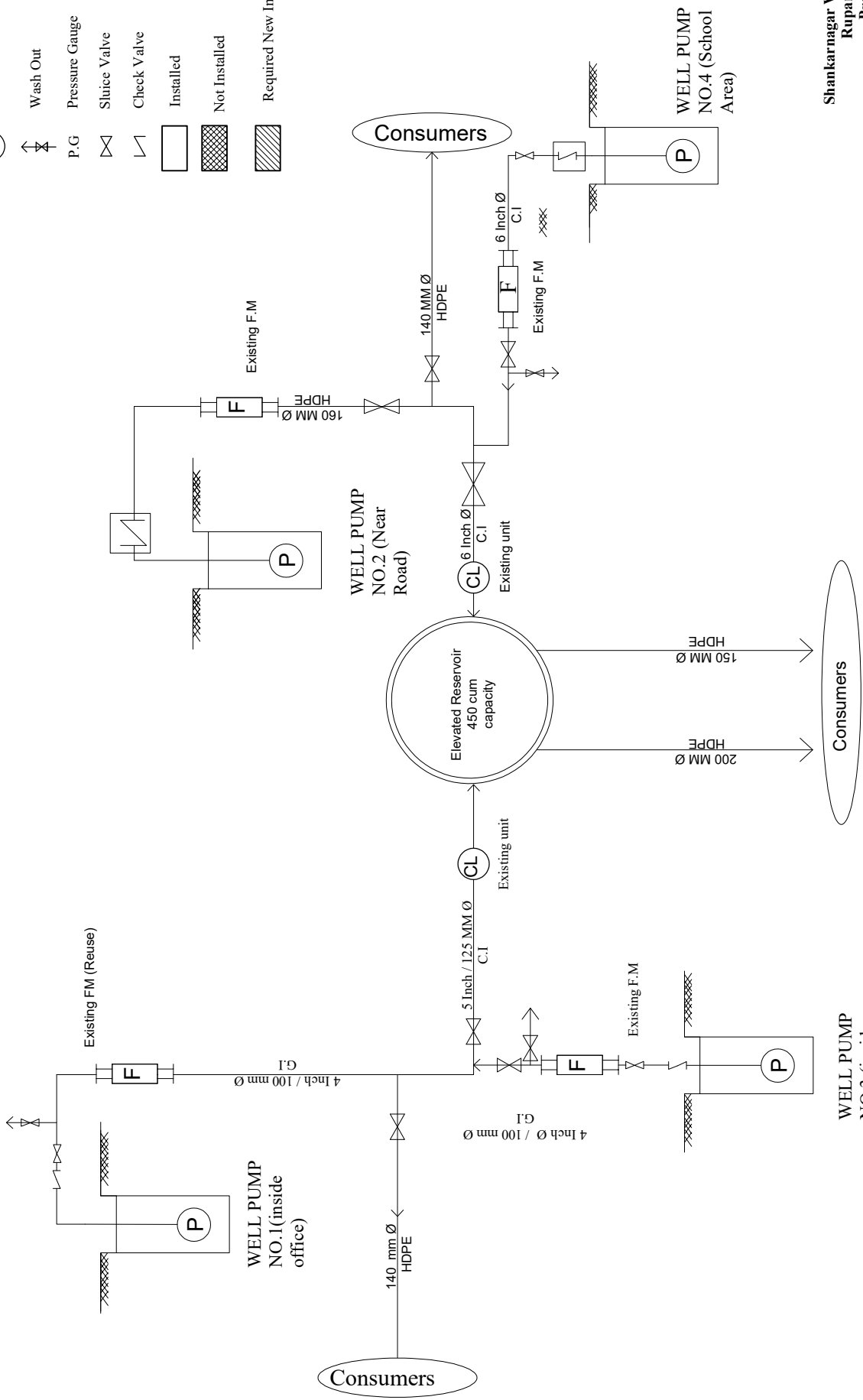
**WELL PUMP
NO. 2**

Revised:
Date:
2021/06/25

ANNEX-3-28

LEGENDS

- Flowmeter**
- Chlorine Dosing Unit**
- Wash Out**
- Pressure Gauge**
- Sluice Valve**
- Check Valve**
- Installed**
- Not Installed**
- Required New Installing and Replacing Point**












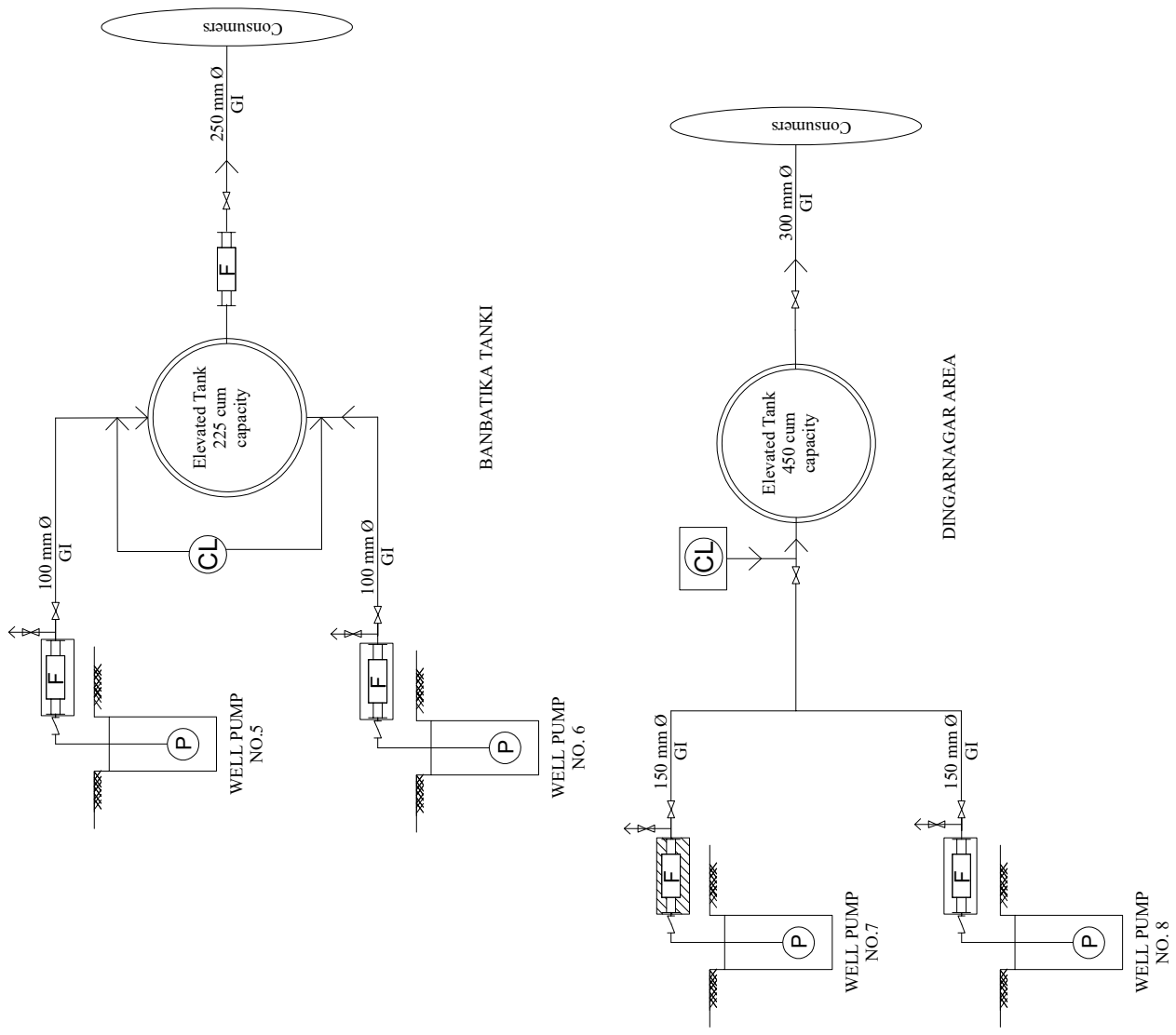
Shankarnagar Water Users Committee
Rupandehi District
Province no 5

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Shankarnagar Water Users Committee	Scale: Not in Scale
Rupandehi, Nepal	

Revised
 Date: 24/06/2021
 Date: 18/08/2019
 Date: DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point




Shankarnagar Water Users Committee
Rupandehi District
Province no 5

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIIP II)

Drawing Title:
 Schematic Flow Diagram Of Shankarnagar
 Water Users Committee

Scale: Not in Scale

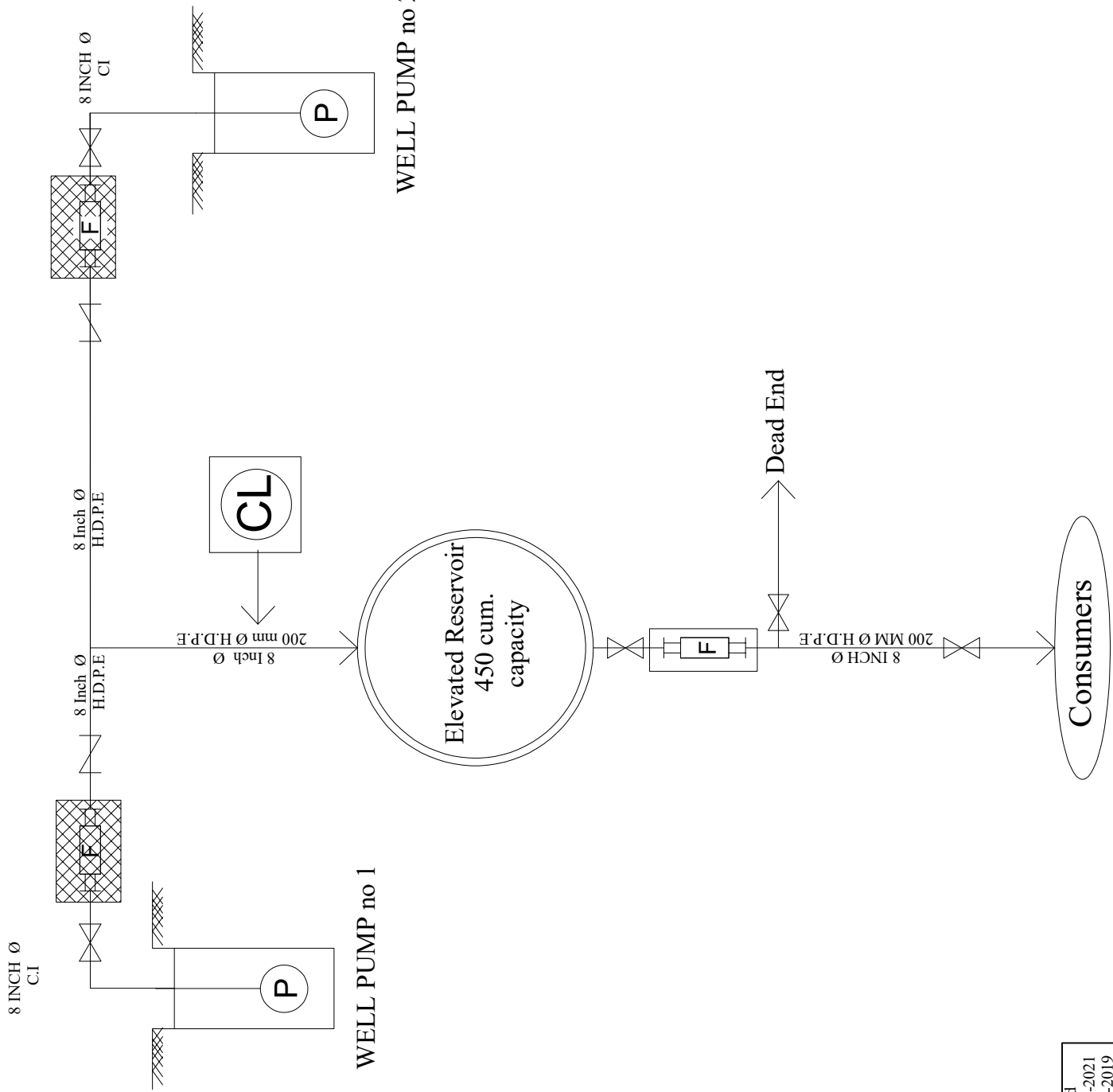
 **WASMIIP**
 For providing safe and quality drinking water to

Revised
 Date: 24/06/2021
 Date: 18/08/2019

Date: YYYY
 DD/MM/YYYY

LEGENDS

- Flowmeter
- Chlorine Dosing Unit
- Wash Out
- Pressure Gauge
- Sluice Valve
- Check Valve
- Installed
- Not Installed
- Required New Installing and Replacing Point



Barhathwa Water Users Committee, Sarlahi District,
Province No.2

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)










Drawing Title:
Schematic Flow Diagram Of Barhathwa
Water Users Committee
Sarlahi, Nepal

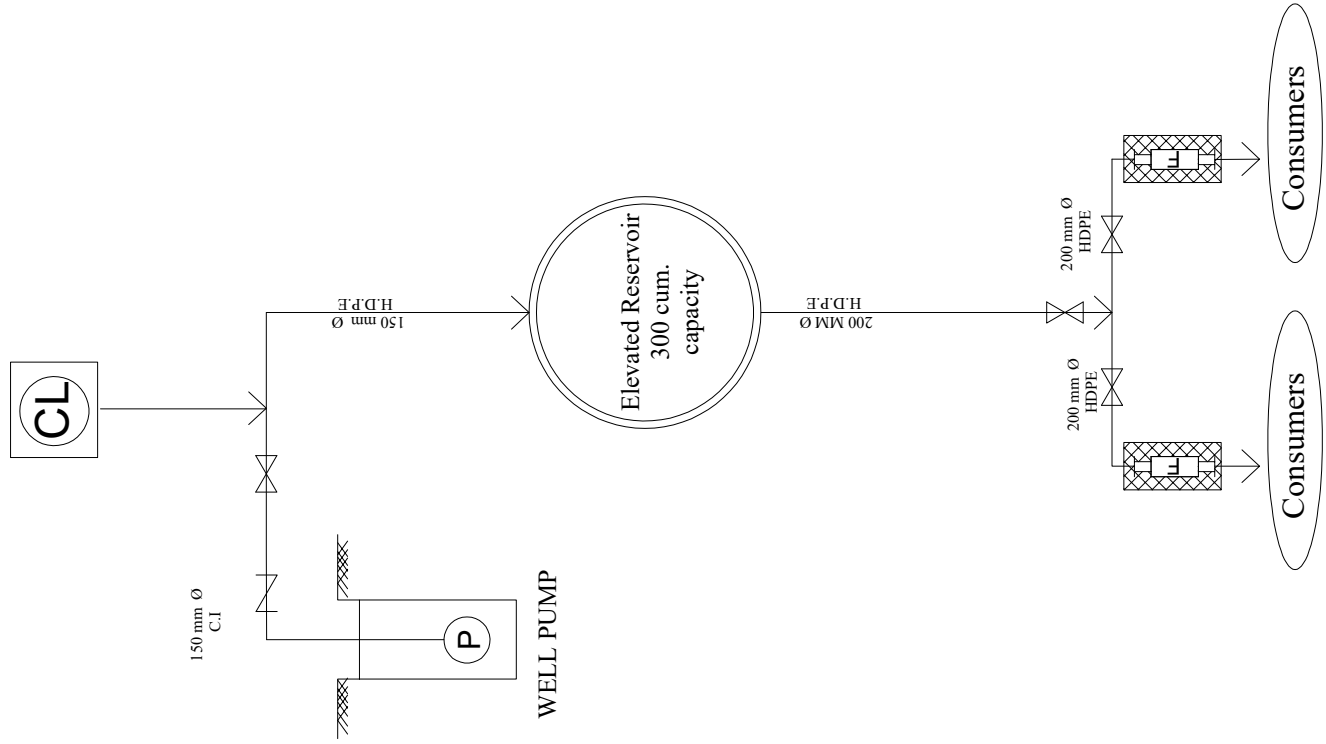
Date: 11/8/2017
Scale: Not in Scale

Revised
Date: 28-06-2021
Date: 18-08-2019
Date: 29-06-2019
Date: 19/2/2019

ANNEX-3-39

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












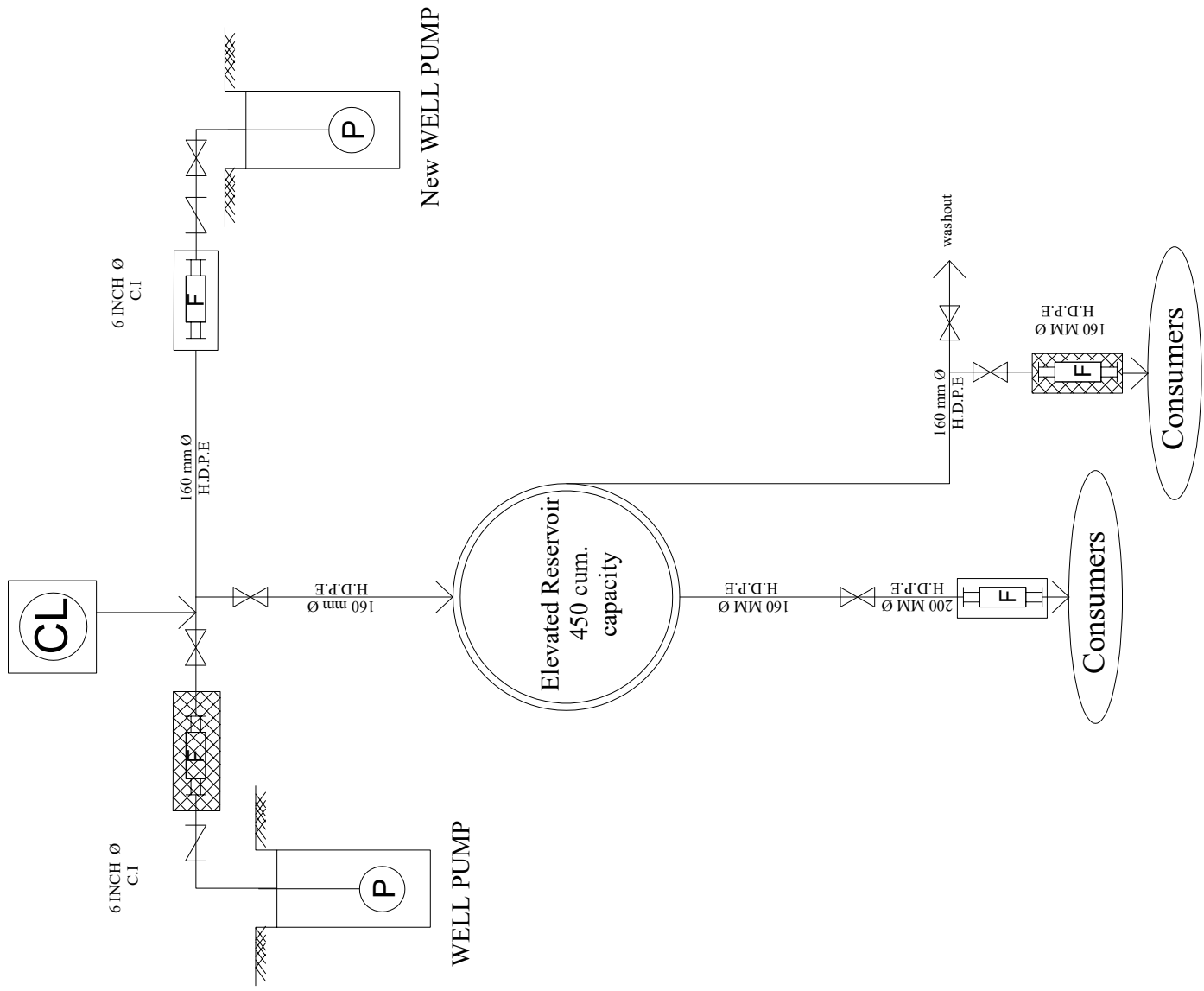
Hariyon Water Users Committee, Sarlahi District,
Province No.2

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Hariyon Water Users Committee Sarlahi, Nepal	Date: 11/8/2017 Scale: Not in Scale

Revised
Date: 28/06/2021
Date: 18-08-2019
Date: 29-06-2019
Date: 19/2/2019
Date: 4/9/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  P.G
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Ishworpur Water Users Committee, Sarlahi District,
Province No.2

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Ishworpur
Water Users Committee
Sarlahi, Nepal










Date: 11/8/2017

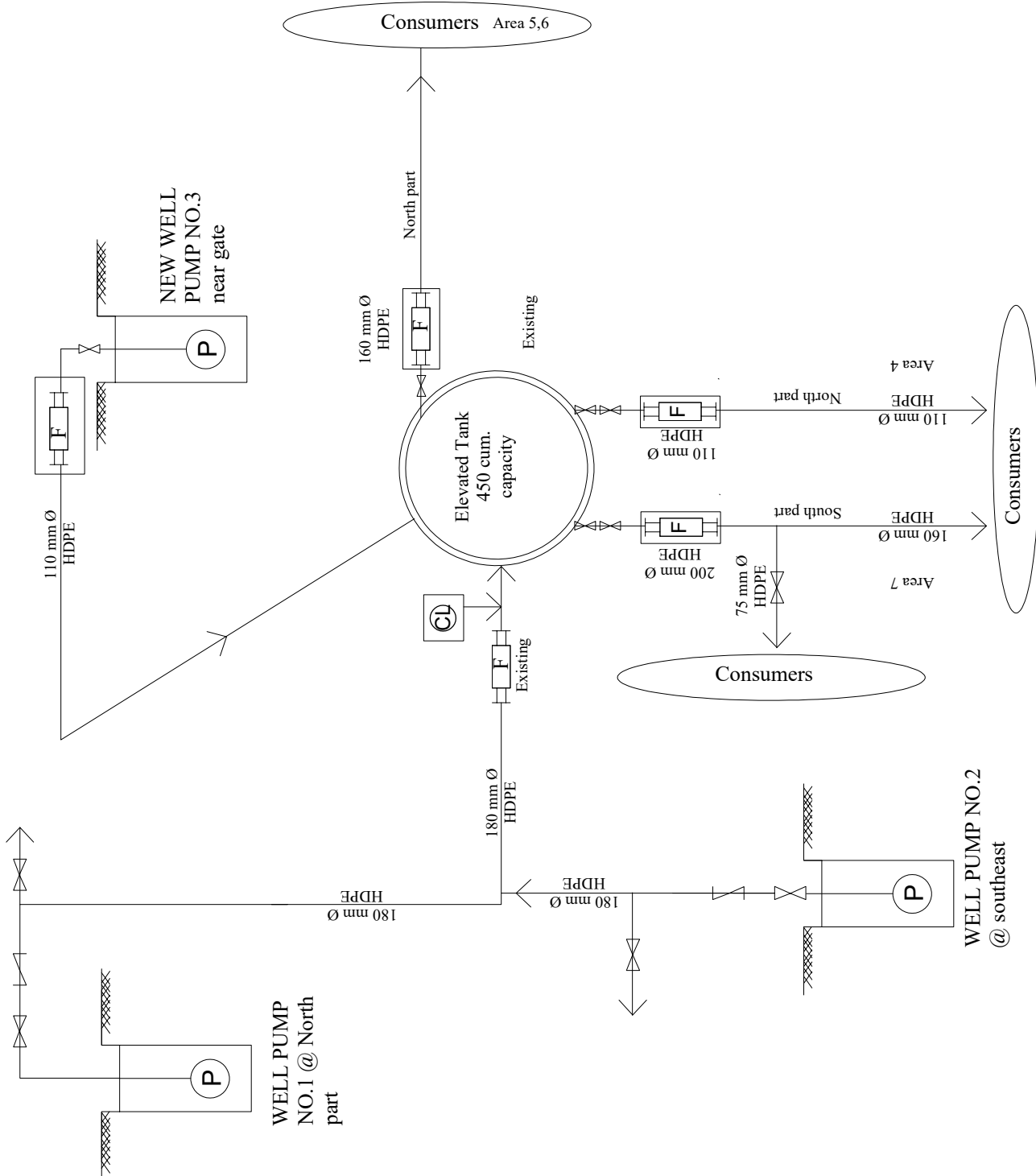
Scale: Not in Scale

ANNEX-3-40

Revised
Date: 28/06/2021
Date: 18/08/2019
Date: 30/6/2019
Date: 19/2/2019

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point












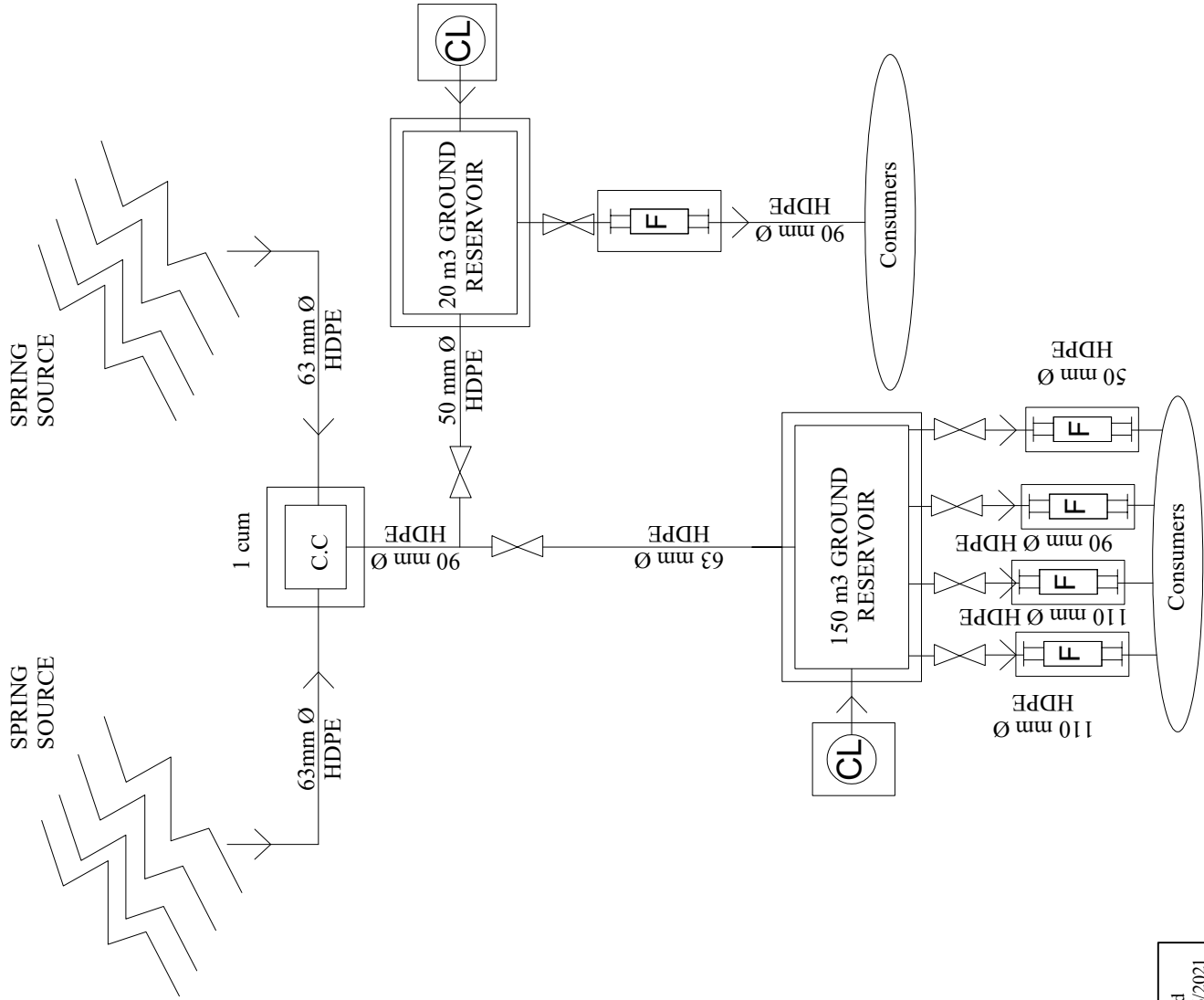
Karmatiya Water Users Committee
Sariahi District
Province no 2

Project Name:
 The Capacity Development Project for the
 Improvement of water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)
 Drawing Title:
 Schematic Flow Diagram Of Karmatiya
 Water Users Committee
 Sariahi, Nepal
 Scale: Not in Scale

Revised
Date: 29/08/2021
Date: 18/08/2019
Date: 25/07/2019
Date: 25/04/2019
Date: 11.2.2019
Date: 11/8/2017
DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Barahbise Water Users Committee, Sindhupalchok District, Province No.3

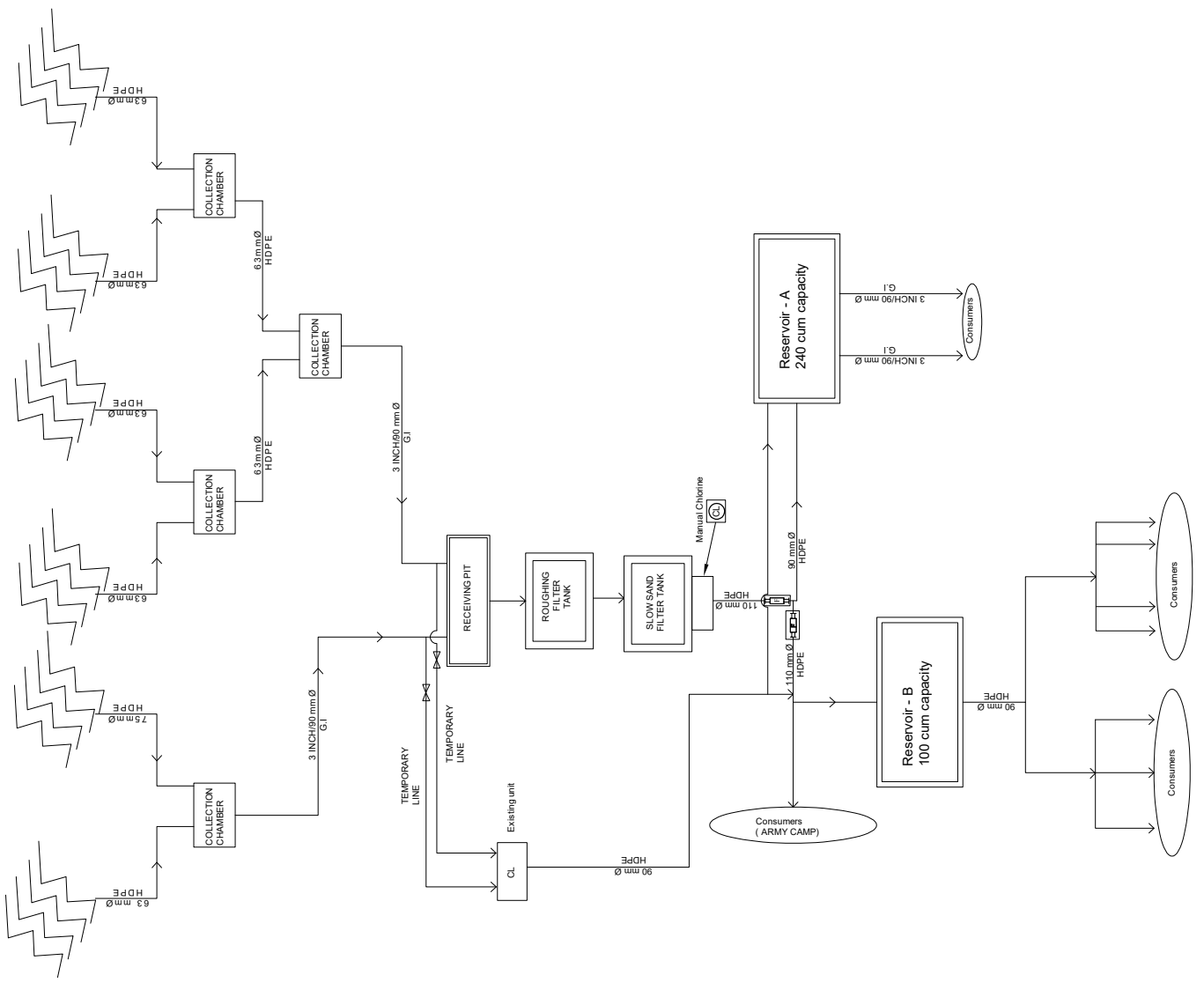
Project Name:
The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Barahbise Water Users Committee Sindhupalchowk, Nepal

Date: 11/8/2017
Scale: Not in Scale

Revised
Date: 24/06/2021
Date: 18/08/2019
Date: 11/2/2019

- LEGENDS**
- Flowmeter
 - Chlorine Dosing Unit
 - Wash Out
 - Pressure Gauge
 - Slitice Valve
 - Check Valve
 - Installed
 - Not Installed
 - Required New Installing and Replacing Point












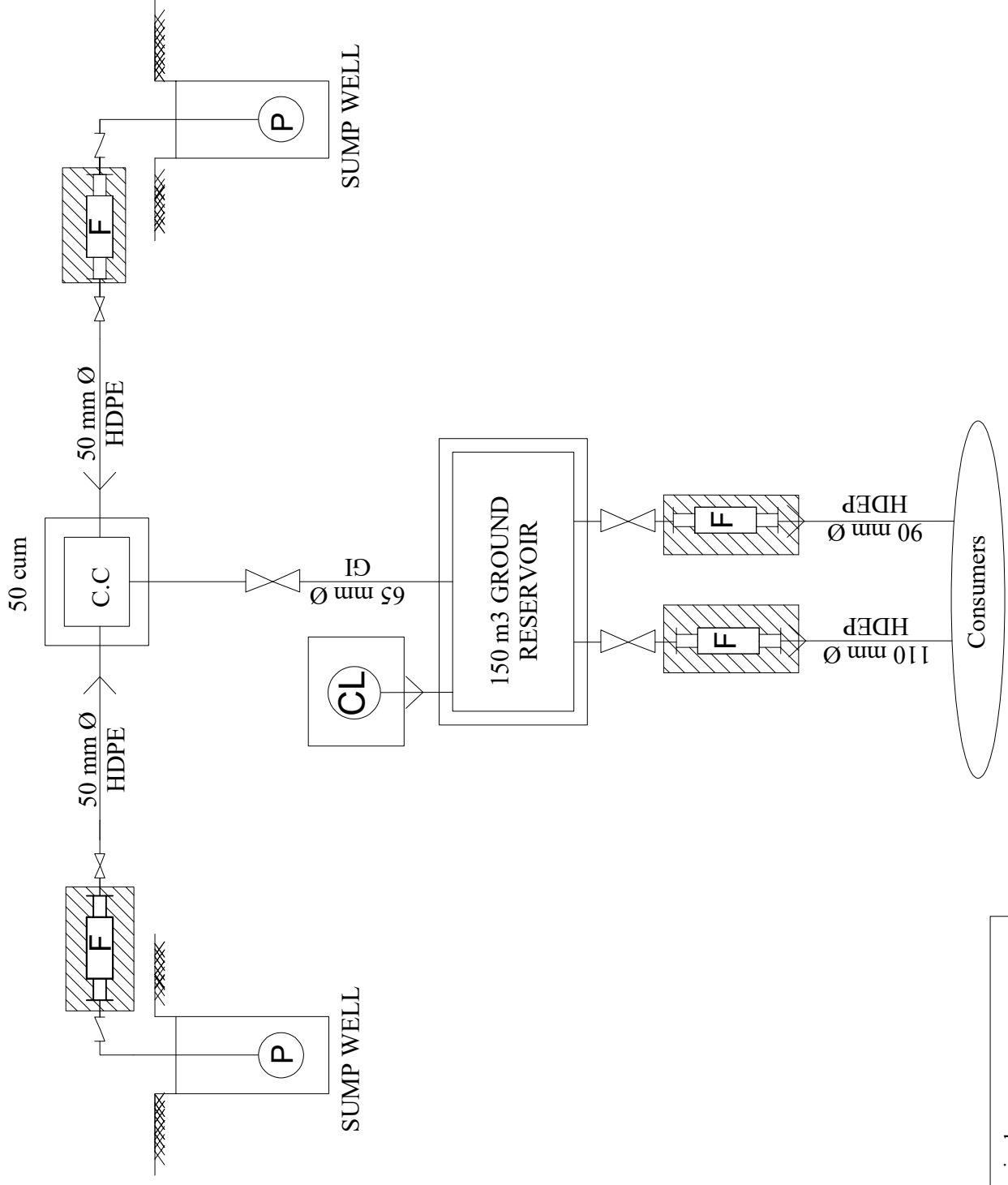
**Chautara Water Users Committee
Sindhupalchowk District
Province no 3**

Project Name: The Capacity Development Project for the Improvement of water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)	
Drawing Title: Schematic Flow Diagram Of Chautara Water Users Committee	Scale: Not in Scale

Revised
Date: 22/06/2021
Date: 18/05/2019
Date: 25/4/2019
Date: 11.2.2019
Date: 11/8/2017
DD/MM/YYYY

LEGENDS

-  Flowmeter
-  Chlorine Dosing Unit
-  Wash Out
-  Pressure Gauge
-  Sluice Valve
-  Check Valve
-  Installed
-  Not Installed
-  Required New Installing and Replacing Point



Melamchi Water Users Committee, Sindhupalchok District,
Province No.3

Project Name:
The Capacity Development Project for the
Improvement of water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)

Drawing Title:
Schematic Flow Diagram Of Melamchi
Water Users Committee
Sindhupalchok, Nepal

Date: 11/8/2017

Scale: Not in Scale

Revised:
Date: 23/06/2021

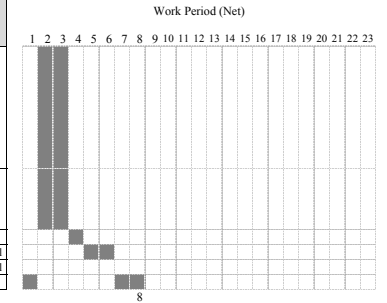
Appendix 2.20

Cost Breakdown for Target A WUSC

COST BREAKDOWN

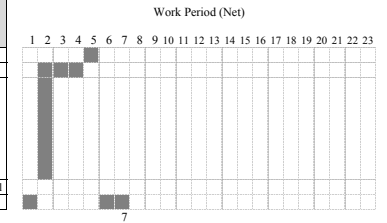
01 Gulariya

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
1-CE-1	Chlorination Equipment	Automatic Diaphragm Pump; 11-45 L/hr × 1.0MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare), Chemical Tank; PE, 200L with iron base ×1 set, Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set, Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	1										2	3	Mechanical	1	Inlet pipe of ET (D) Outside installation under the Elevated Tank
1-CE-2	Chlorination Equipment	- Electrical Panel / Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension)	1												Electrical	1	
1-OL-1	Other Item	Pressure gage / 0-1.0 MPa, Stop valve x 1set	2										1	2	Civil	1	for tube well pump No.1 and 2
1-OL-2	Other Item	Sluice valve / D=150mm, Flange connection PN10, Bolts and nuts x 1set, additional CT pipe & fittings	2										2	3	Assistant (Driver)	1	Drain nozzle shall be installed for No.1 & 2 tube well
1-OL-3	Other Item	Material	1										-	-			Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work and Training	1										3	4			



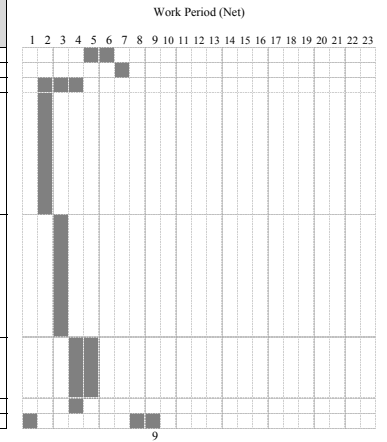
02 Belhundi

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
2-FM-3	Flow Meter	150mm, 1.0 MPa, Flange connection	2										2	3	Mechanical	1	160mm HDPE pipe at WTP
2-C-1	Chamber	according to DWSS standard drawing	1										3	4	Civil	2	for bypass pipe at WTP
2-CE-1	Chlorination Equipment	Manual Flow Control Valve with Flow Meter; 2-11 L/hr ×1 set, Chemical Tank; PE, 200L with iron base (Height: approx. 2.5m) ×1 set, Portable Mixer with Battery; propeller type, SS (SUS304) ×1 set, Y-type Strainer ×1 set, tube & fittings	1										1	2	Assistant (Driver)	1	WTP/Reservoir (pat.A) Outside installation at the Outlet Chamber of SSF
2-OL-1	Other Item	Material	1										-	-			Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work and Training	1										3	4			



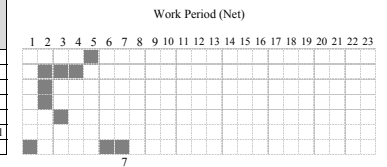
03 Pragatinagar

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
3-FM-1	Flow Meter	110mm, 1.0 MPa, Flange connection, additional piping work is necessary	2										2	3	Mechanical	1	HDPE pipe, for Tube Well No.2 (high turbidity)
3-FM-2	Flow Meter	100mm, 1.0 MPa, Flange connection	1										1	2	Electrical	1	GI pipe, for Tube Well No.3
3-C-1	Chamber	according to DWSS standard drawing	2										6	8	Civil	2	at No.2 Tube Well
3-CE-1	Chlorination Equipment	Automatic Diaphragm Pump; 11-45 L/hr × 1.0MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare), Chemical Tank; PE, 500L with iron base ×1 set, Mixer; propeller type, SS (SUS304), 0.1 kW ×1 set, Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	1										1	2	Assistant (Driver)	1	Tube Well No.2 (pat.D) Outside installation beside the well
3-CE-2	Chlorination Equipment	Automatic Diaphragm Pump; 11-45 L/hr × 1.0MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare), Chemical Tank; PE, 500L with iron base ×1 set, Mixer; propeller type, SS (SUS304), 0.1 kW ×1 set, Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	1										1	2			Tube Well No.3 (pat.D) Outside installation beside the well
3-CE-3	Chlorination Equipment	- Electrical Panel / Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension)	2										2	3			
3-OL-1	Other Item	Pressure gage / 0-1.0 MPa, Stop valve x 1set	3										1.5	2			for tube well pump No.1 to 3
---	---	Preparation Work, Cleaning Work and Training	1										3	4			



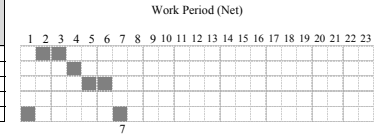
04 Ramgram

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
4-FM-1	Flow Meter	200mm, 1.0 MPa, Flange connection	1										1	2	Mechanical	1	DI pipe, for Over Head Tank
4-C-1	Chamber	according to DWSS standard drawing	1										3	4	Electrical	1	after the over head tank
4-OL-1	Other Item	Pressure gage / 0-1.0 MPa, Stop valve x 1set	1										0.5	1	Civil	2	for tube well pump
4-OL-2	Other Item	Mixer / Propeller type, SS (SUS304), 0.1 kW	1										0.5	1	Assistant (Driver)	1	for chlorine dissolving tank
4-OL-3	Other Item	Backpressure valve / 0.5-1.0 MPa	2										1	2			for chlorine dosing pipe (tube)
4-OL-4	Other Item	Material	1										-	-			Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work	1										2	3			



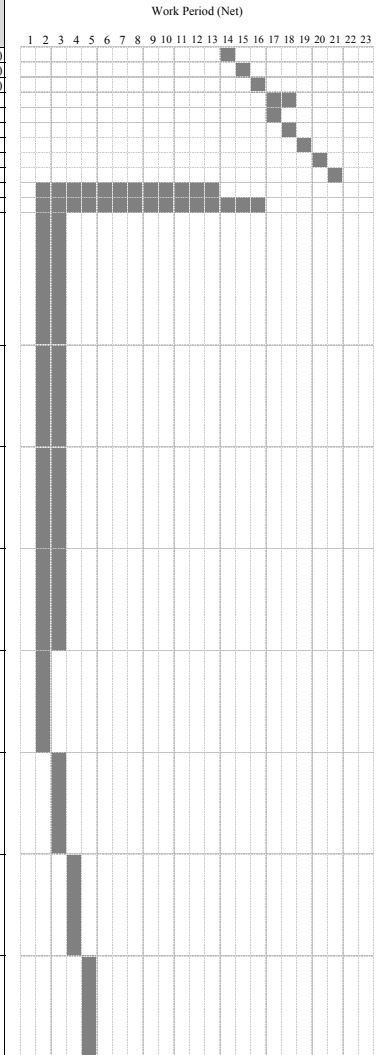
05 Shankarnagar

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
5-01-1	Other Item	Pressure gage / 0-1.0 MPa, Stop valve x 1set	4											2	3	Mechanical	for tube well pump No.1,3,4,5 (No.1 shall be replaced)
5-01-2	Other Item	Sluice valve/ D=100mm, Flange connection PN10, Bolts and nuts x 1set	1											1	2	Civil	for tube well pump No.3
5-01-3	Other Item	Check valve / D=150mm, Flange connection PN10, Bolts and nuts x 1set	2											2	3	Assistant (Driver)	for tube well pump No.4,5
5-01-4	Other Item	Material	1											1	2	*2 parties	Drain nozzle shall be installed for No.1 & 2 tube well
--	--	Preparation Work, Cleaning Work	1											2	3		

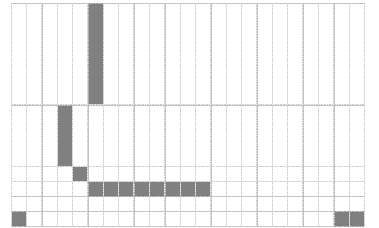


06 Besisbahar

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
6-FM-1	Flow Meter	125mm, 1.0 MPa, Flange connection	1											1	2	Mechanical	HDPE pipe, Inlet of Reservoir No.1 (Urban Area)
6-FM-2	Flow Meter	110mm, 1.0 MPa, Flange connection	1											1	2	Electrical	HDPE pipe, Inlet of Reservoir No.2 (Urban Area)
6-FM-3	Flow Meter	110mm, 1.0 MPa, Flange connection	1											1	2	Civil	HDPE pipe, Inlet of Reservoir No.3 (Urban Area)
6-FM-4	Flow Meter	110mm, 1.0 MPa, Flange connection	2											2	3	Assistant (Driver)	HDPE pipe, for Reservoir No.4 (Urban Area)
6-FM-5	Flow Meter	110mm, 1.0 MPa, Flange connection	1											1	2		HDPE pipe, for Furkevri Khola (Rural Area)
6-FM-6	Flow Meter	50mm, 1.0 MPa, Flange connection	1											1	2		HDPE pipe, for Dhad Khola I (Rural Area)
6-FM-7	Flow Meter	32mm, 1.0 MPa, Flange connection	1											1	2		HDPE pipe, for Dhad Khola II (Rural Area)
6-FM-8	Flow Meter	50mm, 1.0 MPa, Flange connection	1											1	2		HDPE pipe, for Sapli Khola (Rural Area)
6-FM-9	Flow Meter	90mm, 1.0 MPa, Flange connection	1											1	2		HDPE pipe, for Puma Khola, Inlet of reservoir (Rural Area)
6-C-1	Chamber	according to DWSS standard drawing	4											12	15		Urban Area
6-C-2	Chamber	ditto	5											15	18		Rural Area
6-CE-1	Chlorination Equipment	Automatic	1														Reservoir No.1/for town Outside installation near reservoirs
6-CE-2	Chlorination Equipment	Automatic	1											2	3		Reservoir No.2/for town Outside installation near reservoirs
6-CE-3	Chlorination Equipment	Automatic	1														Reservoir No.3/for town Outside installation near reservoirs
6-CE-4	Chlorination Equipment	Automatic	1														Reservoir No.4/for town Outside installation near reservoirs
6-CE-5	Chlorination Equipment	Manual	1											1	2		Furkevri khola/for rural Outside installation
6-CE-6	Chlorination Equipment	Manual	1											1	2		Dhad khola/for rural Outside installation
6-CE-7	Chlorination Equipment	Manual	1											1	2		Dhad khola II/for rural Outside installation
6-CE-8	Chlorination Equipment	Manual	1											1	2		Sapli khola/for rural Outside installation



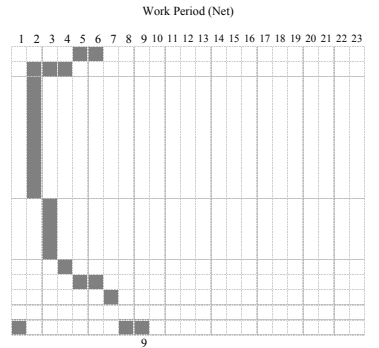
6-CE-9	Chlorination Equipment	Manual	Flow Control Valve with Flow Meter; 2-11 L/hr x1 set, Chemical Tank; PE, 200L with iron base x1 set, Portable Mixer with Battery; propeller type, SS (SUS304) x1 set, Y-type Strainer x1 set, tube & fittings	1								1	2		Puma khola/for rural Outside installation
6-CE-10	Chlorination Equipment	-	Electrical Panel / Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension)	1								1	2		
6-OL-1	Other Item	Sluice valve / D=125mm, Flange connection PN10, Bolts and nuts x 1set		1								1	2		Inlet of No.1 Reservoir
6-OL-2	Other Item	Sluice valve / D=110(100)mm, Flange connection PN10, Bolts and nuts x 1set		8								8	10		Inlet of Collection Chamber at WTP and No.2,3,4 Reservoir
6-OL-3	Other Item	Material		1								-	-		Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work and Training		2								3	4		



23

07 Amlekbaganj

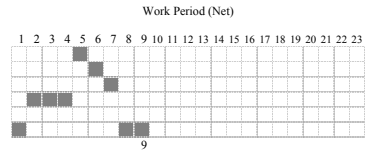
No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks	
				unit	amount	unit	amount	unit	amount					Net	Gross			
7-FM-1	Flow Meter	100mm, 1.0 MPa, Flange connection according to DWSS standard drawing	2											2	3	Mechanical	1	CI pipe, for Distribution at distribution
7-C-1	Chamber		1											3	4	Electrical	1	
7-CE-1	Chlorination Equipment	Automatic Diaphragm Pump; 7-30 L/hr x 1.0MPa x 0.1kW(motor driven) x4 set (2 set shall be delivered as spare), Chemical Tank; PE, 1,000L with iron base x1 set, Mixer; propeller type, SS (SUS304), 0.2 kW x1 set, Backpressure Valve; 0.5MPa x2 set, Relief Valve x2 set, Y-type Strainer x1 set, tube & fittings	1											1	2	Civil	2	CC (1,000L), Chamber 2 (Reservoir) Inside installation
7-CE-2	Chlorination Equipment	-	1											1	2	Assistant (Driver)	1	
7-OL-1	Other Item	Sluice valve / D=100mm, Flange connection PN10, Bolts and nuts x 1set	1											1	2			for reservoir
7-OL-2	Other Item	Sluice valve / D=75mm, Flange connection PN10, Bolts and nuts x 1set	2											2	3			for reservoir
7-OL-3	Other Item	Sluice valve / D=50mm, Flange connection PN10, Bolts and nuts x 1set	1											1	2			for reservoir
7-OL-4	Other Item	Material	1											-	-			Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work and Training	1											3	4			



9

08 Karmatiya

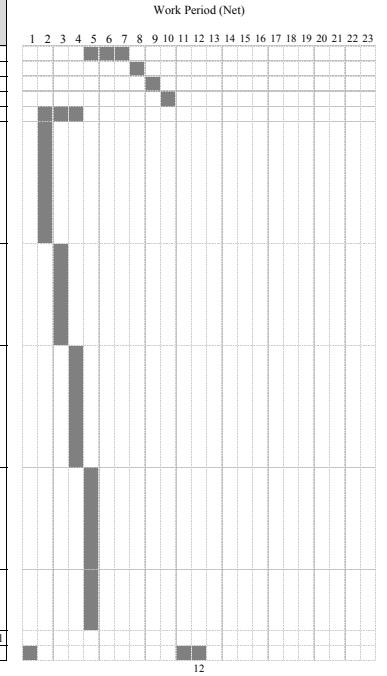
No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks	
				unit	amount	unit	amount	unit	amount					Net	Gross			
8-FM-1	Flow Meter	200mm, 1.0 MPa, Flange connection	1											1	2	Mechanical	1	HDPE pipe, for Over head tank
8-FM-2	Flow Meter	160mm, 1.0 MPa, Flange connection	1											1	2	Civil	2	HDPE pipe, for Over head tank
8-FM-3	Flow Meter	110mm, 1.0 MPa, Flange connection	1											1	2	Assistant (Driver)	1	HDPE pipe, for Over head tank
8-C-1	Chamber	according to DWSS standard drawing	3											9	11			at distribution
8-OL-1	Other Item	Material	1											-	-			Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work	1											2	3			



9

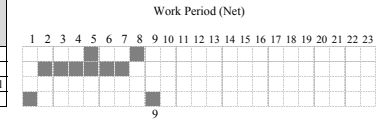
09 Manthali

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
9-FM-1	Flow Meter	50mm, 1.0 MPa, Flange connection	3											3	4	Mechanical	HDPE pipe, Batchaur well 2, Akase well, WTP reservoir
9-FM-2	Flow Meter	90mm, 1.0 MPa, Flange connection	1											1	2	Civil	HDPE pipe, Reservoir after Batchaur well 1, WTP reservoir
9-FM-3	Flow Meter	100mm, 1.0 MPa, Flange connection	1											1	2	Assistant (Driver)	HDPE pipe, WTP reservoir
9-FM-4	Flow Meter	110mm, 1.0 MPa, Flange connection	1											1	2	Assistant (Driver)	HDPE pipe, Batchaur well 1
9-C-1	Chamber	according to DWSS standard drawing	1											3	4		at the reservoir after Batchaur well 1
9-CE-1	Chlorination Equipment	Automatic Diaphragm Pump; 10-42 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare), Chemical Tank; PE, 300L with iron base ×1 set, Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set, Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	1											1	2		Batchaur Well 1 (pat.D) Inside installation at the Electrical House
9-CE-2	Chlorination Equipment	Automatic Diaphragm Pump; 1-9 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare), Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set (note) included in 9-CE-1 as a unit	1											1	2		Batchaur Well 2 (pat.D) Inside installation at the Electrical House
9-CE-3	Chlorination Equipment	Automatic Diaphragm Pump; 0.5-4 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare), Chemical Tank; PE, 50L with iron base ×1 set, Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set, Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	1											1	2		Akase Well (pat.D) Outside installation beside the well
9-CE-4	Chlorination Equipment	Manual Flow Control Valve with Flow Meter; 2-11 L/hr ×1 set, Chemical Tank; PE, 200L with iron base ×1 set, Portable Mixer with Battery; propeller type, SS (SUS304) ×1 set, Y-type Strainer ×1 set, tube & fittings	1											1	2		WTP/Reservoir (pat.A) Outside installation above the reservoir
9-CE-5	Chlorination Equipment	- Electrical Panel / Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension)	2											2	3		
9-OL-1	Other Item	Material	1											-	-		Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work and Training	1											3	4		



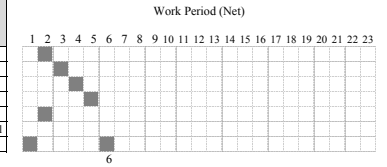
10 Chautara

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
10-FM-1	Flow Meter	110mm, 1.0 MPa, Flange connection	2											2	3	Mechanical	HDPE pipe, at WTP
10-C-1	Chamber	according to DWSS standard drawing	2											6	8	Civil	
10-OL-1	Other Item	Material	1											-	-	Assistant (Driver)	Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work	1											2	3		



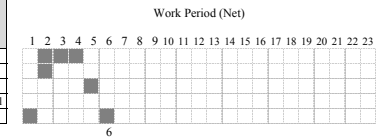
11 Dhulabari

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
11-FM-1	Flow Meter	100mm, 1.0 MPa, Flange connection	1											1	2	Mechanical	Steel Pipe
11-OL-1	Other Item	Check Valve (D=100mm), Flange connection PN10, Bolts and nuts x 1set	1											1	2	Electrical	for new tube well pump at over head tank
11-OL-2	Other Item	To change existing chlorine dosing point	1											1	2	Civil	for new tube well pump at over head tank
11-OL-3	Other Item	Pressure gage/ 0-0.6 MPa, Stop valve x 1set	1											0.5	1	Assistant (Driver)	for No.1 Wash Water Lifting Pump at WTP
11-OL-4	Other Item	To replace existing cable or motor for No.1 mixer (TACMINA)	1											1	2	Assistant (Driver)	for chlorine dosing equipment at WTP
11-OL-5	Other Item	Material	1											-	-		Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work	1											2	3		



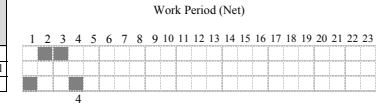
12 Gauradaha

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
12-FM-1	Flow Meter	100mm, 1.0 MPa, Flange connection	3											3	4	Mechanical	Steel Pipe
12-OL-1	Other Item	Media of Aeration Tank	1											1	2	Civil	
12-OL-2	Other Item	Inlet Flow Meter for No.1 SF / ϕ150, 12-60m3/h (Flowwell, FLY-N60H-5)	1											0.5	1	Assistant (Driver)	
12-OL-3	Other Item	Material	1											-	-		Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work	1											2	3		



13 Mangadh

No.	Item	Specification	Qty	Equipment Cost (NPR)		Installation Cost (NPR)		Delivery Cost (NPR)		Accommodation Expense (NPR)	Rent-a-car Expense (NPR)	Fuel Expense (NPR)	Total Cost (NPR)	Work Period (day)		Necessary Worker (Person)	Remarks
				unit	amount	unit	amount	unit	amount					Net	Gross		
13-FM-1	Flow Meter	150mm, 1.0 MPa, Flange connection	2											2	3	Mechanical	Steel Pipe
13-OI-1	Other Item	Material	1											-	-	Assistant (Driver)	Drain nozzle shall be installed for No.1 & 2 tube well
---	---	Preparation Work, Cleaning Work	1											2	3		



<条件>

- Equipment及びInstallation Costは見積による。
- Delivery Costは、記載あるものは見積、記載ないものは、Stトラックで作業員と一緒に輸送する。
- Accommodation Costは、作業員数×(実質工期+移動1日)×宿泊単価(3,500NPR/泊)で算出した。Chautaraは近距離のため実質工期-1日とした。
- Rent-a-car Costは、(実質工期+移動日数)×単価で算出した。基本的に4トントラック×1台とし、Besisaharのみ4トントラック×1台、4WD車×1台とした。
- Fuel Expenseは、Google Mapで求めたDWSS(日本大使館)からの距離に基づき、移動距離×燃費(10km/L)×2(往復)×1.2(滞在半分)で算出した。
- Other Item / Materialは、流量計及びバルブ設置における材料(配管、継ぎ手)として、材料費の15%を計上した。
- Preparation Work, Cleaning Workは、普通作業員2人×各1日、Trainingは、機械技師1人×1日、電気技師1人×1日を計上した。
- Total金額は、税金13%を含む。

Total NPR
 材工 0
 その他 0

Appendix 2.21

Design Manual of Rehabilitation Works for WUSC in Semi-Urban Towns



MANUAL OF REHABILITATION WORKS FOR WUSC IN SEMI-URBAN TOWNS

< version 2 >



WASMiP



For providing safe and quality drinking water to people

Table of Contents

I. Overview and Introduction	1
II. Sustainable Water Supply to Consumers.....	1
III. Sound Operation and Maintenance.....	2
.....	3
IV. Water Supply System	3
V. How to Use This Manual	5
1. Recognition of Purpose.....	5
2. Site Survey	5
3. Development/Revision of Schematic Flow Diagram.....	7
3.1. Necessary Information.....	7
3.2. Procedure to Develop/Revise Schematic Flow Diagram.....	7
4. Identifying Installation Locations.....	7
4.1. Flow meter	7
4.2. Chlorination Unit	8
4.3. Examples of Schematic Flow Diagram	8
5. Determination of Specification	12
5.1. Specification of Chlorination Unit	12
5.2. Specification of Flow Meter (Bulk Meter)	15
6. Preparing Bill of Quantity (BOQ).....	15
6.1. Chlorination Unit	15
6.2. Flow Meter (Bulk Meter)	16
7. Procurement and Installation.....	16
7.1. General Rules of Procurement.....	16
7.2. General Rules of Installation.....	16
7.3. Installation of Chlorination Unit.....	16
7.4. Installation of Flow Meter	17

ANNEX-1. Preventive Maintenance

ANNEX-2. Check List for Water Supply System

ANNEX-3. Capacity Calculation of Chlorination Unit

I. Overview and Introduction

“There are many challenges in water and sanitation sector, at one end, functionality/ sustainability with efficient O&M, upgrading the service level, and rehabilitations of completed water supply schemes, at another end, providing water and sanitation services with systematic water supply and sanitation facilities to the un-served people. While facing such challenges, we should think about the indicators like available quantity, quality, accessibility and reliability. Since “National Drinking Water Quality Standards, 2062 (hereafter the Standards)” and its implementation directive are in effect, we must be concerned with quality of drinking water.” [Water Safety Plan Handbook Nepal, 2013]

In this manual, “Rehabilitation Works” is defined as providing WUSCs in semi-urban towns with essential equipment, materials and instruments such as chlorination unit, water meter, valve and pressure gauge, in order to recover and ensure the proper function of water supply system.

II. Sustainable Water Supply to Consumers

Sustainable water supply to consumers is defined as follows.

To supply sufficient water volume

To provide safe water

To extend lifetime of facility and equipment

a) To supply sufficient water volume

How much water do you supply? WUSC must answer this question. This is very simple, but fundamental question.

To measure/grasp the supplied water amount, bulk/flow meters are required in water supply system.

b) To provide safe water

Do you care about safe water compared with water volume? What is safe water? Do you know the Standards ?

Water quality test shall be performed to check whether the quality meets the Standards.

WUSC has obligation to provide safe water and to disclose the water quality information to consumers.

c) To extend lifetime of facility and equipment

Do you periodically maintain your water supply facility and equipment? Your facility/equipment always requires periodical maintenance to extend its lifetime. Without proper maintenance to the facility, its performance to supply sufficient and safe water might be gradually deteriorating, and finally its function suspends. In this case, water supply is stopped and it is costly to recover the original performance. (Refer to ANNEX-1, Preventive Maintenance)

III. Sound Operation and Maintenance

Firstly, to grasp the supplied water volume and to ensure adequate production and supply water to consumers, flow meters shall be installed. Valves and pressure gauge are also required in a water supply system to maintain the pipelines with adequate pressure and control the water flow according to the demand.

Secondly, to provide safe water without any pathogenic bacteria and/or virus, chlorination unit shall be installed within the water supply system/network.

To operate and maintain water supply system effectively, aforementioned items shall be operated and maintained properly with keeping necessary record. Proper operation and maintenance (O&M) including record keeping and analyzing data is the next step after installation of essential items.

A concept of sound O&M with essential equipment is shown below.

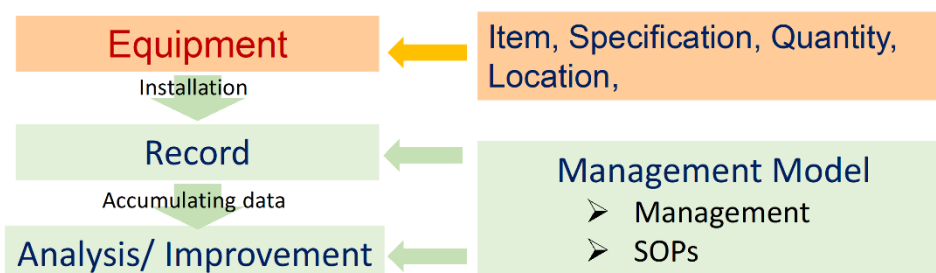


Figure 1. Concept of Sound Operation and Maintenance (O&M)

- **First step: [Installation of Essential Equipment (flow meter, chlorination unit, valve etc.)]**
 - 1) Verify the necessity of installation of equipment by conducting a survey.
 - 2) Identify the installation location and quantity of equipment by preparing a schematic flow diagram.
 - 3) Determine the specifications for the required equipment.
 - 4) Procure/install the equipment.

- **Second step: [Record Keeping]**
 - 1) Keep updating the O&M record (supplied water volume, water quality, maintenance, repair etc.) in accordance with the Standard Operating Procedures (SOPs).
 - 2) Collect the required data to calculate Key Performance Indicators (KPIs).

- **Third step: [Analysis and Improvement]**
 - 1) Summarize/analyze the data and results of O&M activity.
 - 2) Detect potential errors such as abnormal condition of equipment (before malfunction), increasing non-revenue water value, exceeding the water quality value compared to the Standards etc.
 - 3) Calculate/evaluate the KPIs.
 - 4) Make/conduct an improvement plan of O&M activities.

IV. Water Supply System

Water supply system is an essential link between water source and consumers. Water supply system consists of several facilities such as intake facility, raw water transmission pipeline, water treatment plant, transmission pipeline, service reservoir, distribution pipeline and household connection with domestic water meter.

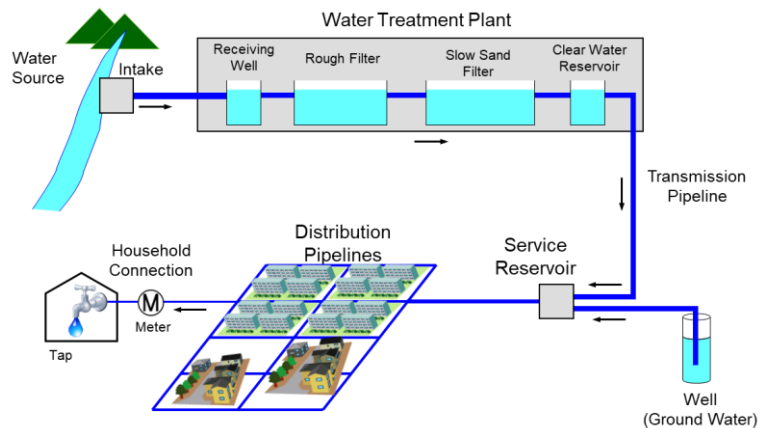


Figure 2. Water Supply Facilities

➤ Intake Facility

Intake facility is defined as the facilities and equipment which extract raw water from sources such as surface water or groundwater from the designated intake point.

➤ Raw Water Transmission Pipeline

Raw water transmission pipeline is defined as the pipeline and ancillary equipment which convey the raw water from an intake point to the water treatment plant and/or service reservoir.

➤ Water Treatment Plant

Water Treatment Plant (hereafter WTP) is defined as the plant consists of facility and equipment which purify raw water and produce clean water that meets with the Standards. Water treatment processes in a semi-urban area are basically classified into the five patterns as shown in **Figure 3**.

➤ Service Reservoir

Service reservoir is defined as the storage facility to meet the requirements for 1) absorption of water demand fluctuation, 2) water storage for firefighting, 3) water storage for emergency.

➤ Water Distribution Pipelines

Water distribution pipeline is defined as the pipeline and ancillary equipment which distribute the clear water (purified and disinfected water) from service reservoirs to the respective water supply service areas.

➤ Household Connection and Domestic Water Meter

Household connection is defined as a facility which extract clean water from distribution pipe into a household. A water meter is equipped on a household connection pipe to measure water consumption of users.

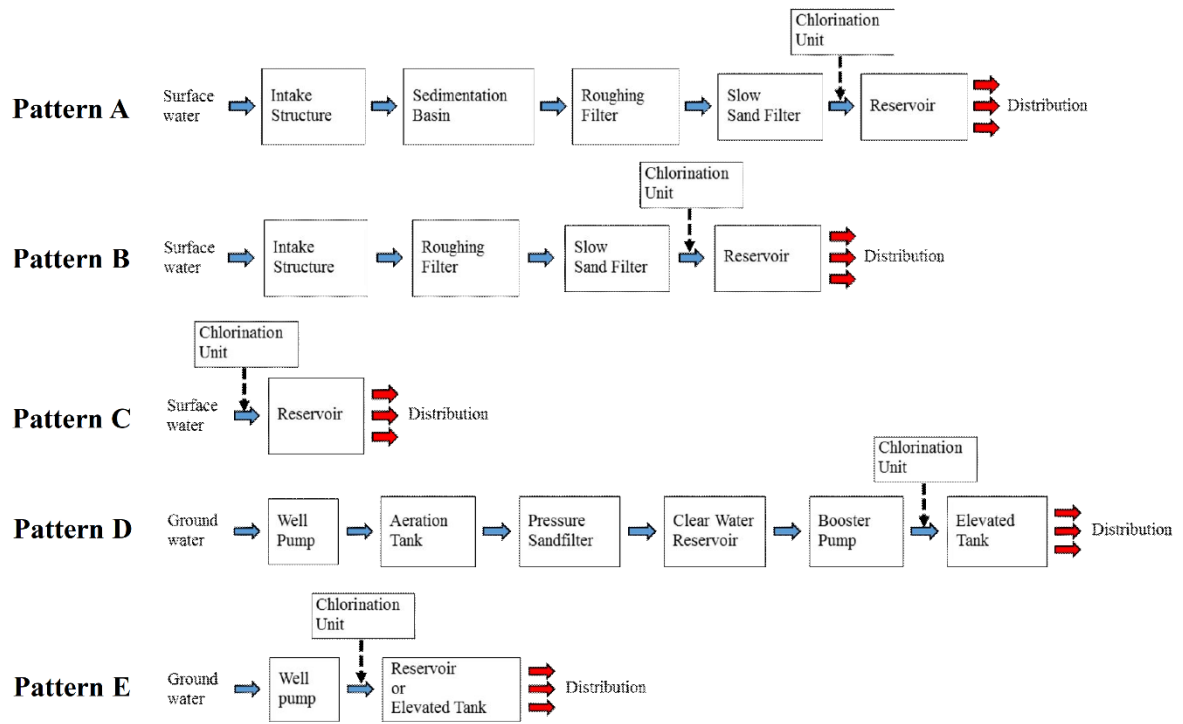


Figure 3. Five Patterns of Treatment Processes

V. How to Use This Manual

The targets of this manual are **engineer of FWSSMP** and **manager/engineer of WUSC**. The objective of this manual is **to understand the procedure of rehabilitation works (planning, designing, procuring and installing the essential equipment/material/instrument) for WUSCs in semi-urban towns**. This manual mainly instructs the following seven processes.

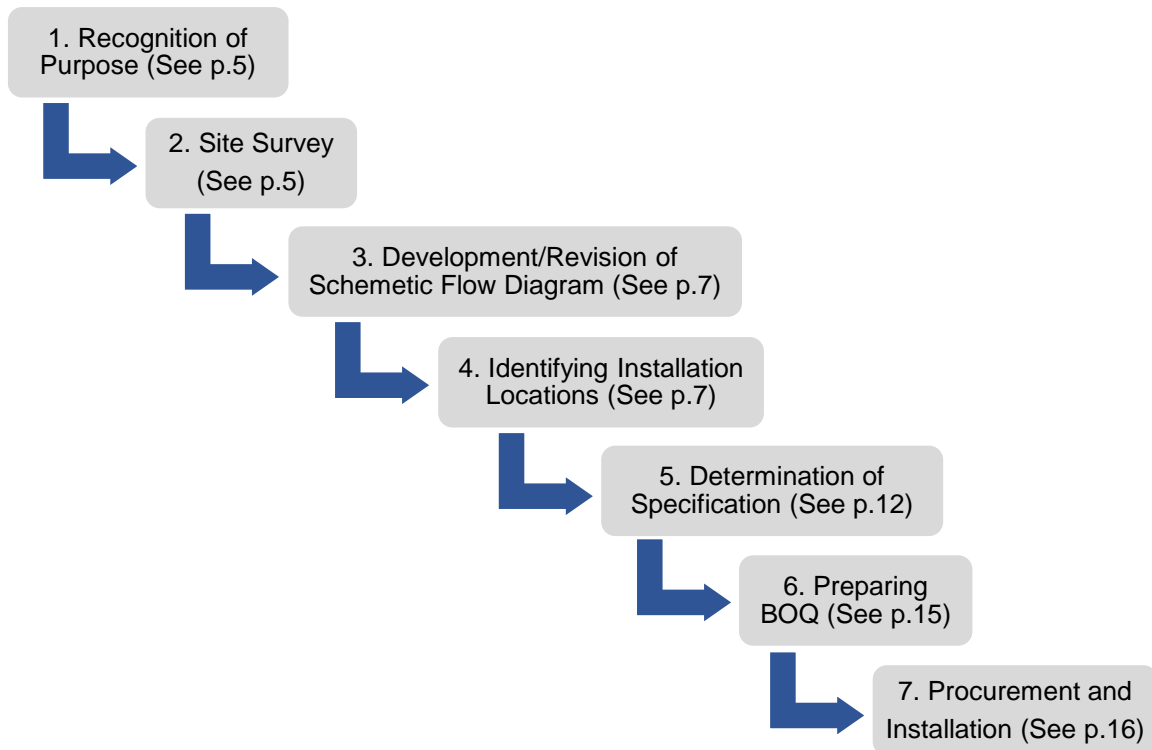


Figure 4. Procedure of Rehabilitation Works

1. Recognition of Purpose

An effective water supply system has the following essential equipment, material and instrument.

- **Flow Meter:** To Measure supplied and distributed water amount.
- **Chlorination Unit:** To provide safe water by disinfection.
- **Valves/Pressure Gauge:** To perform proper O&M activities.

If the above items are not installed or installed at improper location, WUSC cannot supply sufficient amount of water and provide safe water to consumers. In this case, a rehabilitation work to install the above items at proper locations shall be conducted.

2. Site Survey

The schematic flow diagram shows the current situation of water supply system, existence/absence and installation location of the essential items. Therefore, the diagram shall be developed for each WUSC

and revised it if required. The procedure to conduct a site survey for developing the diagram is shown as follows;

- 1) Contact a chairperson or manager of WUSC, discuss/decide a schedule of site survey and ask to dispatch a staff who knows the location of the water supply facility/equipment including pipe.
- 2) Prepare/bring camera, measuring tape, check list as shown in Table 1, notebook and pen for recording data at the site.
- 3) Start the survey from the water source. If it is difficult, start from the intake.
- 4) Identify the water source/intake facility and note their type and quantity with taking pictures.
- 5) Identify the transmission pipelines from the intake to WTP and/or reservoirs.

- Check and note the pipe diameter and material. In case that carved seal/markings is invisible, the diameter shall be checked by using measuring tape and the material shall be checked by visual inspection.
- If the pipe is inaccessible/invisible, verify it by excavating.
- Identify the locations of reservoir, flow meter, valve (including chamber) and washout (including chamber).
- In case that reservoir exists, its type, quantity and capacity shall be checked and noted.
- Take pictures of the above facility/equipment and note their location.
- Draw a rough flow diagram based on the acquired information.



- 6) Identify pipeline and water supply facility/equipment within WTP.

- Check and note the pipe diameter and material.
- Identify the location of T-junction, bypass line, valves, washout, dosing point of chlorine and flow meter.
- Check and note the results in accordance with Table 1 and operating condition of facilities/equipment such as Sedimentation Tank, Roughing Filter, Slow Sand Filter, Aeration Tank, Pressure Filter, Lifting Pump, Chlorination Unit etc. in WTP.
- Take pictures of the above facility/equipment and note their location.
- Draw a rough flow diagram based on the acquired information.



- 7) Identify the transmission pipelines from WTP to reservoirs.
 - Same as 5) above.
- 8) Identify the transmission pipelines from reservoir to service area.
 - Same as 5) above.

- Check and note the quantity of service areas.
- 9) Develop the schematic flow diagram from the intake to reservoir.

3. Development/Revision of Schematic Flow Diagram

3.1. Necessary Information

The following basic information of water supply facilities is required for the schematic flow diagram.

- Water Sources (stream, spring, surface, groundwater)
- Intake Facility (type, quantity, location, capacity (in case of well pump))
- Transmission Pipeline (pipe material, diameter)
- Water Treatment Plant (treatment process, information of facility/equipment; name, type, quantity, capacity, location)
- Reservoir (type, capacity, location)
- Chlorination Unit (type, quantity, capacity, location)
- Flow Meter (type, quantity, diameter, location)
- Valve, Pressure Gauge and other materials/instruments (type, quantity, diameter, location)
- Water Service Areas (number of wards)

Use the check list as shown in **ANNEX-2** to identify the necessary information of Water Supply System

3.2. Procedure to Develop/Revise Schematic Flow Diagram

- 1) The diagram must include intake (type), intake facility, pipe diameter and material, main facility/equipment in WTP, reservoirs (type, capacity), flow meter (if existing), chlorination unit/dosing point (if existing), valves etc.
- 2) The direction of flow should be denoted by an arrow and note survey date.
- 3) The unit of the pipe diameter should be same throughout the drawing (either mm or inch).
- 4) WUSC's name along with location, plotter's name and date of preparation should be written in lower right corner of the drawing.
- 5) Legends shall be shown in upper right or left corner of the drawing.
- 6) In case that any equipment, material and/or instrument is installed newly, reinstalled to another location or removed, revise/update the diagram.

4. Identifying Installation Locations

4.1. Flow meter

(1) Installation Location

- 1) Flow meter should be installed at easily accessible location for reading, installation and maintenance.

- 2) The meter should be installed on the pipe. Proper installation location is where relatively close to the ground. If the meter is installed under the ground, a chamber should be constructed to protect it.
- 3) Priority of installation location should be given to the location where total volume of supplied water from WTP can be measured. Desirable location is the outlet of Clear Water Reservoir within WTP area.



(2) Minimizing the Quantity

Considering the burden of WUSC staffs, the quantity of flow meter shall be minimized so that WUSC staff can perform reading and O&M work of the meter properly within the jurisdiction.

4.2. Chlorination Unit

(1) Installation Location

Chlorination Unit shall be installed at the location where the following conditions are satisfied.

- 1) O&M works such as preparation of chlorine solution can be performed easily and safely. (Roof, ventilation, electrical power supply and clear water supply shall be considered.)
- 2) The prepared chlorine solution can be injected properly with required amount and pressure.

(2) Dosing Point

- 1) Dosing point of chlorine should be selected/decided to disinfect all the supplied water.
- 2) Recommended dosing point of chlorine is upstream of reservoirs as shown in **Example-1 to 3**.

4.3. Examples of Schematic Flow Diagram

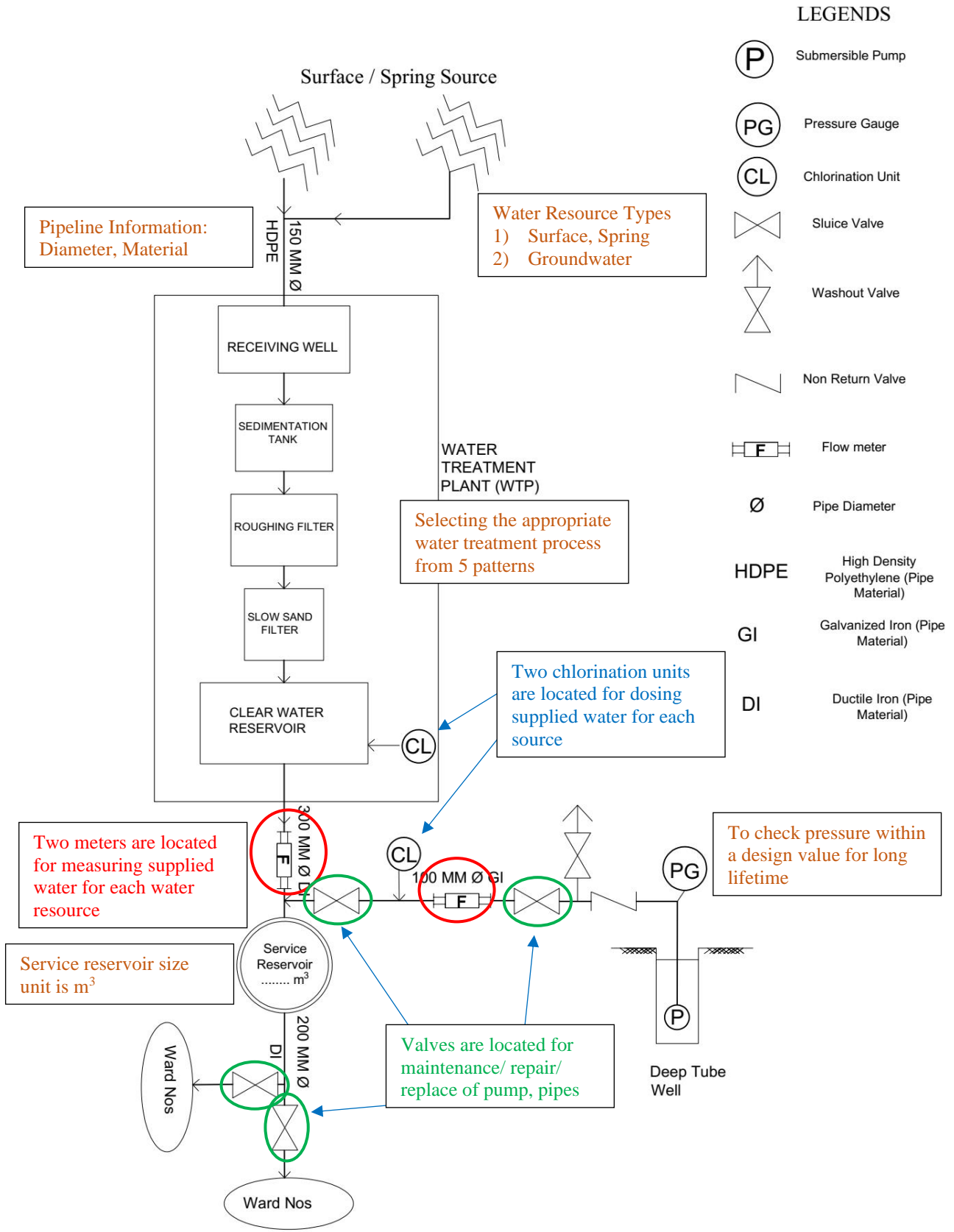
Three examples of the schematic flow diagrams are shown in page 9 to 10.

Example-1: Multiple Water Sources (combination of surface water and groundwater)

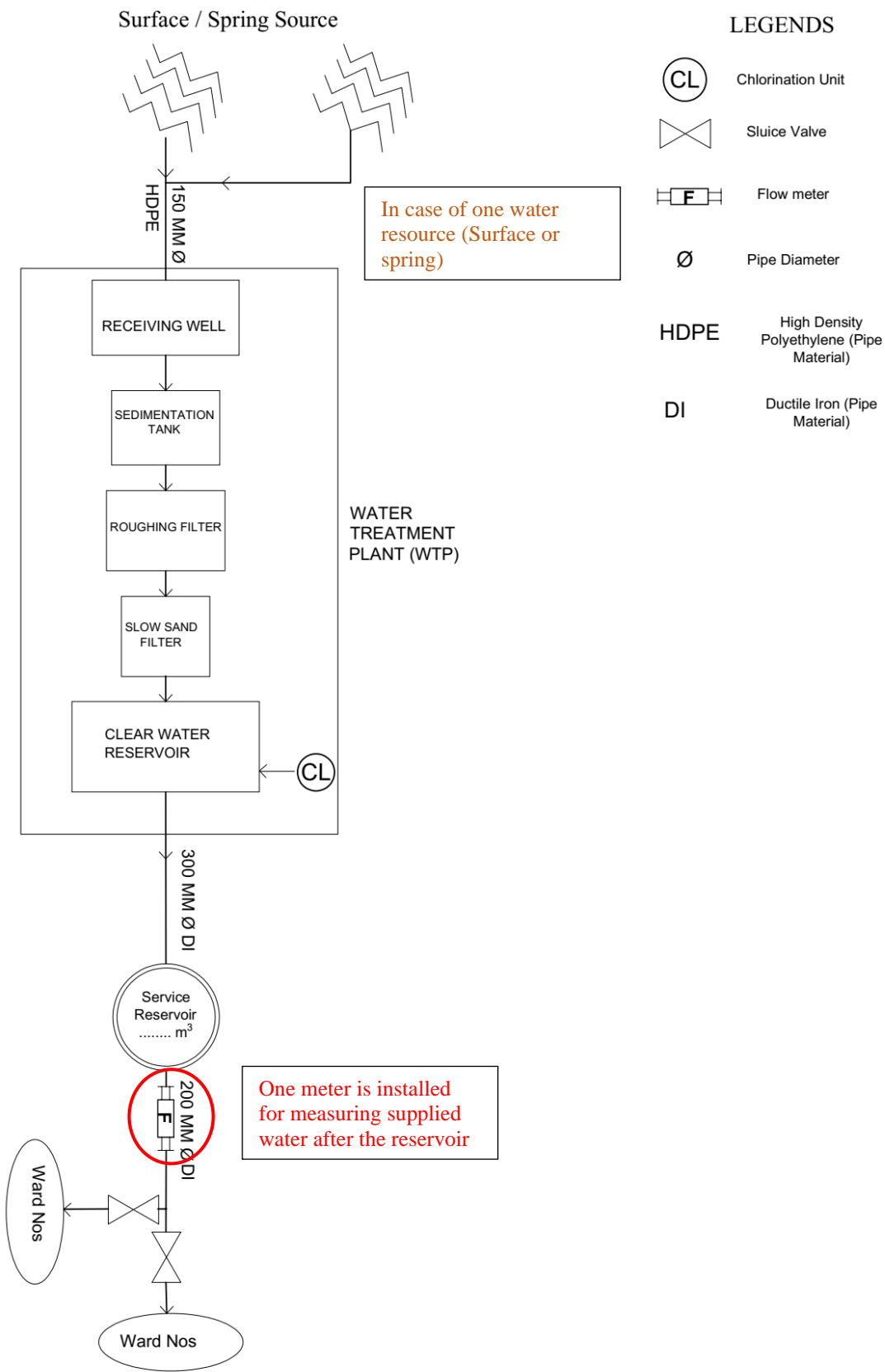
Example-2: Surface Water Source

Example-3: Groundwater Source

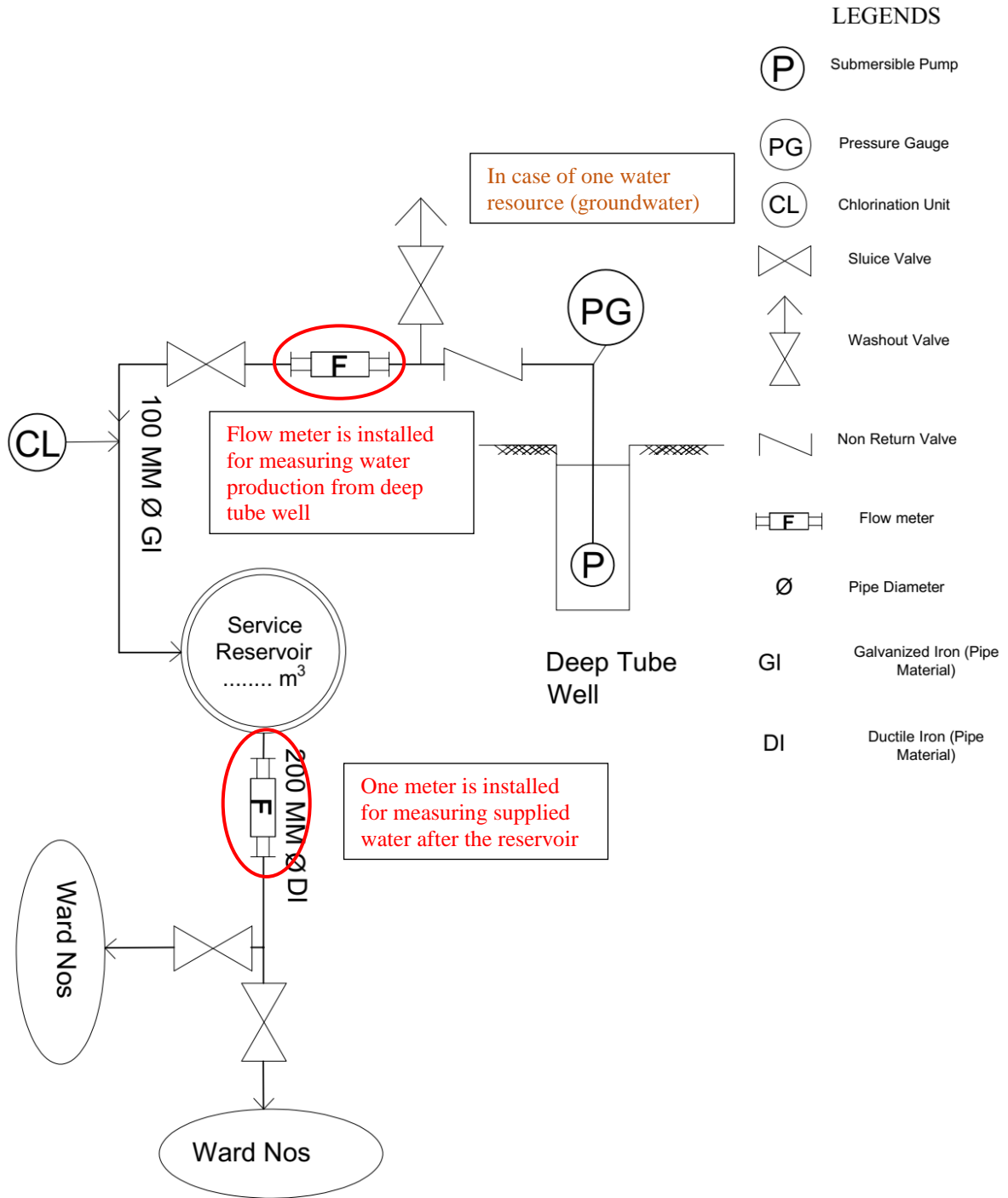
Example-1: Multiple Water Sources (combination of surface water and groundwater)



Example-2: Surface Water Source



Example-3: Groundwater Water Source



5. Determination of Specification

How to determine the specifications of chlorination unit and flow meter to be procured and samples of Bill of Quantity (BOQ) are described below.

5.1. Specification of Chlorination Unit

Generally, a pump type chlorination unit is procured/installed in case that desirable power supply is available. In case of no power supply, a gravity type chlorination unit which injects chlorine solution by gravity flow without using pump is applied.

A pump type chlorination unit consists of the following items:

- 1) Chemical Storage Tank with Base-frame
- 2) Propeller Type Mixer
- 3) Chemical Dosing Pump
- 4) Other Components; Y-strainer, Relief Valve, Pressure Gauge, Back Pressure Valve, Tube and fittings
- 5) Electrical Control Panel

A gravity type chlorination unit consists of the following items:

- 1) Chemical Storage Tank with Base-frame
- 2) Propeller Type Mixer (operated by solar power or generator)
- 3) Flow Control Valve with Flow Meter
- 4) Other Components; Y-strainer, Tube and fittings

The following specifications shall be clarified/determined for procurement of chlorination unit.

(1) Chemical Storage Tank with Base-frame

- The material of a tank shall be chemical resistant plastic against 1 % of chlorine solution such as Polyethylene (PE).
- The size of a tank shall be determined based on dosing volume and frequency of chlorine solution preparation in accordance with the calculation procedure as shown in **ANNEX-3**. Generally, 200L or 500L is required for a water supply system of semi- urban towns in Nepal.
- Base-frame must have sufficient strength to withstand a load of tank and inside chlorine solution. The material of base-frame shall be iron with proper coating such as galvanizing or epoxy coating to prevent from corrosion.
- A drain valve with proper size shall be installed to wash out the sediments at the bottom of tank.
- A level gauge shall be installed to confirm the inside solution level.

(2) Propeller Type Mixer

- The material of shaft and impeller shall be metal which have not only tolerance of 1 % of chlorine solution such as Stainless Steel (SS) or Resin Coating Metal, but also enough strength for mixing.
- The capacity of motor shall be determined based on the tank volume to prepare a homogeneous chlorine solution within 30 minutes.

- The power supply of motor shall be considered/determined depending on the site condition.

(3) Chemical Dosing Pump

- The recommended type of chemical dosing pump is diaphragm pump.
- The capacity of pump shall be determined based on the dosing amount calculated by the procedure as shown in **ANNEX-3**.
- The material of a diaphragm shall be chemical resistant resin against 1 % of chlorine solution.
- Relief Valve shall be installed to protect pump from overpressure due to blockages or closed valves.
- Back Pressure Valve shall be installed to prevent from backflow and excessive dosing.
- Y-strainer shall be installed to protect pump from debris and/or sediments coming from the storage tank.

(4) Flow Control Valve with Flow Meter

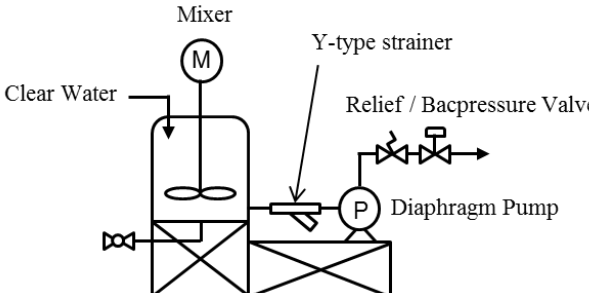

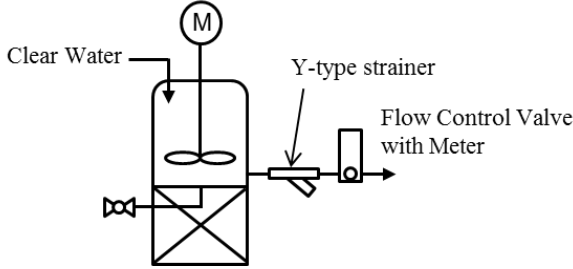

- The recommended type of flow control valve is needle valve or diaphragm valve to control small dosing volume, and flow meter shall be equipped.
- The control range of valve shall be determined based on the dosing amount calculated by the procedure as shown in **ANNEX-3**.
- The material of inside valve shall be chemical resistant resin against 1 % of chlorine solution.
- Y-strainer shall be installed to prevent from clogging by debris and/or sediments coming from the storage tank.

(5) Electrical Control Panel

A typical specification of electrical control panel is shown as follows.

- Three Phase, 400 V, 600mm L x 500mm W x 300mm D (for reference) with key lock for front door
- Equipped with Analog voltage and ampere meter with three phase selector switches.
- Equipped with Main Molded Case Circuit Breaker (MCCB) 30A (for reference).
- Equipped with under/over voltage relay.
- Equipped with respective feeder for the chemical dosing pump and mixer with on/off push button switches.
- Equipped with on/off indication, fault indication lamps.
- Equipped with Earth Leakage Circuit Breaker (ELCB), Magnetic Contactor (MC), and overload relay, a spare feeder and socket, wire connection terminal at bottom with a plastic cover.
- All other internal wires and ducts to be functionally completed.
- Equipped with 20m length of power cable with conduits and fittings for incoming line and the respective load.

The types of chlorination unit are summarized in the following table:

Type	Outline
Pump Type	<p>Mixer</p> <p>Y-type strainer</p> <p>Clear Water</p> <p>Relief / Bacpressure Valve</p> <p>Diaphragm Pump</p>  
Gravity Type	<p>Portable Mixer with Battery</p> <p>Mixer</p> <p>Clear Water</p> <p>Y-type strainer</p> <p>Flow Control Valve with Meter</p>  

5.2. Specification of Flow Meter (Bulk Meter)

The following specifications shall be clarified/determined for procurement of flow meter.

- The type of flow meter shall be impeller type integrating flow meter.
- The diameter shall be clarified based on the diameter of target pipe.
- The maximum pressure shall be clarified based on the actual water pressure of target pipe. Generally, 1.0 MPa is applied.
- The type of connection shall be determined based on the condition of target pipe. Generally, flange connection type is applied for easy replacement work.

6. Preparing Bill of Quantity (BOQ)

Samples of BOQ of chlorination unit and flow meter are shown as below:

6.1. Chlorination Unit

[Pump Type]

S.N	Specification	Unit	Quantity
1	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW (motor driven) ×2 set (1 set shall be delivered as spare)	pc	2
2	Chemical Tank; PE, 200L with iron base ×1 set	pc	1
3	Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1
4	Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	pc	1
5	Electrical Panel Three Phase, 400 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB (Molded Case Circuit Breaker) 30A, under/over voltage relay, respective feeder for the diaphragm pump and mixer with on/off push button switches, on/off indication, fault indication lamps, ELCB (Earth Leakage Circuit Breaker), MC (Magnetic Contactor), and over load relay, a spare feeder and socket, wire connection terminal at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load.	pc	1

[Gravity Type]

S.N	Specification	Unit	Quantity
1	Flow Control Valve with Flow Meter; 3-14 L/hr × 2set	pc	2
2	Chemical Tank; PE, 200L with iron base ×1set	pc	1
3	Mixer with motor operated by solar power; propeller type, SS (SUS304) ×1set	pc	1
4	Y-type Strainer ×1 set, tube & fittings	pc	1

* xx part shall be clarified/determined based on the actual condition.

6.2. Flow Meter (Bulk Meter)

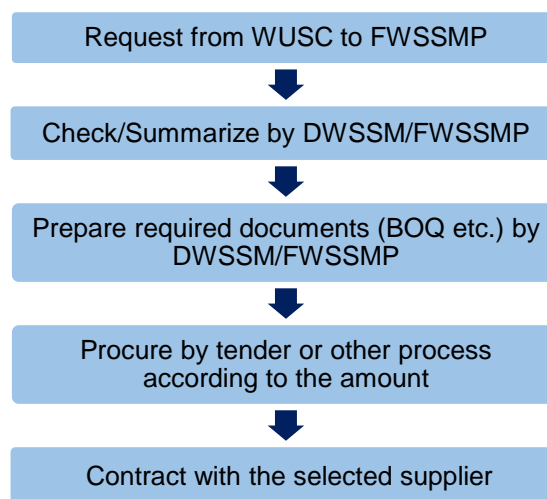
S.N	Specification	Unit	Quantity
1	75mm, 1.0 MPa, Flange connection	pc	1
2	100mm, 1.0 MPa, Flange connection	pc	1
3	200mm, 1.0 MPa, Flange connection	pc	1

* xx part shall be clarified/determined based on the actual condition.

7. Procurement and Installation

7.1. General Rules of Procurement

- 1) In case of using DWSSM budget for procurement, the following procedure is required generally.



- 2) In case of using the other budget or fund, it is necessary to confirm the procurement procedure and follow it.
- 3) Basically, flow meter, valve, pressure gauge and other consumables shall be procured by WUSC.

7.2. General Rules of Installation

- 1) Basically, installation work, commissioning and O&M training of procured equipment such as chlorination unit shall be conducted by the contractor.
- 2) The employer (generally FWSSMP or Local Government) and/or responsible person of WUSC shall conduct necessary supervision and inspection for the above works by the contractor, and give necessary instructions as required.
- 3) As to flow meter, valves etc. which can be installed by WUSC staff, the contractor shall procure and transport them to the designated place in accordance with the contract.
- 4) Necessary explanation of the warranty/guaranty period shall be provided by the contractor.
- 5) Necessary documents such as test report and instruction manual shall be provided by the contractor.

7.3. Installation of Chlorination Unit

- 1) Confirm the installation location of chlorination unit and its dosing point with WUSC staff.

- 2) Ensure the availability of power supply.
- 3) A shed shall be prepared by WUSC to protect the dosing unit from rain and direct sunlight.
- 4) The unit shall be installed horizontally and fixed tightly by using anchor bolt etc. by the contractor.
- 5) Leakage and/or other abnormality shall be checked and rectified if any by the contractor.
- 6) Performance curve (calibration curve) shall be provided by the contractor.

7.4. Installation of Flow Meter

- 1) Confirm the installation location of flow meter.
- 2) If necessary, flow meter chamber shall be constructed before installation of the meter.
- 3) The meter shall be installed horizontally with proper flow direction.
- 4) Leakage and/or other abnormality shall be checked and rectified if any.
- 5) For further information, refer to SOP (Chapter 3, Section 4, Household Connections and Water Meter).

ANNEX-1. Preventive Maintenance

(1) Maintenance Management

Maintenance management is categorized into the following.

- 1) Corrective Maintenance
- 2) Preventive Maintenance

(2) Corrective Maintenance

Corrective Maintenance is repair/ restoration work after malfunction.

(3) Preventive Maintenance

Preventive Maintenance is preliminary maintenance activities such as planned inspection and replacement etc. to prevent any unplanned downtime and expensive costs from unexpected malfunction of equipment.

- To decrease malfunction of equipment.
- To prevent equipment from deterioration by conducting planned inspection and replacement of parts etc.
- To analyze/utilize the obtained data from operational records and inspection results.
- To replace the deteriorated/damaged equipment which exceed its lifetime.

(4) Concept of Preventive Maintenance

The concept of Preventive Maintenance is show in **Figure A1**.

- 1) The initial performance of facilities is set at the beginning of the operation start.
- 2) The facility performance has been gradually decreasing according to time passing and operation.
- 3) Without any maintenance including periodic inspection and repair etc., the facility performance finally reaches zero function that means facility breakage, which means no function and no water supply.
- 4) However, regular and routine maintenance help to keep equipment in good and sound condition. This maintenance can minimize the repair and replacement costs and can recover the facility performance.
- 5) Finally, Preventive Maintenance provides longer lifetime to the facility and minimization of Life Cycle Cost.

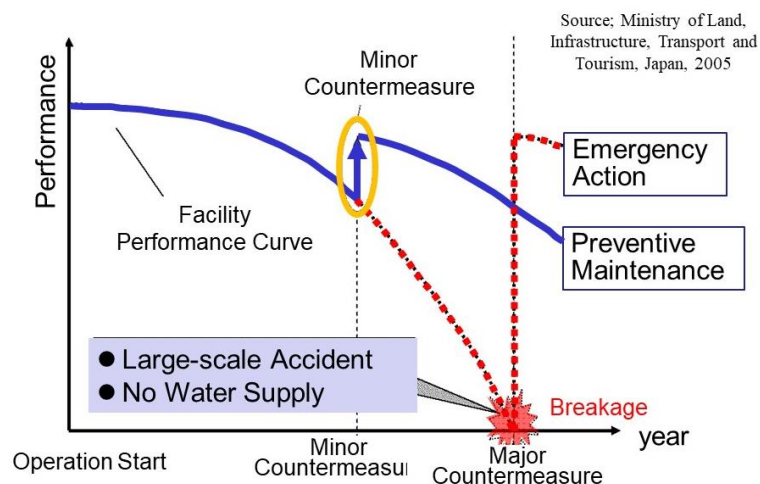


Figure A1. Concept of Preventive Maintenance

ANNEX-2. Check List for Water Supply System

No.	Facility/ Equipment	Check Items	Results	Remarks	
1	Intake	Kind of Water Source (surface water, spring, stream, groundwater)			
		Type (collection chamber, well pump etc.)			
		Quantity			
		Location			
		Capacity (in case of well pump)	(L/h)		
			(HP or kW)		
2	Raw Water Transmission Pipeline	Pipe diameter			
		Pipe material (ductile cast iron, GI, HDPE)			
		Bulk meter (type and diameter if installed)			
3	Water Treatment Plant	Treatment process (Pattern A to E or other)			
		Facility/equipment 1	Name:		
			Type:		
			Quantity:		
			Capacity:		
			Location:		
		Facility/equipment 2	Name:		
			Type:		
			Quantity:		
			Capacity:		
			Location:		
		Facility/equipment 3	Name:		
			Type:		
			Quantity:		
			Capacity:		
			Location:		
		Facility/equipment 4	Name:		
			Type:		
			Quantity:		
			Capacity:		
Location:					

No.	Facility/ Equipment	Check Items	Results	Remarks
4	Service Reservoir	Reservoir-1	Type: elevated or ground	
			Capacity (m ³):	
			Location:	
		Bulk meter (type and diameter if installed)		
		Reservoir-2	Type: elevated or ground	
			Capacity (m ³):	
Location:				
Bulk meter (type and diameter if installed)				
5	Chlorination Unit	Unit-1	Type: pump or gravity	
			Tank capacity (L):	
			Pump capacity (L/h):	
			Location:	
		Unit-2	Type: pump or gravity	
			Tank capacity (L):	
			Pump capacity (L/h):	
			Location:	
6	Valve, Pressure gage	Quantity, location, diameter (of valve)	Draw in a rough sketch	
7	Water Service Areas	Number of wards		
8	Water quality test kit	What kind of kit (kit name, if exists)		
9	New project	Is there any new project?	Yes or No	
		Status (planning or under construction)		
		In case of planning, when does it start?		
		In case of construction, when will it complete?		

ANNEX-3. Capacity Calculation of Chlorination Unit

(1) Dosing amount of chlorine solution

The calculation is carried out in accordance with the following formula:

$$W = Q * R_s * 1 / (C_1/100) * 1/\rho * 10^{-3}$$
$$= Q * R_s * 0.1$$

W: Dosing amount of chlorine solution (L/hour)

Q: Flow rate of treated water (m³/hour)

R_s: Dosing rate of chlorine (mg/L) = 0.5(minimum), 1.0(average), 2.0(maximum)

C₁: Concentration of chlorine solution (%) = 1.0

ρ: Specific gravity of 1% chlorine solution (g/mL) = 1.0

<Example>

In case of R_s=0.5 mg/L and Q=10.8 m³/hour, W₁=0.54 L/hour is obtained by the above formula.

Similarly, in case of R_s=1.0 mg/L and Q=10.8 m³/hour, W₂=1.08 L/hour.

Similarly, in case of R_s=2.0 mg/L and Q=10.8 m³/hour, W₃=2.16 L/hour.

Therefore, the required discharge volume of pump is W₁ to W₃, 0.54 to 2.16 L/hour.

(2) Storage Tank Volume

Storage tank volume (V) is calculated by the following formula:

$$V = W_2 * (\text{Supply hours per day})$$

<Example>

In case that supply hour is 24 hours per day, C=1.08*24 = 25.9 L.

Hence, the required tank volume is 30 liters.

(3) Preparation of Chlorine Solution

The calculation is carried out in accordance with the following formula:

$$A = V * \rho * C_1/100 * 1/(C_2/100)$$

A: Required amount of Bleaching Powder (kg)

V: Storage tank volume (L)

ρ: Specific gravity of 1% chlorine solution (kg/L) = 1.0

C₁: Concentration of chlorine solution (%) = 1.0

C₂: Available chlorine concentration (%) = 34.0

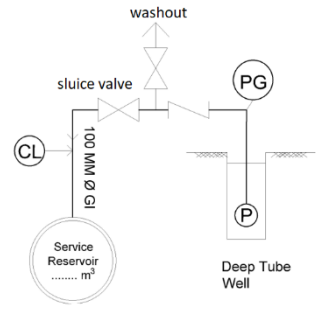
The typical C₂ value of bleaching powder which can be procured in Nepal is 34 %.

In case of V=1,000 L, A=29.4 kg is obtained.

If bulk meter is not installed, Flow rate (Q) should be estimated by the following methods.

Method 1 (for ground water source):

- 1) Prepare a bucket of known volume (for example 100 liters) and a stopwatch.
- 2) Close the sluice valve (discharge valve) and open the washout valve.
- 3) Start operation of the well pump.
- 4) Collect the water from washout into the bucket and measure the time to fill the bucket using the stopwatch.
- 5) In case that it takes 10 seconds, $Q=100/10=10$ L/sec (36 m³/hour) is obtained.

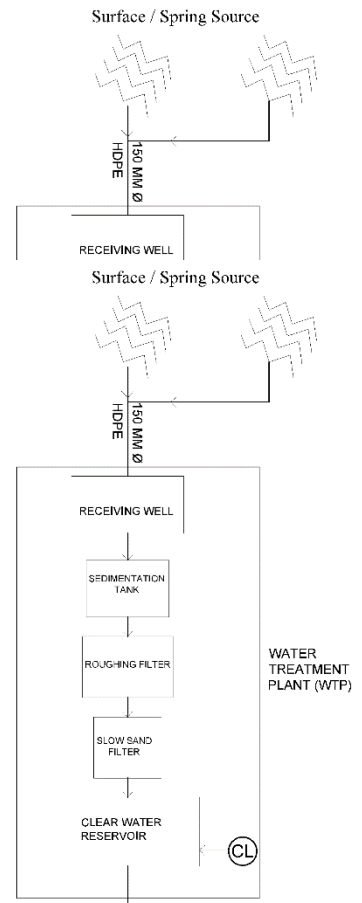


Method 2 (for surface water source and ground water source):

- 1) Close all discharge valves (outflow valves) of the reservoir.
- 2) Measure the inside water level.
- 3) Measure the inside water level after one hour.
- 4) In case that the area of the reservoir is 100 m² and the increased water level is 1 m/hour, $Q=100*1= 100$ m³/hour is obtained.

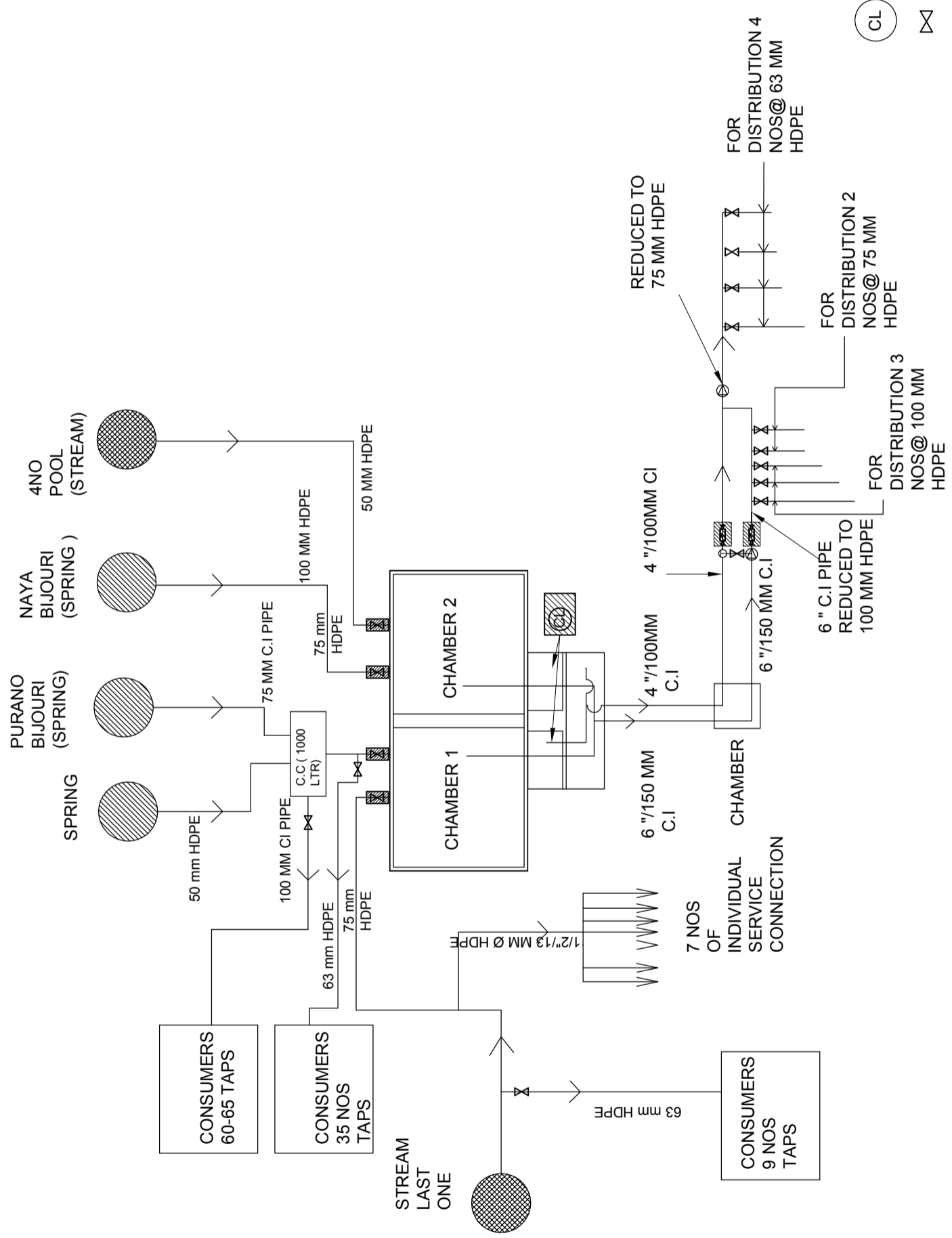
Method 3 (Measurement by ultrasonic flow meter):

- 1) Measure the flow rate directly by using ultrasonic flow meter.







Appendix 2.22

**Flow Diagram indicating the
Location of Rehabilitation Works
for Target A WUSC**





Legend:

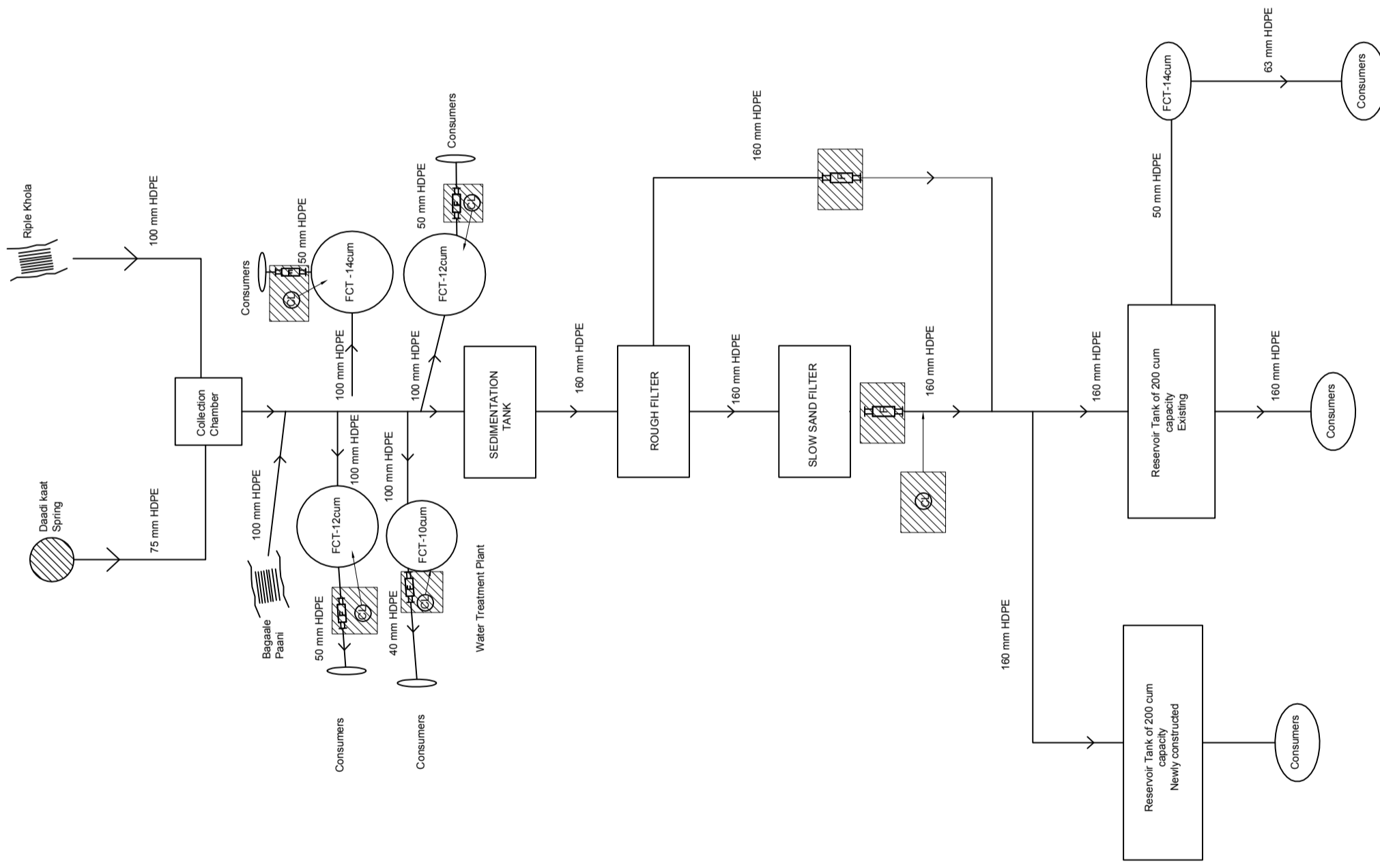
-  Suggested Chlorine Dosing Unit
-  Suggested sluce valve points
-  Suggested Flowmeter
-  New Installation Point and Replacing Point

Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

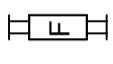

Drawing title:
Schematic Flow Diagram Of Amlekhgunj Water Users Committee Bara, Nepal

Date: 12/5/2016
 Scale: Not In Scale

 
 For providing safe and quality drinking water to people



Legend:

- FCT
- CL
-
- 
- 
- Ferro Cement Tank
- Suggested Chlorine Dosing Unit
- Temporary Line
- Suggested Flowmeter
- New Installation Point and Replacing Point

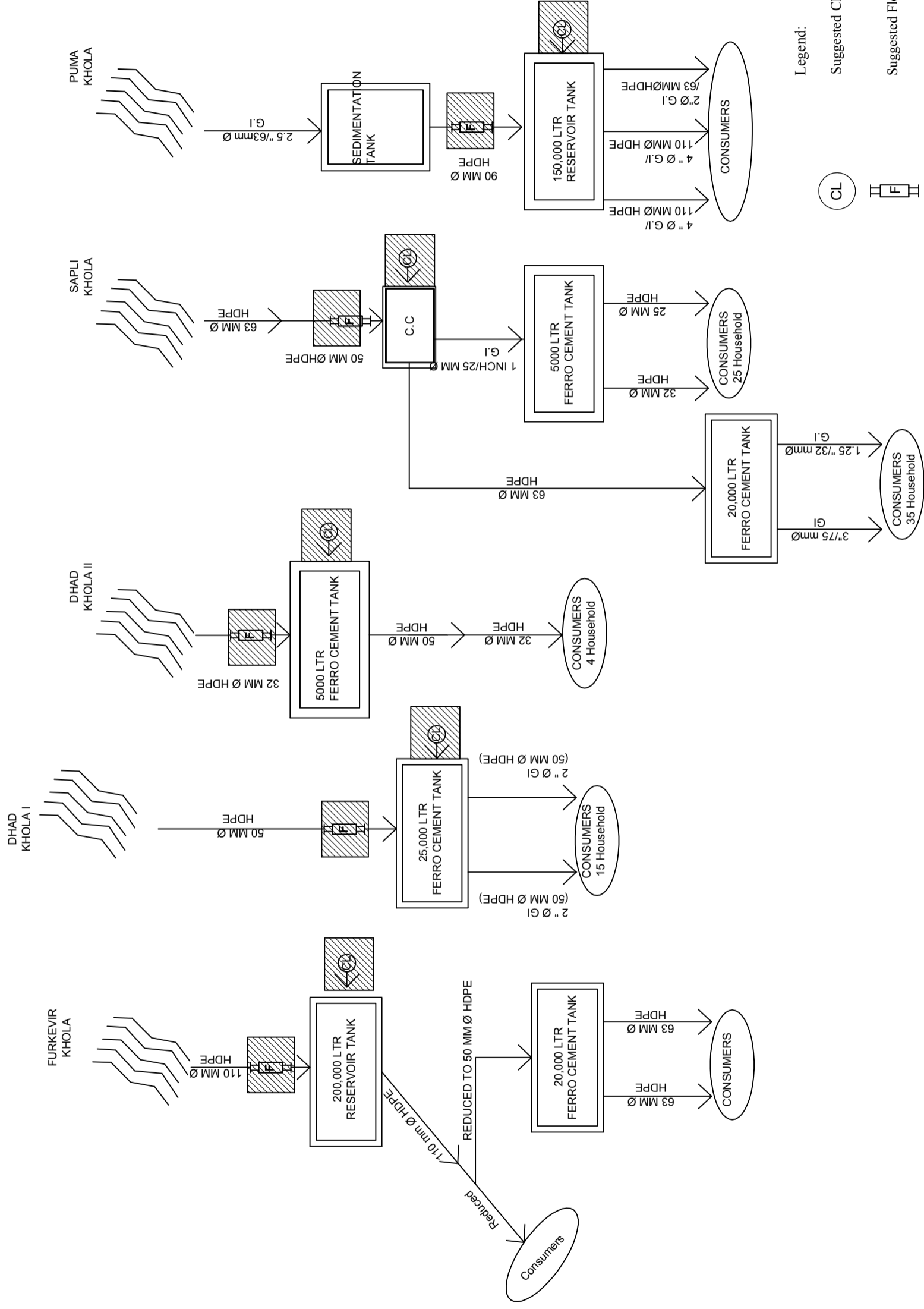
Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)




Drawing title:
Schematic Flow Diagram Of Beljhungdi Water Users Committee Dang, Nepal

Date: 12/5/2016

Scale: Not In Scale





- Legend:
-  Suggested Chlorine Dosing Unit
 -  Suggested Flowmeter
 -  New Installation Point and Replacing Point

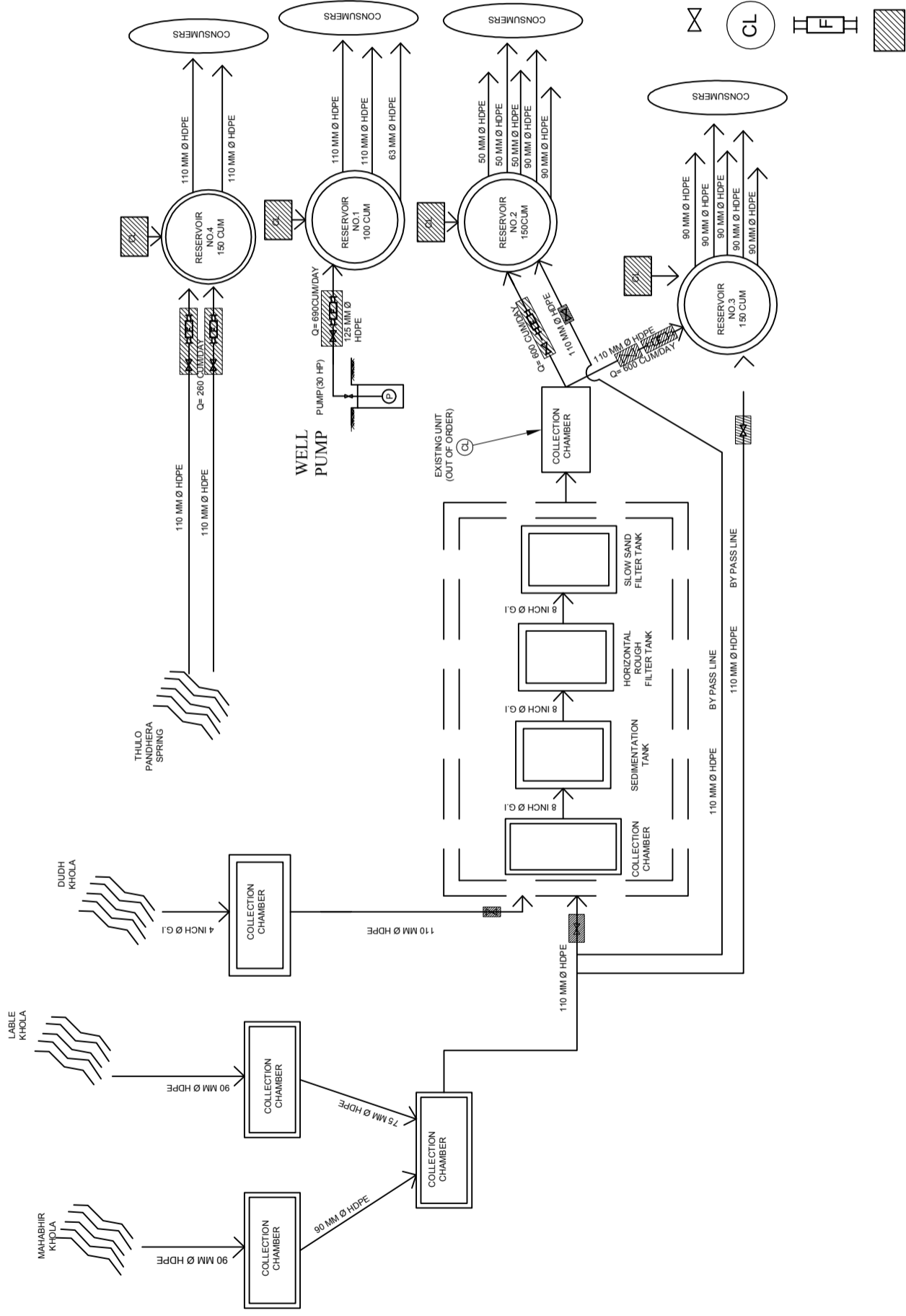
Project Name:
**The Capacity Development Project for the
 Improvement of Water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)**





Drawing title:
**Schematic Flow Diagram Of
 Besisahar(rural) Water Users Committee
 Lamjung, Nepal**

Date: 12/5/2016

Scale: Not In Scale





- Legend:
-  Suggested sluzice valve points
 -  Suggested Chlorine Dosing Unit
 -  Suggested Flowmeter
 -  New Installation Point and Replacing Point

Project Name:
**The Capacity Development Project for the
 Improvement of Water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)**

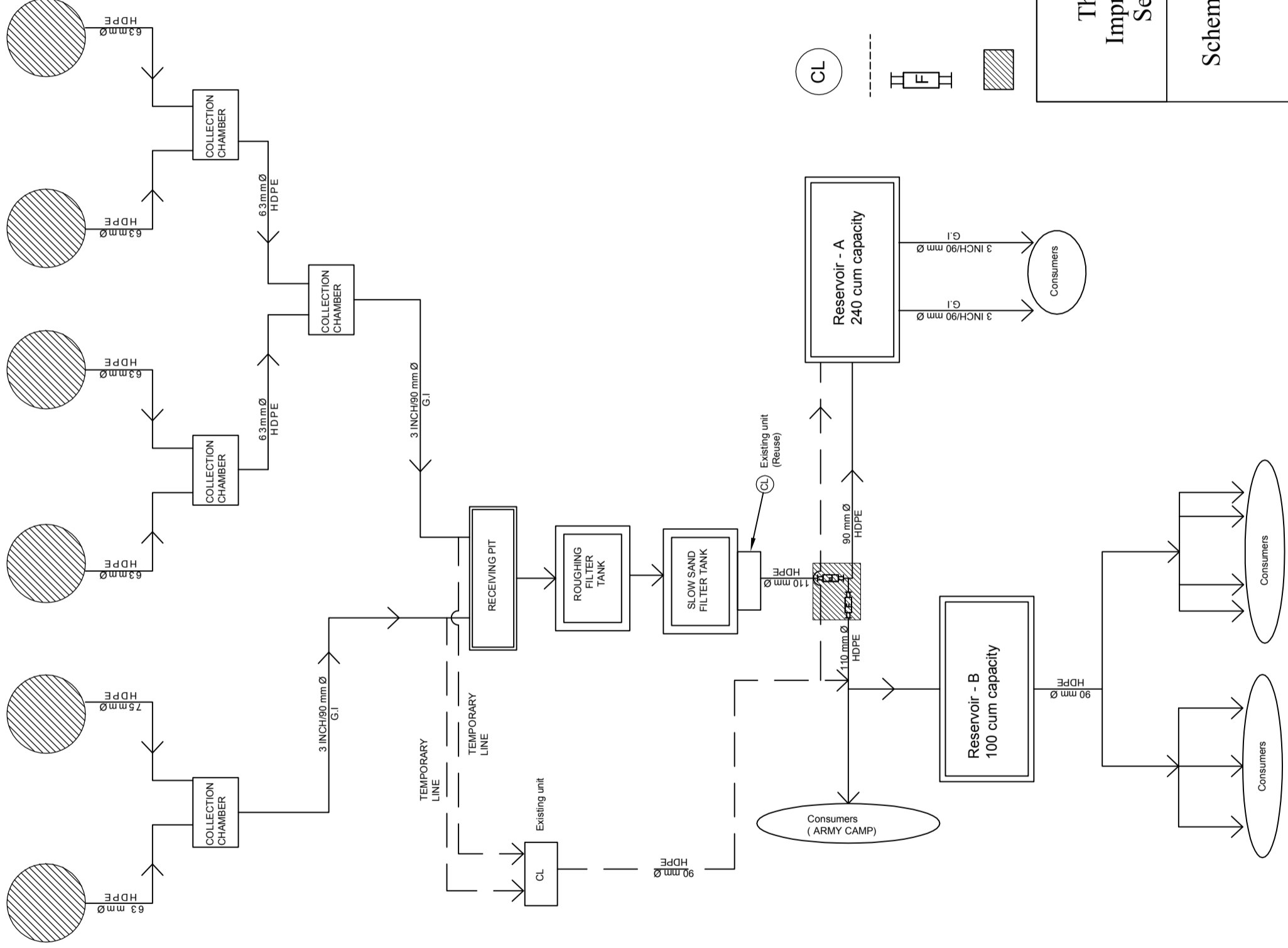
Drawing title:
**Schematic Flow Diagram Of
 Besisahar(urban) Water Users Committee
 Lamjung, Nepal**

Date: 12/5/2016


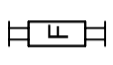
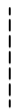
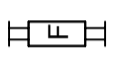

Scale: Not In Scale



For providing safe and quality drinking water to people



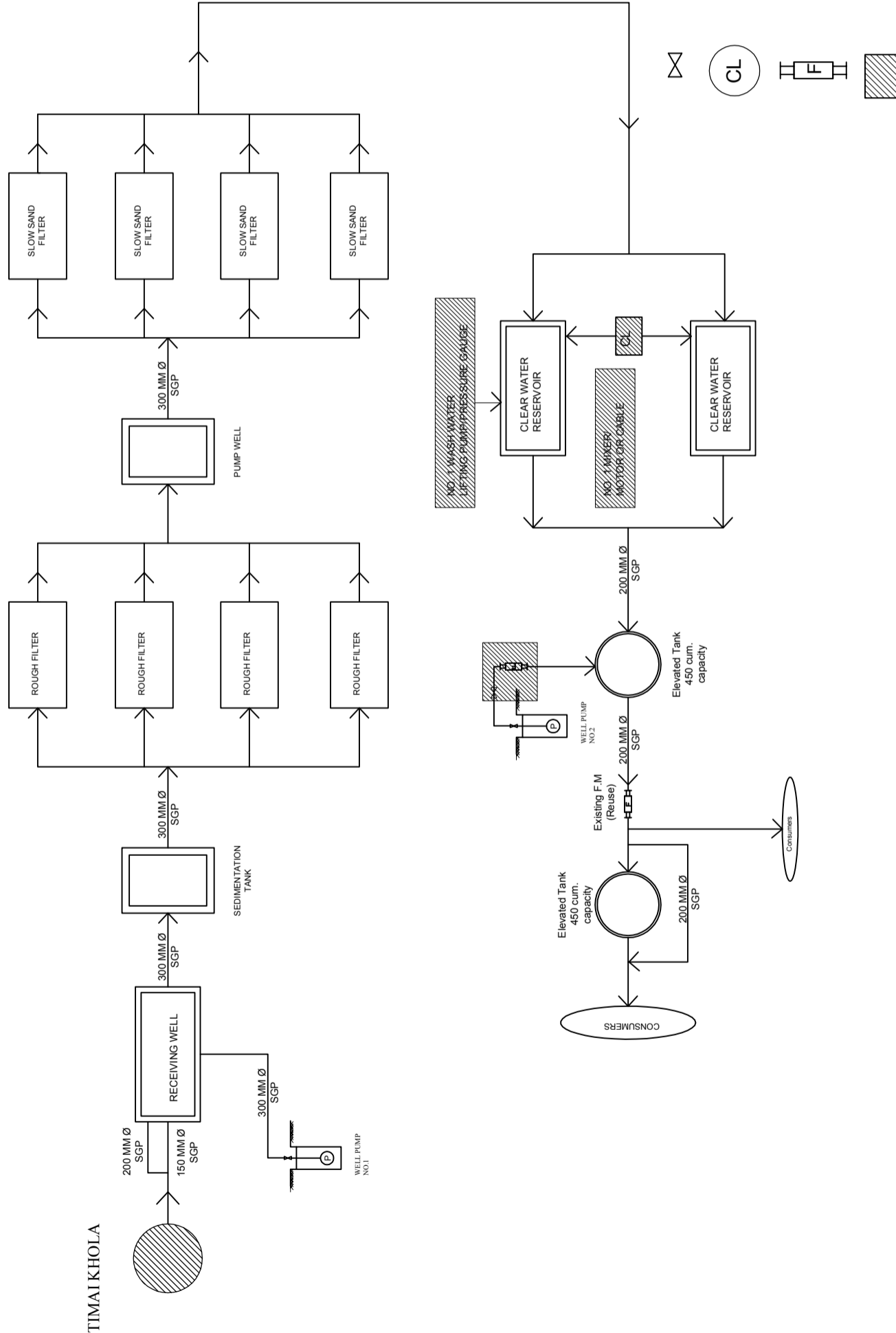
Legend:

-  CL
-  Suggested Chlorine Dosing Unit
-  Temporary Line
-  Suggested Flowmeter
-  New Installation Point and Replacing Point

Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

Drawing title:
Schematic Flow Diagram Of Chautara Water Users Committee Sindhupalchowk, Nepal

Date: 12/5/2016
 Scale: Not In Scale

- Legend:
- Suggested sluice valve points
 - Suggested Chlorine Dosing Unit
 - Suggested Flowmeter
 - New Installation Point and Replacing Point

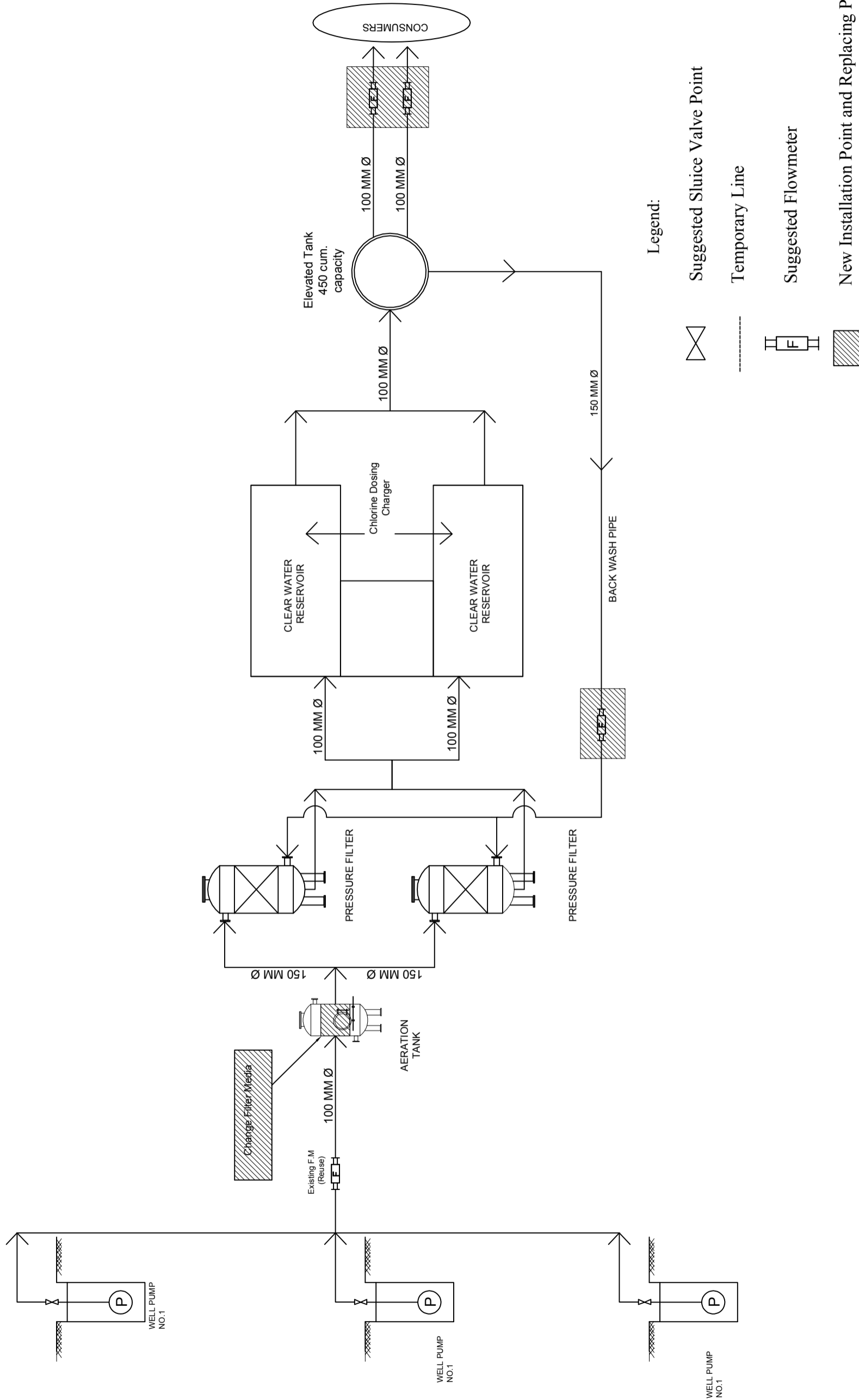
Project Name:
**The Capacity Development Project for the
 Improvement of Water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)**

Drawing title:
**Schematic Flow Diagram Of Dhulabari
 Water Users Committee
 Jhapa, Nepal**





Date: 12/5/2016

Scale: Not In Scale





Legend:

-  Suggested Sluice Valve Point
-  Temporary Line
-  Suggested Flowmeter
-  New Installation Point and Replacing Point

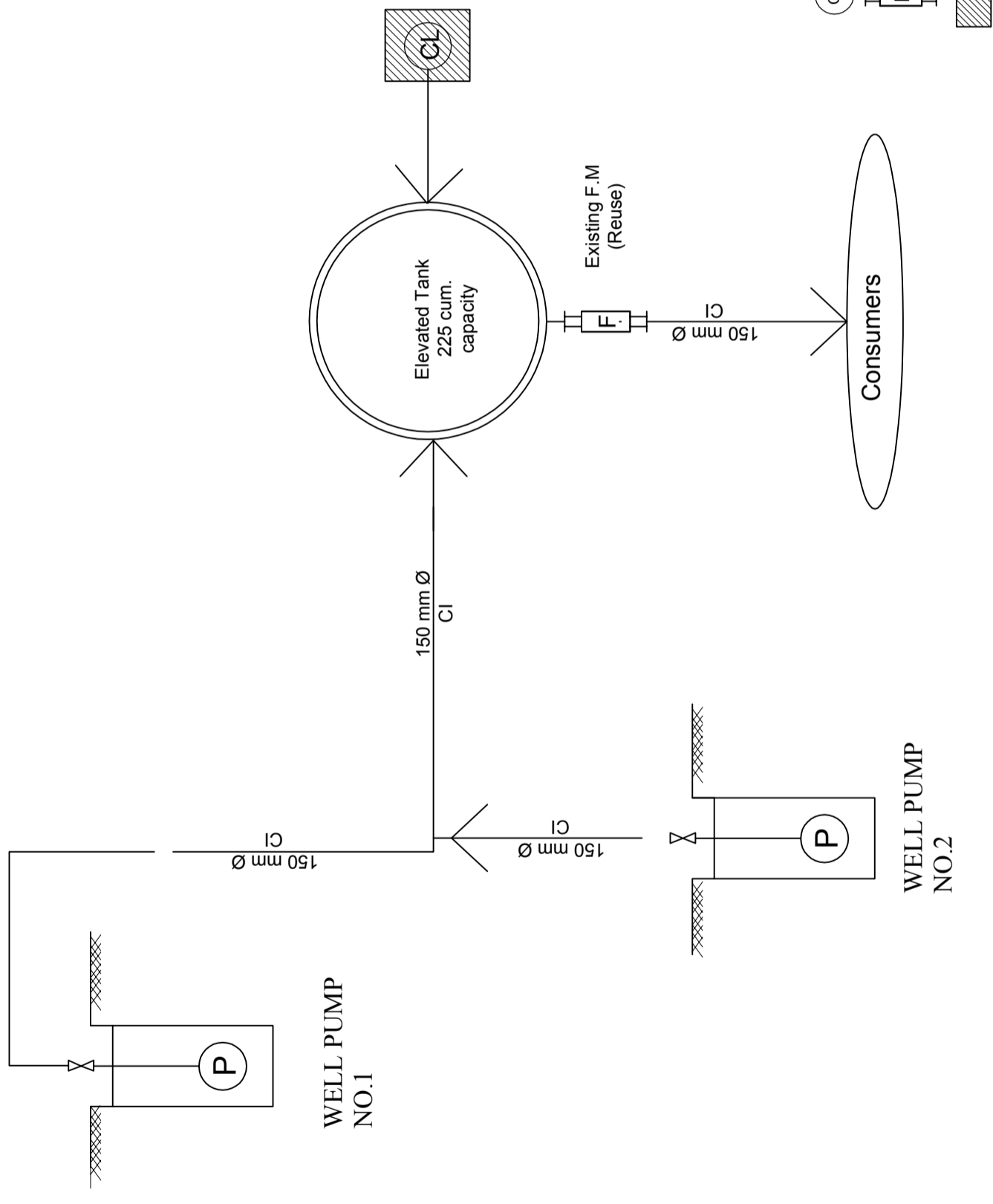
Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

Drawing title:
Schematic Flow Diagram Of Gauradaha Water Users Committee Jhapa, Nepal


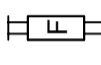

Date: 12/5/2016



Scale: Not In Scale

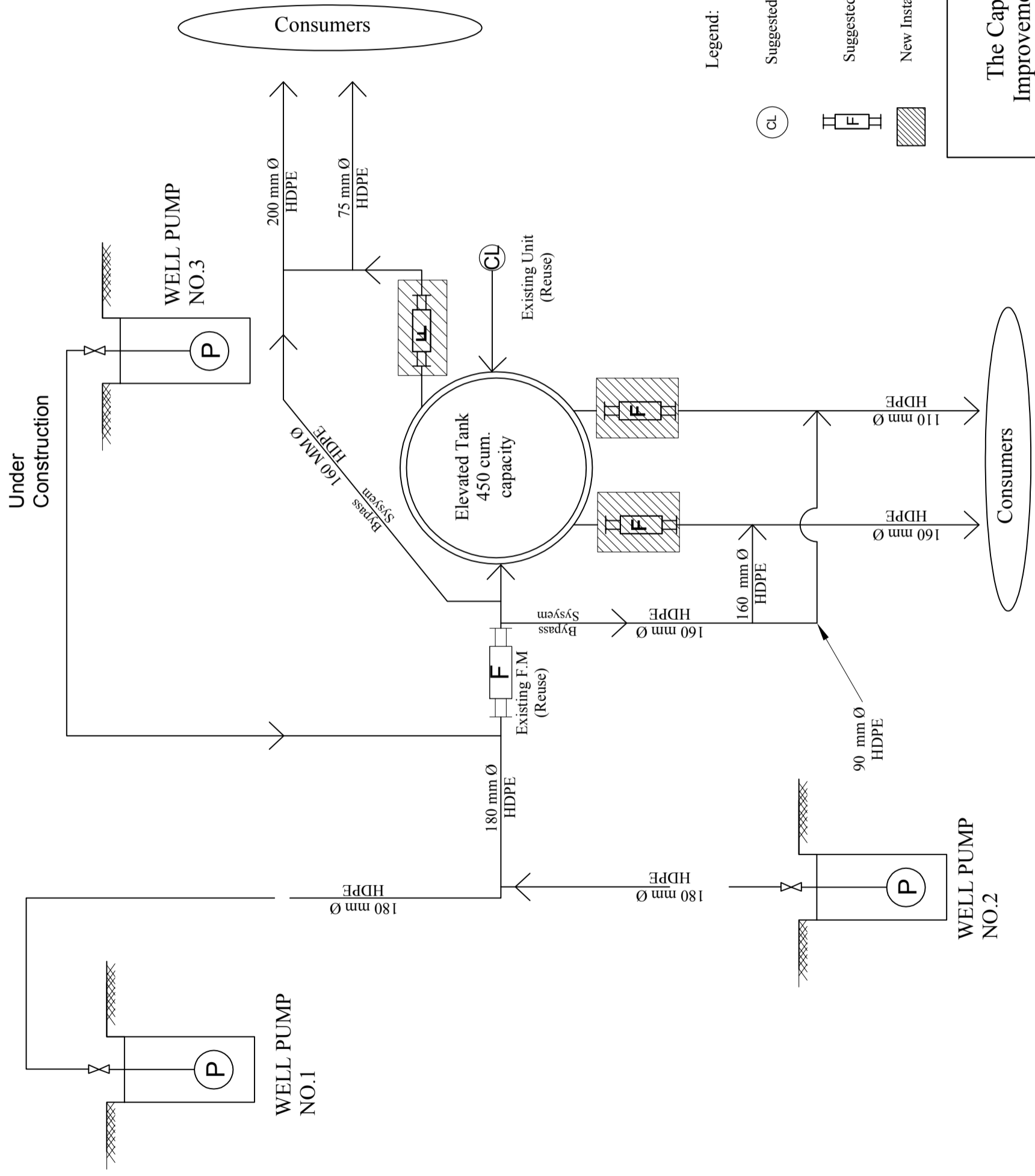




Legend:



-  Suggested Chlorine Dosing Unit
-  Suggested Flowmeter
-  New Installation Point and Replacing Point

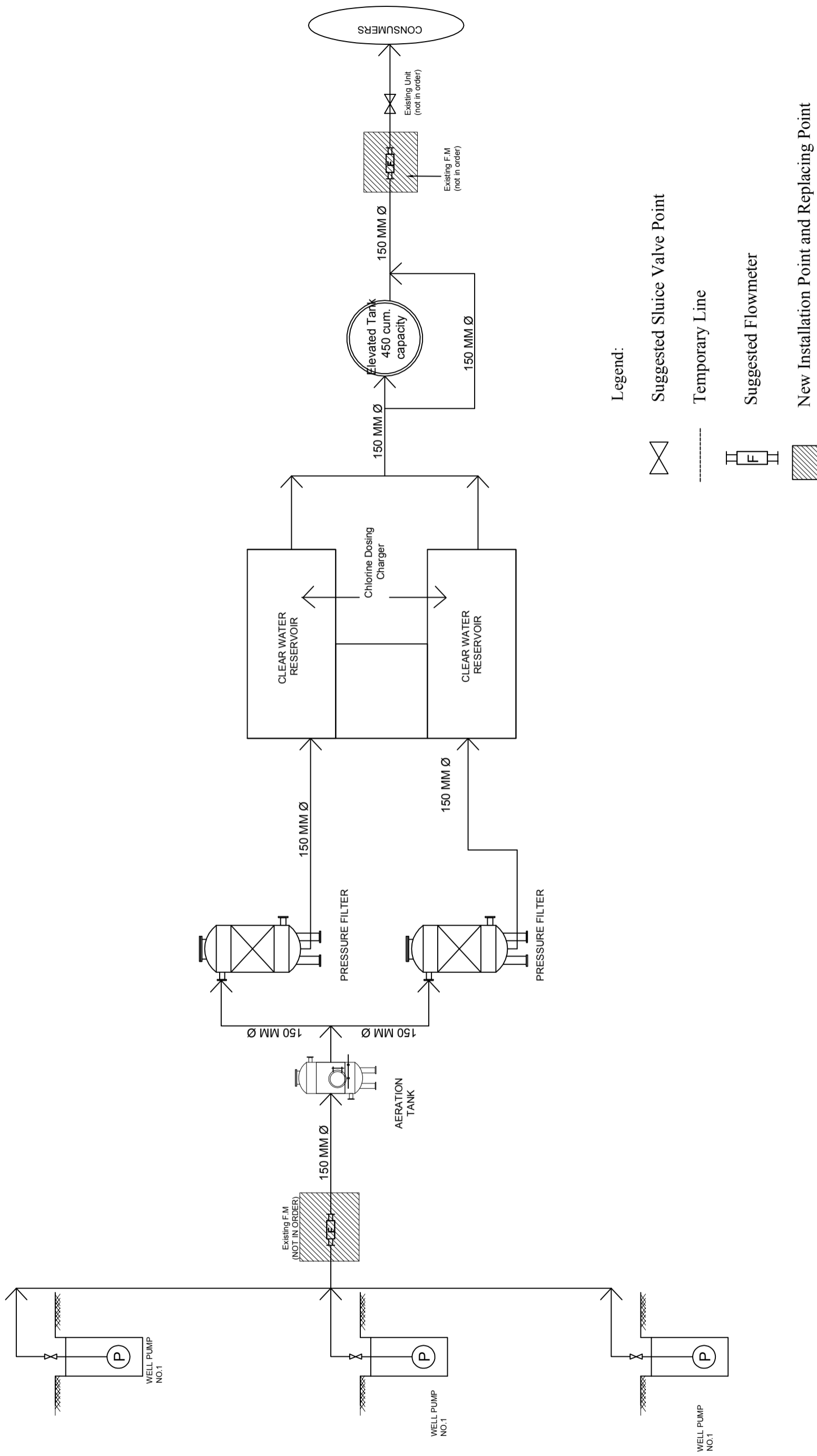
<p>Project Name: The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)</p>		<p>Date: 12/5/2016</p>
<p>Drawing title: Schematic Flow Diagram Of Gulariya Water Users Committee Bardiya, Nepal</p>		<p>Scale: Not In Scale</p>
<p style="font-size: small;">For providing safe and quality drinking water to people</p>  		





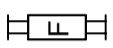

Legend:

- (CL) Suggested Chlorine Dosing Unit
- (F) Suggested Flowmeter
- [Hatched Box] New Installation Point and Replacing Point

Project Name: The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)		Date: 12/5/2016
Drawing title: Schematic Flow Diagram Of Karmaiya Water Users Committee Sarlahi, Nepal		Scale: Not In Scale
  <small>For providing safe and quality drinking water to people</small>		



Legend:

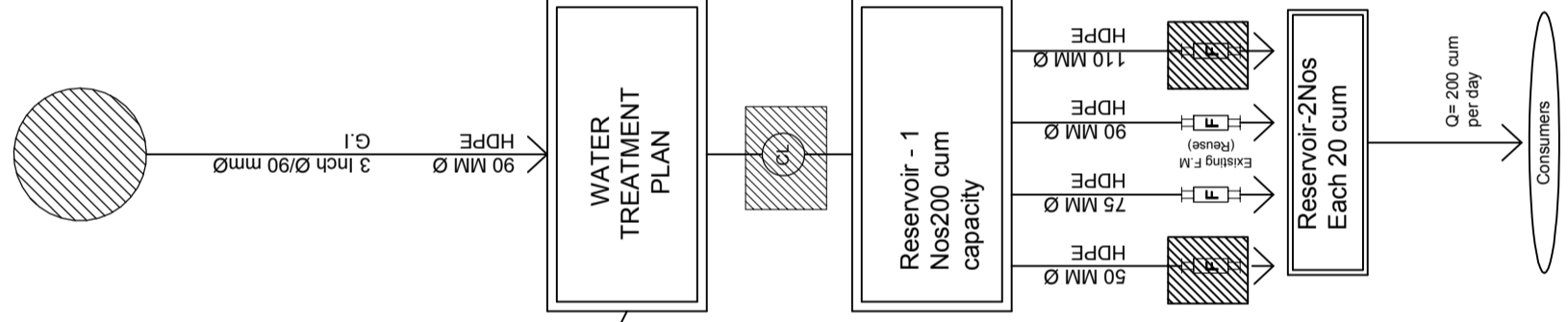
-  Suggested Sluice Valve Point
-  Temporary Line
-  Suggested Flowmeter
-  New Installation Point and Replacing Point

Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

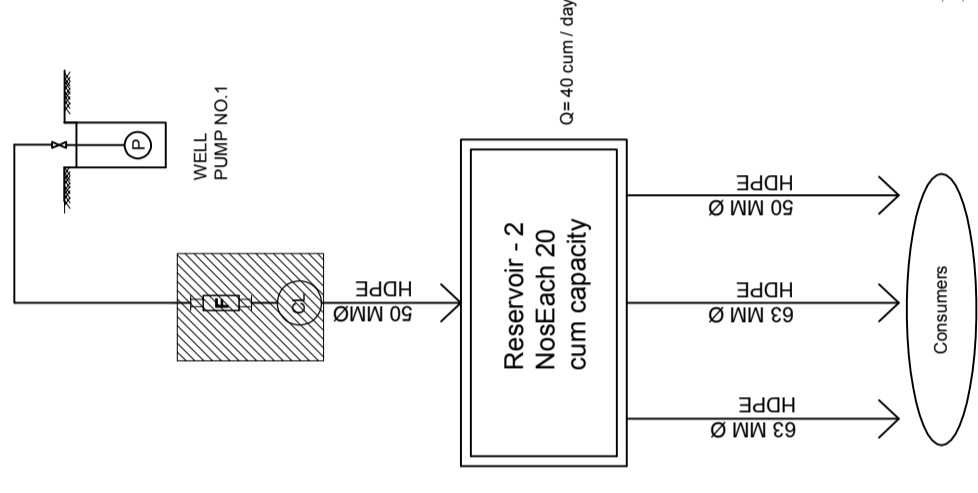
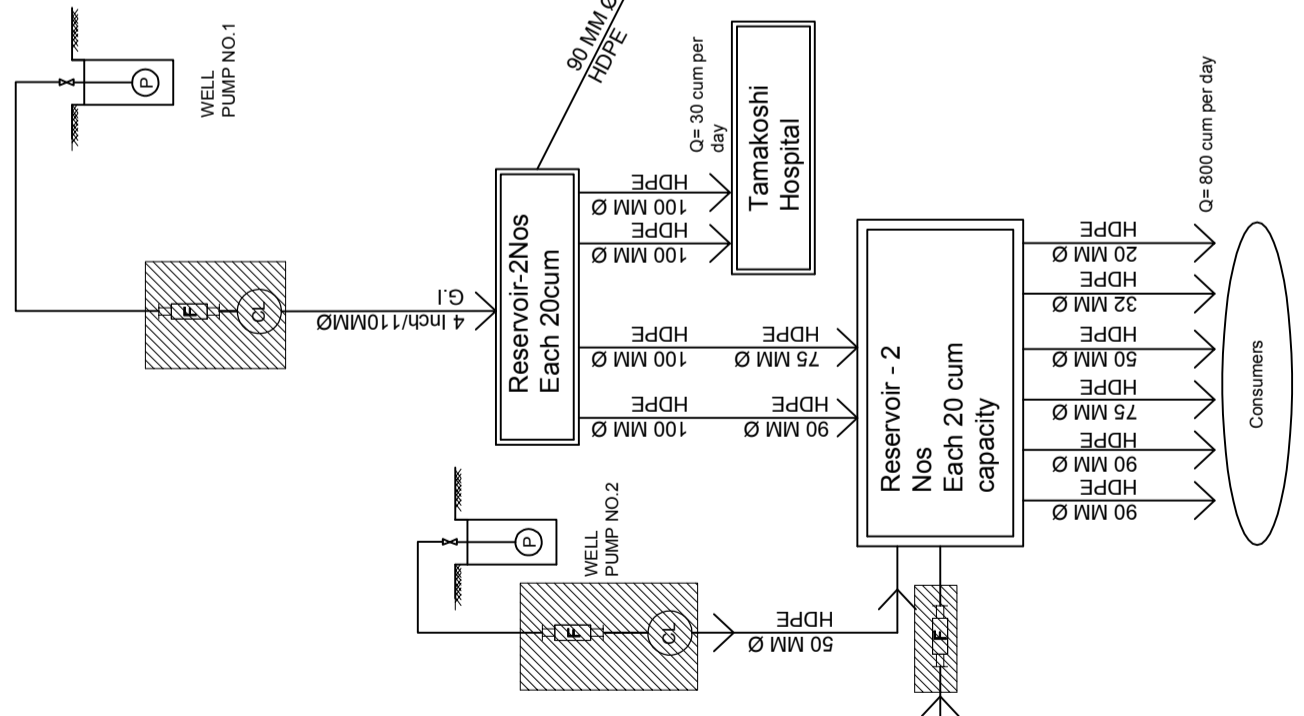
Drawing title:
Schematic Flow Diagram Of Mangadh Water Users Committee Morang, Nepal

Date: 12/5/2016
 Scale: Not In Scale

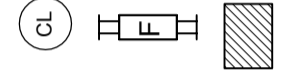

BHALUA
KHOLA
(SPRING) +
LAMAPATE
STREAM



MACHABARI
+ SADI
STREAM



Legend:



Suggested Chlorine Dosing Unit

Suggested Flowmeter

New Installation Point and Replacing Point

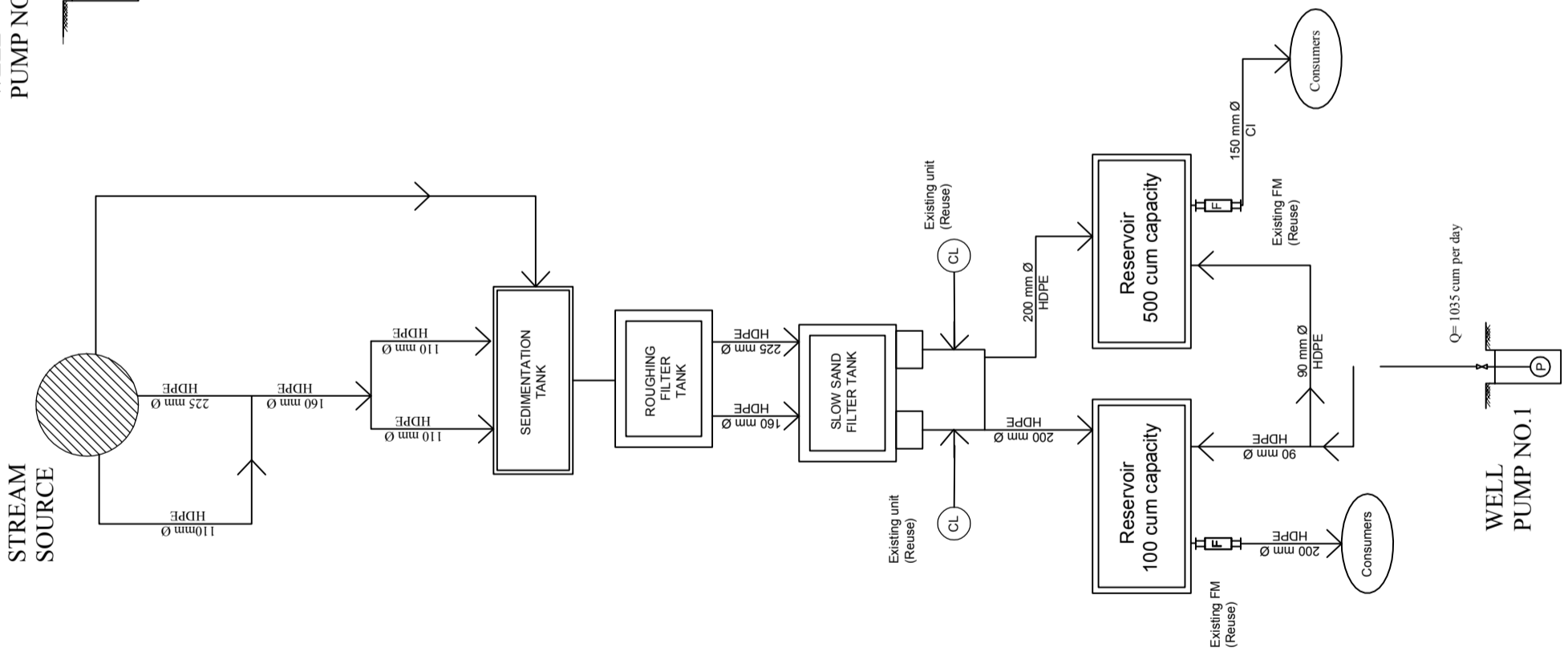
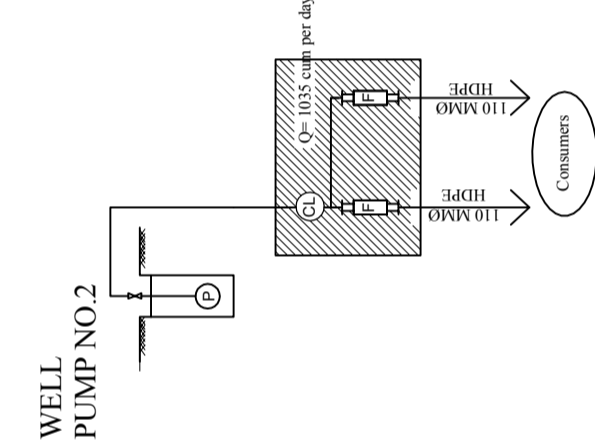
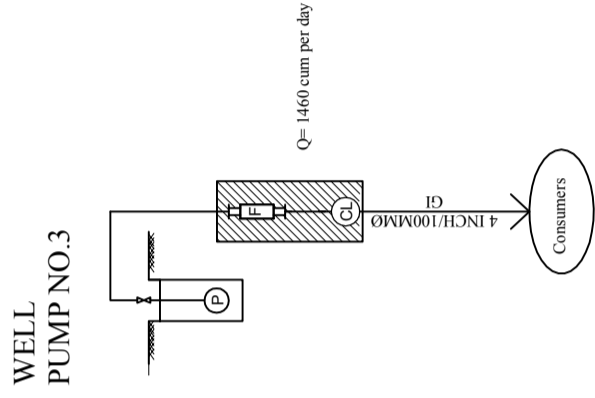
Project Name:
**The Capacity Development Project for the
Improvement of Water Supply Management in
Semi-Urban Areas in Nepal (WASMIP II)**

Drawing title:
**Schematic Flow Diagram Of Manthali
Water Users Committee
Ramechaap, Nepal**

Date: 12/5/2016

Scale: Not In Scale





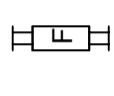
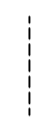
Legend:

Suggested Chlorine Dosing Unit

Temporary Line

Suggested Flowmeter

New Installation Point and Replacing Point



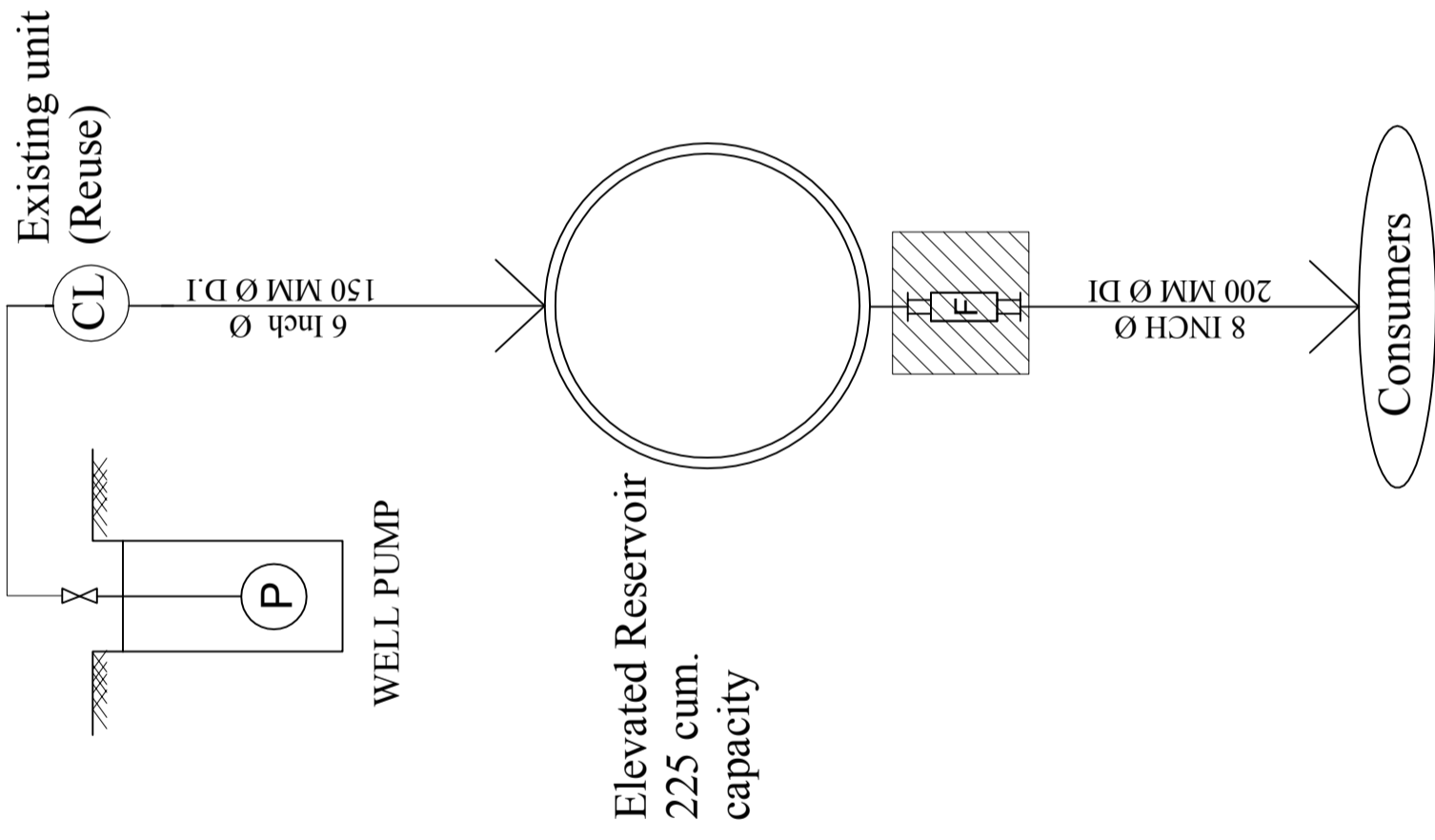
Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

Drawing title:
Schematic Flow Diagram Of Pragatinagar Water Users Committee Nawalparasi, Nepal

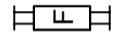
Date: 12/5/2016

Scale: Not In Scale





Legend:



Suggested Flowmeter



New Installation Point and Replacing Point

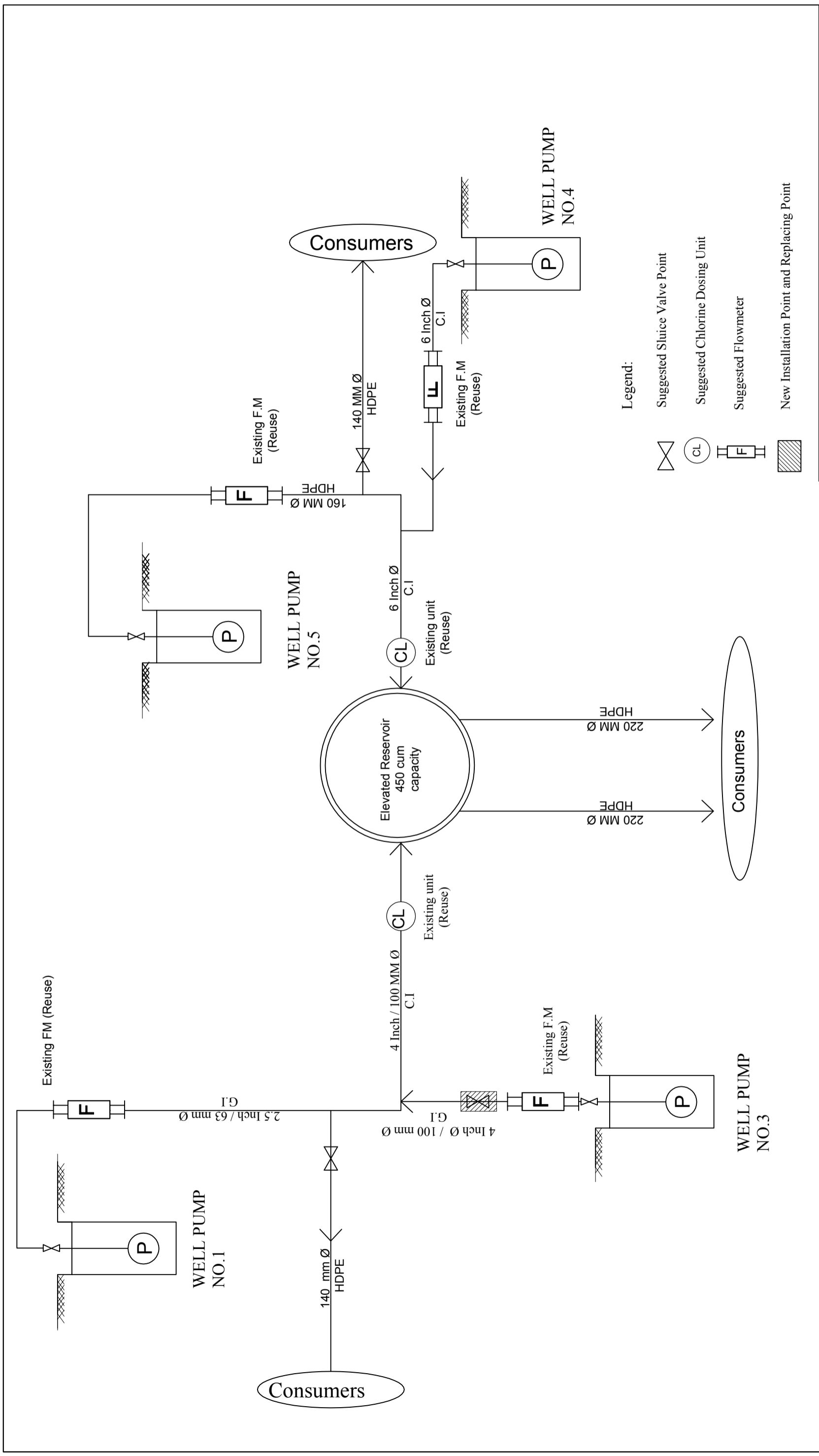
Project Name:
**The Capacity Development Project for the
 Improvement of Water Supply Management in
 Semi-Urban Areas in Nepal (WASMIP II)**

Drawing title:
**Schematic Flow Diagram Of Ramgram
 Water Users Committee
 Nawalparasi, Nepal**

Date: 12/5/2016

Scale: Not In Scale







Project Name:
The Capacity Development Project for the Improvement of Water Supply Management in Semi-Urban Areas in Nepal (WASMIP II)

Drawing title:
Schematic Flow Diagram Of Shankarnagar Water Users Committee Rupandehi, Nepal

Date: 12/5/2016
 Scale: Not In Scale



 For providing safe and quality drinking water to people

Appendix 2.23

BOQ of Target A WUSC

Ministry of Water Supply and Sanitation
 Department of Water Supply and Sewerage
Foreign Assistance Coordination and Planning Section
 Fiscal Year 2073/074

Sealed Tender Form (Bill of Quantities)

Name of Work : Fabrication, Supply, Installation and Commissioning of Chlorination Units in
 Name of Project : Different Water Supply Projects of Different Districts
 Tender Package no. 1/073-74

Estimated Amount (Without VAT) : **Rs. 55,47,322.00**
 Minimum Bid Security Amount : **Rs. 1,84,427.00**
 Delivery, Fabrication and Installation point: **Respective WS Projects**

S.No.	Name of Project	Description of Work	Type*	Unit	Quantity	Rate(Nrs)		Amount	Remarks
						In figure	In words		
Supply of the following Equipments									
1	Gulariya, Bardia	Diaphragm Pump; 11-45 L/hr x 1.0MPa x 0.2kW(motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
2		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
3		Mixer; propeller type, SS (SUS304), 0.07 kW x1 set		pc	1				
4		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
5	Gulariya, Bardia	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incommiing line and the respective load	-	pc	1				
6	Beljhundi, Dang	Flow Control Valve with Flow Meter; 2-11 L/hr x1 set	2	pc	1				
7		Chemical Tank; PE, 200L with iron base (Height: approx. 2.5m) x1 set		pc	1				
8		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set		pc	1				
9		Y-type Strainer x1 set, tube & fittings		pc	1				
10	Beljhundi, Dang	Flow Control Valve with Flow Meter; 0.5-4 L/hr x1 set	2	pc	2				
11		Chemical Tank; PE, 10L with iron base x1 set		pc	2				
12		Y-type Strainer x1 set, tube & fittings		pc	2				
13	Beljhundi, Dang	Flow Control Valve with Flow Meter; 1-5 L/hr x1 set	2	pc	1				
14		Chemical Tank; PE, 10L with iron base x1 set		pc	1				
15		Y-type Strainer x1 set, tube & fittings		pc	1				
16	Beljhundi, Dang	Flow Control Valve with Flow Meter; 0.5-3 L/hr x1 set	2	pc	1				
17		Chemical Tank; PE, 10L with iron base x1 set		pc	1				
18		Y-type Strainer x1 set, tube & fittings		pc	1				
19	Pragatinagar, Nawalparasi	Diaphragm Pump; 11-45 L/hr x 1.0MPa x 0.2kW(motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
20		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
21		Mixer; propeller type, SS (SUS304), 0.07 kW x1 set		pc	1				
22		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
23	Pragatinagar, Nawalparasi	Diaphragm Pump; 11-45 L/hr x 1.0MPa x 0.2kW(motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
24		Chemical Tank; PE, 500L with iron base x1 set		pc	1				
25		Mixer; propeller type, SS (SUS304), 0.1 kW x1 set		pc	1				
26		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
27	Pragatinagar, Nawalparasi	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incommiing line and the respective load	-	pc	2				
28	Shankarnagar, Rupandehi	Chemical Tank; PE, 500L with iron base x1 set	1	pc	1				
29		Mixer; propeller type, SS (SUS304), 0.1 kW x1 set		pc	1				
30		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				

S.No.	Name of Project	Description of Work	Type*	Unit	Quantity	Rate(Nrs)		Amount	Remarks
						In figure	In words		
Supply of the following Equipments									
31	Shankarna gar, Rupendehi	Chemical Tank; PE, 1,000L with iron base x1 set	1	pc	1				
32		Mixer; propeller type, SS (SUS304), 0.2 kW x1 set		pc	1				
33		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
34	Shankarna gar, Rupendehi	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incommiing line and the respective load	-	pc	2				
35	Besisahar, Lamjung	Diaphragm Pump; 1-7 L/hr x 0.3MPa x 0.2kW(motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
36		Chemical Tank; PE, 1,000L with iron base x1 set		pc	1				
37		Mixer; propeller type, SS (SUS304), 0.2 kW x1 set		pc	1				
38		Backpressure Valve; 0.1MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
39	Besisahar, Lamjung	Diaphragm Pump; 1-7 L/hr x 0.3MPa x 0.03kW(solenoid driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
40		Backpressure Valve; 0.1MPa x1 set, Relief valve x1 set		pc	1				
41	Besisahar, Lamjung	Diaphragm Pump; 1-7 L/hr x 0.3MPa x 0.03kW(solenoid driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
42		Backpressure Valve; 0.1MPa x1 set, Relief valve x1 set		pc	1				
43	Besisahar, Lamjung	Diaphragm Pump; 1-7 L/hr x 0.3MPa x 0.03kW(solenoid driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
44		Backpressure Valve; 0.1MPa x1 set, Relief valve x1 set		pc	1				
45	Besisahar, Lamjung	Flow Control Valve with Flow Meter; 2-11 L/hr x1 set	2	pc	1				
46		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
47		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set		pc	1				
48		Y-type Strainer x1 set, tube & fittings		pc	1				
49	Besisahar, Lamjung	Flow Control Valve with Flow Meter; 1-7 L/hr x1 set	2	pc	1				
50		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
51		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set		pc	1				
52		Y-type Strainer x1 set, tube & fittings		pc	1				
53	Besisahar, Lamjung	Flow Control Valve with Flow Meter; 0.5-3 L/hr x1 set	2	pc	1				
54		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
55		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set		pc	1				
56		Y-type Strainer x1 set, tube & fittings		pc	1				
57	Besisahar, Lamjung	Flow Control Valve with Flow Meter; 2-11 L/hr x1 set	2	pc	1				
58		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
59		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set		pc	1				
60		Y-type Strainer x1 set, tube & fittings		pc	1				
61	Besisahar, Lamjung	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the two diaphragm pumps and the mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incommiing line and the respective load	-	pc	1				

S.No.	Name of Project	Description of Work	Type*	Unit	Quantity	Rate(Nrs)		Amount	Remarks
						In figure	In words		
Supply of the following Equipments									
62	Besisahar, Lamjung	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the two diaphragm pumps with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoiming line and the respective load	-	pc	1				
63	Amlekhganj, Bara	Diaphragm Pump; 10-42 L/hr x 1.0MPa x 0.1kW (motor driven) x4 set (1 set shall be delivered as spare)	1	pc	2				
64		Chemical Tank; PE, 1,000L with iron base x1 set		pc	1				
65		Mixer; propeller type, SS (SUS304), 0.2 kW x1 set		pc	1				
66		Backpressure Valve; 0.5MPa x2 set, Relief Valve x2 set, Y-type Strainer x1 set, tube & fittings		pc	1				
67	Amlekhganj, Bara	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoiming line and the respective load	-	pc	1				
68	Karmaiya, Sarlahi	Diaphragm Pump; 10-42 L/hr x 1.0MPa x 0.1kW (motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
69		Chemical Tank; PE, 500L with iron base x1 set		pc	1				
70		Mixer; propeller type, SS (SUS304), 0.1 kW x1 set		pc	1				
71		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
72	Karmaiya, Sarlahi	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoiming line and the respective load	-	pc	1				
73	Manthali, Ramechhap	Diaphragm Pump; 10-42 L/hr x 1.0MPa x 0.1kW (motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
74		Chemical Tank; PE, 300L with iron base x1 set		pc	1				
75		Mixer; propeller type, SS (SUS304), 0.07 kW x1 set		pc	1				
76		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
77	Manthali, Ramechhap	Diaphragm Pump; 10-42 L/hr x 1.0MPa x 0.1kW (motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
78		Backpressure Valve; 0.5MPa x1 set, Relief valve x1 set (1 set shall be delivered as spare)		pc	1				
79	Manthali, Ramechhap	Diaphragm Pump; 0.5-4 L/hr x 1.0MPa x 0.1kW (motor driven) x2 set (1 set shall be delivered as spare)	1	pc	2				
80		Chemical Tank; PE, 50L with iron base x1 set		pc	1				
81		Mixer; propeller type, SS (SUS304), 0.07 kW x1 set		pc	1				
82		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings		pc	1				
83	Manthali, Ramechhap	Flow Control Valve with Flow Meter; 2-11 L/hr x1 set	2	pc	1				
84		Chemical Tank; PE, 200L with iron base x1 set		pc	1				
85		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set		pc	1				
86		Y-type Strainer x1 set, tube & fittings		pc	1				
87	Manthali, Ramechhap	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoiming line and the respective load	-	pc	1				

Tender Package no. 1/073-74

Delivery, Fabrication and Installation point: Respective WS Projects

S.No.	Name of Project	Description of Work	Type*	Unit	Quantity	Rate(Nrs)		Amount	Remarks
						In figure	In words		
		Supply of the following Equipments							
88	Manthali, Ramechha P	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the two diaphragm pumps and the mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incommiing line and the respective load	-	pc	1				
89	All	Fabrication and Installation with Transportation of all the above Equipments to the respectives projects		pc	1				
Total									
VAT 13%									
Grand Total									

Suppliers or Manufacturer's Name :
Address :
Signature :

Signature
Office In-Charge

NOTE: TYPE 1: AUTOMATIC TYPE
TYPE 2: MANUAL TYPE

Appendix 2.24

BOQ of Target B WUSC

Name of Work : Fabrication, Supply, Installation and Commissioning of Chlorination Units in Different Districts

Name of Project : Different Water Supply Projects of Different Districts

S.No.	Name of Project	Description of Work	Type*	Unit	Quantity	Rate(Nrs)		Amount	Anex
						In figure	In words		
<u>Supply of the following Equipments</u>									
1	Bardiya, Rajapur	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-1
2		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-1
3		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-1
4		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		pc	1				3-1
5		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	-	pc	1				3-1
6	Bardiya, Guleriya II	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-2
7		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-2
8		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-2
9		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		pc	1				3-2
10	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	-	pc	1				3-2	
11	Bardiya, Kusumba	Diaphragm Pump; 3-13 L/hr × 1.0MPa × 0.1 kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-3
12		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-3
13		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-3
14		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		pc	1				3-3
15	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	-	pc	1				3-3	

16	Bardiya, Naulapur Bhurigaun	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	1	pc	2				3-4
17		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-4
18		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-4
19		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel		pc	1				3-4
20		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	-	pc	1				3-4
21	Dang, Bharatpur	Diaphragm Pump; 15-70 L/hr × 0.3MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare)	1	pc	2				3-6
22		Chemical Tank; PE, 200L with iron base ×3-1 set		pc	1				3-6
23		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-6
24		Backpressure Valve; 0.2 MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel		pc	1				3-6
25		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	-	pc	1				3-6
26	Dang, Chaughera	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	1	pc	2				3-7
27		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-7
28		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-7
29		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel		pc	1				3-7
30		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	-	pc	1				3-7

31	Dang, Narayanpur	Diaphragm Pump; 1-9 L/hr × 1.0MPa × 0.1kW(motor driven) ×4 set (2 set shall be delivered as spare)	pc	4			3-5
32		Chemical Tank; PE, 200L with iron base ×2 set	pc	2			3-5
33		Mixer; propeller type, SS (SUS304), 0.07 kW ×2 set	pc	2			3-5
34		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	2			3-5
35		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	2			3-5
36		Flow Control Valve with Flow Meter; 2-9 L/hr ×1 set	pc	1			3-1
37		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-1
38		Portable Mixer with Battery; propeller type, SS (SUS304) ×1set	pc	1			3-1
39		Y-type Strainer ×1 set, tube & fittings	pc	1			3-1
40	Nawalparasi, Rajahar	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×6 set (3 set shall be delivered as spare)	pc	6			3-9
41		Chemical Tank; PE, 200L with iron base ×3set	pc	3			3-9
42		Mixer; propeller type, SS (SUS304), 0.07 kW ×3 set	pc	3			3-9
43		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	3			3-9
44		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	3			3-9
45	Nawalparasi, 'Gaidakot	Diaphragm Pump; 3-15 L/hr × 0.3MPa × 0.03kW(solenoid driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-10
46		Diaphragm Pump; 10-42 L/hr × 1.0MPa × 0.1kW(motor driven) ×8 set (4 set shall be delivered as spare)	pc	8			3-10
47		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-10
48		Chemical Tank; PE, 500L with iron base ×4 set	pc	4			3-10
49		Mixer; propeller type, SS (SUS304), 0.07 kW ×5 set	pc	5			3-10
50		Backpressure Valve; 0.2 MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-10
51		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	4			3-10
52		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	5			3-10
53	Nawalparasi, Agauli	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-11
54		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-11
55		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-11
56		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-11
57		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-11

58	Rupandehi, Devdaha	Flow Control Valve with Flow Meter; 7-30 L/hr x1 set	pc	1				3-12
59		Chemical Tank; PE, 200L with iron base x1 set	pc	1				3-12
60		Portable Mixer with Battery; propeller type, SS (SUS304) x1 set	pc	1				3-12
61		Y-type Strainer x1 set, tube & fittings	set	1				3-12
62		Diaphragm Pump; 3-15 L/hr x 0.3MPa x 0.03kW(solenoid driven) x2 set (1 set shall be delivered as spare)	pc	2				3-12
63		Chemical Tank; PE, 200L with iron base x1 set	pc	1				3-12
64		Mixer; propeller type, SS (SUS304), 0.07 kW x1 set	pc	1				3-12
65		Backpressure Valve; 0.2MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings	set	1				3-12
66	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1					3-12
67	Rupandehi, Anandaban	Diaphragm Pump; 13-53 L/hr x 1.0MPa x 0.2kW(motor driven) x 6 set (3 set shall be delivered as spare)	pc	6				3-13
68		Chemical Tank; PE, 200L with iron base x1 set	pc	1				3-13
69		Chemical Tank; PE, 500L with iron base x1 set	pc	1				3-13
70		Mixer; propeller type, SS (SUS304), 0.07 kW x2set	pc	2				3-13
71		Backpressure Valve; 0.5MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings	set	1				3-13
72		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	2				
73	Rupandehi, Sainamaina	Diaphragm Pump; 3-15 L/hr x 0.3MPa x 0.03kW(solenoid driven) x4 set (2 set shall be delivered as spare)	pc	4				3-14
74		Chemical Tank; PE, 200L with iron base x1 set	pc	1				3-14
75		Mixer; propeller type, SS (SUS304), 0.07 kW x1 set	pc	1				3-14
76		Backpressure Valve; 0.2MPa x1 set, Relief Valve x1 set, Y-type Strainer x1 set, tube & fittings	set	1				3-14
77		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1				

78	Rupandehi, Sauraha farsatikar	Diaphragm Pump; 3-15 L/hr × 0.3MPa × 0.03kW(solenoid driven) ×2 set (1 set shall be delivered as spare)	pc	2				3-15
79		Chemical Tank; PE, 200L with iron base ×1 set	pc	1				3-15
80		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1				3-15
81		Backpressure Valve; 0.2 MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1				3-15
82	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1					3-15
83	Lamjung, Sundarbazar	Flow Control Valve with Flow Meter; 3-15 L/hr × 3set	pc	3				3-16
84		Chemical Tank; PE, 200L with iron base ×2 set	pc	2				3-16
85		Portable Mixer with Battery; propeller type, SS (SUS304) ×2set	pc	2				3-16
86		Y-type Strainer ×1 set, tube & fittings	pc	2				3-16
87	Lamjung, Bhotewodar	Flow Control Valve with Flow Meter; 0.5-3 L/hr ×1 set	pc	1				3-17
88		Chemical Tank; PE, 200L with iron base ×1 set	pc	1				3-17
89		Portable Mixer with Battery; propeller type, SS (SUS304) ×1set	pc	1				3-17
90		Y-type Strainer ×1 set, tube & fittings	pc	1				3-17
91	Lamjung, Lasunekhola	Flow Control Valve with Flow Meter; 1-8 L/hr ×1 set	pc	1				3-18
92		Flow Control Valve with Flow Meter; 2-11 L/hr ×1 set	pc	1				3-18
93		Chemical Tank; PE, 200L with iron base ×2set	pc	2				3-18
94		Portable Mixer with Battery; propeller type, SS (SUS304) ×2set	pc	2				3-18
95		Y-type Strainer ×2 set, tube & fittings	pc	2				3-18
96	Bara, Nijgadh	Diaphragm Pump; 4-20 L/hr × 1.0 MPa × 0.1kW(motor driven) × 4 set (2 set shall be delivered as spare)	pc	4				3-19
97		Diaphragm Pump; 10-42 L/hr × 1.0MPa × 0.1kW(motor driven) ×4 set (2 set shall be delivered as spare)	pc	4				3-19
98		Chemical Tank; PE, 200L with iron base ×4 set	pc	1				3-19
99		Chemical Tank; PE, 500L with iron base ×4 set	pc	3				3-19
100		Mixer; propeller type, SS (SUS304), 0.07 kW ×4 set	pc	4				3-19
101		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	4				3-19
101		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	3				3-19
102	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	2					3-19
103	Bara, Simara	Diaphragm Pump; 4-20 L/hr × 1.0 MPa × 0.1kW(motor driven) × 4 set (2 set shall be delivered as spare)	pc	4				3-20
104		Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×4 set (2 set shall be delivered as spare)	pc	4				3-20
105		Chemical Tank; PE, 200L with iron base ×4 set	pc	4				3-20
106		Mixer; propeller type, SS (SUS304), 0.07 kW ×4 set	pc	4				3-20
107		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	4				3-20
107		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	4				3-20
108	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	4					3-20

109	Bara, Jitpur Gadimai	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×1 set (2 set shall be delivered as spare)	1	pc	2				3-22	
110		Chemical Tank; PE, 200L with iron base ×2 set		pc	1				3-22	
111		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-22	
112		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		pc	1				3-22	
113	Bara, Jitpur Gadimai	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		pc	1				3-22	
114	Bara, Dumarbana	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) × 2 set (1 set shall be delivered as spare)	1	pc	2				3-23	
115		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-23	
116		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-23	
117		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		pc	1				3-23	
118	Bara, Dumarbana	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		pc	1				3-23	
119	Bara, Bharatgunj	Flow Control Valve with Flow Meter; 1-8 L/hr ×1 set	1	pc	1				3-24	
120		Chemical Tank; PE, 200L with iron base ×1set		pc	1				3-24	
121		Portable Mixer with Battery; propeller type, SS (SUS304) ×1set		pc	1				3-24	
122		Y-type Strainer ×1 set, tube & fittings		pc	1				3-24	
123		Diaphragm Pump; 6-25 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-24	
124		Chemical Tank; PE, 200L with iron base ×1 set	pc	1				3-24		
125		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1				3-24		
126		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	pc	1				3-24		
127		Bara, Bharatgunj	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		pc	1				3-24

128	Dhanusa, Dhalkebar	Diaphragm Pump; 10-42 L/hr × 1.0MPa × 0.1kW(motor driven) ×8 set (4 set shall be delivered as spare)	pc	8				3-25
129		Chemical Tank; PE, 200L with iron base ×4 set	pc	4				3-25
130		Mixer; propeller type, SS (SUS304), 0.07 kW ×4 set	pc	4				3-25
131		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel	set	4				3-25
132		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	4				3-25
133	Sarlahi, Hariyon	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2				3-26
134		Chemical Tank; PE, 200L with iron base ×1 set	pc	1				3-26
135		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1				3-26
136		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel	pc	1				3-26
137		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	1				3-26
138	Sarlahi, Barhathwa	Diaphragm Pump; 13-53 L/hr × 0.5 MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2				3-27
139		Chemical Tank; PE, 200L with iron base ×1 set	pc	1				3-27
140		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1				3-27
141		Backpressure Valve; 0.4 MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel	pc	1				3-27
142		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	1				3-27
143	Sarlahi, Ishworpur	Diaphragm Pump; 13-53 L/hr × 0.5 MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2				3-28
144		Chemical Tank; PE, 200L with iron base ×1 set	pc	1				3-28
145		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1				3-28
146		Backpressure Valve; 0.4 MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings Electrical Panel	pc	1				3-28
147		Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	pc	1				3-28

148	Ramechaap, Ramechaap	Flow Control Valve with Flow Meter; 7-30 L/hr ×3 set	pc	3			3-29
149		Chemical Tank; PE, 50 L with iron base ×3 set	pc	3			3-29
150		Portable Mixer with Battery; propeller type, SS (SUS304) ×3 set	pc	3			3-29
151		Y-type Strainer ×3 set, tube & fittings	pc	3			3-29
152	Sindhupalchowk, Melamchi	Flow Control Valve with Flow Meter; 4-18 L/hr ×1 set	pc	1			3-32
153		Chemical Tank; PE, 50 L with iron base ×1set	pc	1			3-32
154		Portable Mixer with Battery; propeller type, SS (SUS304) ×1set	pc	1			3-32
155		Y-type Strainer ×1 set, tube & fittings	pc	1			3-32
156	Sindhupalchowk, Barahbise	Flow Control Valve with Flow Meter; 2-11 L/hr ×1 set	pc	1			3-33
157		Flow Control Valve with Flow Meter; 0.3-2 L/hr ×1 set	pc	1			3-33
158		Chemical Tank; PE, 50 L with iron base ×2 set	pc	2			3-33
159		Portable Mixer with Battery; propeller type, SS (SUS304) ×2set	pc	2			3-33
160		Y-type Strainer ×2 set, tube & fittings	pc	2			3-33
161	Morang, Uurlabari	Diaphragm Pump; 10-42 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-34
162		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-34
163		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-34
164		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-34
165		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-34
166	Morang, Pathari- Sanischare municipality	Diaphragm Pump; 4-17 L/hr × 1.0 MPa × 0.1 kW(Motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-35
167		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-35
168		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-35
169		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-35
170		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-35
171	Morang, Jamunagachi	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-36
172		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-36
173		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-36
174		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-36
175		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-36

176	Morang, Rangeli municipality	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-37
177		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-37
178		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-37
179		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-37
180		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-37
181	Morang, Tankesunwari	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-38
182		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-38
183		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-38
184		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-38
185		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-38
186	Morang, Itahara	Diaphragm Pump; 1-9 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-39
187		Chemical Tank; PE, 50 L with iron base ×1 set	pc	1			3-39
188		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-39
189		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-39
190		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-39

191	Morang, Madhumalla	Diaphragm Pump; 11-45 L/hr × 1.0MPa × 0.2kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-40
192		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-40
193		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-40
194		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-40
195		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-40
196	Morang, Picharra	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-41
197		Chemical Tank; PE, 200L with iron base ×1 set	pc	1			3-41
198		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-41
199		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-41
200		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-41
201	Morang, Sorabhag	Diaphragm Pump; 1-9 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)	pc	2			3-42
202		Chemical Tank; PE, 50 L with iron base ×1 set	pc	1			3-42
203		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1			3-42
204		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	set	1			3-42
205		Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load	set	1			3-42

206		Diaphragm Pump; 4-17 L/hr × 1.0 MPa × 0.1 kW(Motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-46
207		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-46
208		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-46
209		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		set	1				3-46
210	Jhapa, Shani-Arjun	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		set	1				3-46
211		Flow Control Valve with Flow Meter; 4-20 L/hr ×1 set		pc	3				3-47
212	Jhapa, Shivasatatchhi	Chemical Tank; PE, 200L with iron base ×1 set		pc	3				3-47
213		Portable Mixer with Battery; propeller type, SS (SUS304) ×1 set		pc	3				3-47
214		Y-type Strainer ×1 set, tube & fittings		pc	3				3-47
215		Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-48
216		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-48
217		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-48
218		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		set	1				3-48
219	Jhapa, Prithivinagar	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		set	1				3-48
220		Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2			2	3-53
221		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-53
222		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-53
223		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		set	1				3-53
224	Jhapa, Juropani	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		set	1				3-53
225		Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-54
226		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-54
227		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-54
228		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		set	1				3-54
229	Jhapa, Chandragadhi I	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respectie feeder for the diaphragm pump and mixer with on/off puch button switches, on/off indication, fault indication lamps, ELCB, MC, and over laod relay, a spare feeder and socket, wire connection termianl at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		set	1				3-54

230		Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW(motor driven) ×2 set (1 set shall be delivered as spare)		pc	2				3-55
231		Chemical Tank; PE, 200L with iron base ×1 set		pc	1				3-55
232		Mixer; propeller type, SS (SUS304), 0.07 kW ×1 set		pc	1				3-55
233		Backpressure Valve; 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings		set	1				3-55
234	Jhapa, Chandragadhi II	Electrical Panel Single Phase, 230 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB 30A, under/over voltage relay, respective feeder for the diaphragm pump and mixer with on/off push button switches, on/off indication, fault indication lamps, ELCB, MC, and over load relay, a spare feeder and socket, wire connection terminal at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load		set	1				3-55
								Total	
								VAT 13%	
								Grand Total	

BILL OF QUANTITY

Pakage No. :

Name of Work :

Supply and Delivery of Flowmeters

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate(Nrs)	Amount	Remarks
1	Bardiya, Rajapur	75mm, 1.0 MPa, Flange connection	pc	1			3-1
2		200mm, 1.0 MPa, Flange connection	pc	1			3-1
3	Bardiya, Guleriya II	100mm, 1.0 MPa, Flange connection	pc	2			3-2
4	Bardiya, Kusumba	100mm, 1.0 MPa, Flange connection	pc	3			3-3
5		200mm, 1.0 MPa, Flange connection	pc	1			3-3
6	Bardiya, Naulapur	100mm, 1.0 MPa, Flange connection	pc	1			3-4
7		180mm, 1.0 MPa, Flange connection	pc	1			3-4
8	Dang, Tripur	90mm, 1.0 MPa, Flange connection	pc	3			3-5
9		110mm, 1.0 MPa, Flange connection	pc	2			3-5
10		125mm, 1.0 MPa, Flange connection	pc	1			3-5
11	Dang, Bharatpur	75mm, 1.0 MPa, Flange connection	pc	2			3-6
12		200mm, 1.0 MPa, Flange connection	pc	1			3-6
13	Dang, Chaughera	50mm, 1.0MPa, Flange connection	pc	2			3-7
14		150mm, 1.0MPa, Flange connection	pc	1			3-7
15	Dang, Jhakredhunga	90mm, 1.0 MPa, Flange connection	pc	2			3-8
16		135mm, 1.0 MPa, Flange connection	pc	2			3-8
17		125mm, 1.0 MPa, Flange connection	pc	1			3-8
18		110mm, 1.0 MPa, Flange connection	pc	4			3-8
19	Nawalparasi, Rajahar	100mm, 1.0 MPa, Flange connection	pc	2			3-9
20		110mm, 1.0 MPa, Flange connection	pc	2			3-9
21		200mm, 1.0 MPa, Flange connection	pc	1			3-9
22	Nawalparasi, Gaidakot	100mm, 1.0 MPa, Flange connection	pc	6			3-10
23		300 mm, 1.0 MPa, Flange connection	pc	1			3-10
24	Nawalparasi, Agauli	150mm, 1.0 MPa, Flange connection	pc	1			3-11
25		100mm, 1.0 MPa, Flange connection	pc	1			3-11
26		250mm, 1.0 MPa, Flange connection	pc	1			3-11
27	Rupandehi, Devdaha	90mm, 1.0 MPa, Flange connection	pc	1			3-12
28		110mm, 1.0 MPa, Flange connection	pc	1			3-12
29		160mm, 1.0 MPa, Flange connection	pc	1			3-12
30	Rupandehi, Anandaban	150mm, 1.0 MPa, Flange connection	pc	4			3-13
31		250mm, 1.0 MPa, Flange connection	pc	1			3-13
32	Rupandehi, Sainamaina	100mm, 1.0 MPa, Flange connection	pc	2			3-14
33	Rupandehi, Sauraha farsatikar	100mm, 1.0 MPa, Flange connection	pc	1			3-15
34	Lamjung, Sundarbazar	50 mm, 1.0 MPa, Flange connection	pc	3			3-16
35		63 mm, 1.0 MPa, Flange connection	pc	1			3-16
36		90 mm, 1.0 MPa, Flange connection	pc	3			3-16
37	Lamjung, Bhotewodar	140mm, 1.0 MPa, Flange connection	pc	2			3-17
38	Lamjung, Lasunekhola	75 mm, 1.0 MPa, Flange connection	pc	1			3-18
39		90 mm, 1.0 MPa, Flange connection	pc	2			3-18
40		100 mm, 1.0 MPa, Flange connection	pc	2			3-18
41	Bara, Nijgadh	100 mm, 1.0 MPa, Flange connection	pc	5			3-19
42		90mm, 1.0 MPa, Flange connection	pc	1			3-19
43		150mm, 1.0 MPa, Flange connection	pc	1			3-19
44		160mm, 1.0 MPa, Flange connection	pc	1			3-19
45		200mm, 1.0 MPa, Flange connection	pc	1			3-19
46		250mm, 1.0 MPa, Flange connection	pc	2			3-19
47	Bara, Simara	150mm, 1.0 MPa, Flange connection	pc	4			3-20
48		160 mm, 1.0 MPa, Flange connection	pc	3			3-20
49		200mm, 1.0 MPa, Flange connection	pc	1			3-20
50	Bara, Jitpur Gadimai	100mm, 1.0 MPa, Flange connection	pc	1			3-22
51		150mm, 1.0 MPa, Flange connection	pc	2			3-22
52		250 mm, 1.0 MPa, Flange connection	pc	1			3-22
53	Bara, Dumarbana	90 mm, 1.0 MPa, Flange connection	pc	1			3-23
54		160mm, 1.0 MPa, Flange connection	pc	1			3-23
55		150 mm, 1.0 MPa, Flange connection	pc	1			3-23
56		250 mm, 1.0 MPa, Flange connection	pc	1			3-23
57	Bara, Bharatgunj	75 mm, 1.0 MPa, Flange connection	pc	1			3-24
58		90 mm, 1.0 MPa, Flange connection	pc	1			3-24
59		110 mm, 1.0 MPa, Flange connection	pc	1			3-24

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate(Nrs)	Amount	Remarks
60	Dhanusa, Dhalkebar	75 mm, 1.0 MPa, Flange connection	pc	1			3-25
61		90 mm, 1.0 MPa, Flange connection	pc	1			3-25
62		100mm, 1.0 MPa, Flange connection	pc	3			3-25
63		110 mm, 1.0 MPa, Flange connection	pc	3			3-25
64		160 mm, 1.0 MPa, Flange connection	pc	1			3-25
65	Sarlahi, Hariyon	200mm, 1.0 MPa, Flange connection	pc	2			3-26
66	Sarlahi, Barhathwa	200 mm, 1.0 MPa, Flange connection	pc	3			3-27
67	Sarlahi, Ishworpur	150 mm, 1.0 MPa, Flange connection	pc	1			3-28
68		160 mm, 1.0 MPa, Flange connection	pc	1			3-28
69	Ramechaap, Ramechaap	75mm, 1.0 MPa, Flange connection	pc	7			3-29
70	Sindhupalchowk, Melamchi	50 mm, 1.0 MPa, Flange connection	pc	2			3-32
71		90mm, 1.0 MPa, Flange connection	pc	1			3-32
72		110mm, 1.0 MPa, Flange connection	pc	1			3-32
73	Sindhupalchowk, Barabhise	110mm, 1.0 MPa, Flange connection	pc	2			3-33
74		50mm, 1.0 MPa, Flange connection	pc	1			3-33
75		90mm, 1.0 MPa, Flange connection	pc	2			3-33
76	Morang, Uurlabari	100mm, 1.0 MPa, Flange connection	pc	3			3-34
77		200mm, 1.0 MPa, Flange connection	pc	1			3-34
78	Morang, Pathari-Sanischara municipality	100mm, 1.0 MPa, Flange connection	pc	1			3-35
79		250mm, 1.0 MPa, Flange connection	pc	1			3-35
80	Morang, Jamunagachi	250mm, 1.0 MPa, Flange connection	pc	1			3-36
81	Morang, Rangeli municipality	100mm, 1.0 MPa, Flange connection	pc	1			3-37
82		150mm, 1.0 MPa, Flange connection	pc	2			3-37
83	Morang, Tankesunwari	100mm, 1.0 MPa, Flange connection	pc	2			3-38
84		250mm, 1.0 MPa, Flange connection	pc	1			3-38
85	Morang, Madhumalla	100mm, 1.0 MPa, Flange connection	pc	2			3-40
86		90mm, 1.0 MPa, Flange connection	pc	3			3-40
87	Morang, Sorabhag	150mm, 1.0 MPa, Flange connection	pc	1			3-42
88	Jhapa, Shani-Arjun	150mm, 1.0 MPa, Flange connection	pc	3			3-46
89	Jhapa, Shivasatachhi	90mm, 1.0 MPa, Flange connection	pc	1			3-47
90		110mm, 1.0 MPa, Flange connection	pc	2			3-47
91	Jhapa, Prithivinagar	100mm, 1.0 MPa, Flange connection	pc	1			3-48
92	Jhapa, Topgachi I	150mm, 1.0 MPa, Flange connection	pc	1			3-50
93	Jhapa, Topgachi II	100mm, 1.0 MPa, Flange connection	pc	1			3-51
94		150mm, 1.0 MPa, Flange connection	pc	1			3-51
95	Jhapa, Topgachi III	100mm, 1.0 MPa, Flange connection	pc	1			3-52
96	Jhapa, Juropani	150mm, 1.0 MPa, Flange connection	pc	1			3-53
97	Jhapa, Chandragadhi I	125mm, 1.0 MPa, Flange connection	pc	1			3-54
98		150mm, 1.0 MPa, Flange connection	pc	2			3-54
99	Jhapa, Chandragadhi II	100mm, 1.0 MPa, Flange connection	pc	1			3-55
Total				168			

BILL OF QUANTITY

Pakage No. :

Name of Work :

Supply and Delivery of Valves

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate(Nrs)	Amount	Annex	Remarks
1	Bardiya, Rajapur	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-1	
3	Bardiya, Guleriya II	Sluice valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	2			3-2	
		Washout valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	2			3-2	GI
		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-2	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-2	
4	Bardiya, Kusumba	Sluice valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	3			3-3	
		Washout valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	3			3-3	GI
5		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	3			3-3	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-3	
6	Bardiya, Naulapur	Sluice valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	1			3-4	
		Washout valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	1			3-4	GI
7		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-4	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-4	
8	Dang, Narayanpur	Sluice valve / D=90mm, Flange connection PN10, Bolts and nuts	pc	2			3-5	
9		Washout valve / D=90mm, Flange connection PN10, Bolts and nuts	pc	2			3-5	GI
10		Check valve / D=90mm, Flange connection PN10, Bolts and nuts	pc	2			3-5	
11		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-5	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1				
12	Dang, Bharatpur	Sluice valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	2			3-6	
		Washout valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	2			3-6	GI
		Check valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	2			3-6	
13		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-6	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-6	
14	Dang, Chaughera	Sluice valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	2			3-7	
		Washout valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	2			3-7	GI
		Check valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	2			3-7	
15		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-7	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-7	

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate(Nrs)	Amount	Annex	Remarks
18	Nawalparasi, Rajahar	Washout valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	2			3-9	GI
20		Check valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	2			3-9	
21		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-9	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-9	
22	Nawalparasi, Gaidakot	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	6			3-10	
24	Nawalparasi, Agauli	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-11	
27	Rupandehi, Devdaha	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-12	
31	Rupandehi, Anandaban	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	6			3-13	
33	Rupandehi, Sainamaina	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-14	
34	Rupandehi, Sauraha farsatikar	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-15	
35	Lamjung, Sundarbazar	Sluice valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	3			3-16	
		Washout valve / D=50mm, Flange connection PN10, Bolts and nuts,	pc	3			3-16	GI
36		Check valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	3			3-16	
37		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	3			3-16	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-16	
39	Lamjung, Lasunekhola	Washout valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	1			3-18	GI
40		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-18	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-18	
42	Bara, Nijgadh	Sluice valve / D=90 mm, Flange connection PN10, Bolts and nuts	pc	1			3-19	
43		Washout valve / D=75 mm, Flange connection PN10, Bolts and nuts	pc	1			3-19	GI
		Washout valve / D=100mm, Flange connection PN10, Bolts and nuts	pc	5			3-19	3 GI + 2 HDPE
		Washout valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	1			3-19	CI
		Check valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	1			3-19	
46		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	7			3-19	
47	Bara, Simara	Washout valve / D=150mm, Flange connection PN10, Bolts and nuts	pc	4			3-20	CI
48		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	4			3-20	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-20	
49	Bara, Jitpur Gadimai	Check valve / D=150mm, Flange connection PN10, Bolts and nuts	pc	1			3-22	
50		Washout valve / D=150mm, Flange connection PN10, Bolts and nuts	pc	2			3-22	CI
51		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-22	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-22	

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate(Nrs)	Amount	Annex	Remarks
52	Bara, Dumarbana	Washout valve / D=150mm, Flange connection PN10, Bolts and nuts	pc	1			3-23	GI
53		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-23	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-23	
57	Bara, Bharatgunj	Washout valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	1			3-24	GI
58		Check valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	1			3-24	
		Sluice valve / D=75 mm, Flange connection PN10, Bolts and nuts	pc	1			3-24	
59		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-24	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1				
60	Dhanusa, Dhalkebar	Washout valve / D=100 mm, Flange connection PN10, Bolts and nuts	pc	3			3-25	GI
		Washout valve / D=75 mm, Flange connection PN10, Bolts and nuts	pc	1			3-25	GI
61		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	4			3-25	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-25	
62	Sarlahi, Hariyon	Washout valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	1			3-26	CI
		Check valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	1			3-26	
63		Pressure gauge / 0-1.0 MPa, Stop valve	pc	1			3-26	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-26	
	Sarlahi, Barhathwa	Check valve / D=200 mm, Flange connection PN10, Bolts and nuts	pc	1			3-27	
		Washout valve / D=200 mm, Flange connection PN10, Bolts and nuts	pc	2			3-27	CI
		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-27	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-27	
65	Sarlahi, Ishworpur	Washout valve / D=150 mm, Flange connection PN10, Bolts and nuts,	pc	1			3-28	CI
		Check valve / D=150 mm, Flange connection PN10, Bolts/nuts and flanges	pc	1			3-28	
66		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-28	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-28	
67	Ramechaap, Ramechaap	Sluice valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	1			3-29	
		Washout valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	1			3-29	GI
		Check valve / D=75mm, Flange connection PN10, Bolts and nuts	pc	1			3-29	
68		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-29	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-29	
69	Sindhupalchowk, Melamchi	Sluice valve / D=50 mm, Flange connection PN10, Bolts and nuts	pc	2			3-32	
70		Washout valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	2			3-32	GI
		Check valve / D=50mm, Flange connection PN10, Bolts and nuts	pc	2			3-32	
71		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-32	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-32	

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate(Nrs)	Amount	Annex	Remarks
74	Morang, Urlabari	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	3			3-34	
76	Morang, Pathari-Sanisichare municipality	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	3			3-35	
78	Morang, Jamunagachi	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-36	
79	Morang, Rangeli municipality	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-37	
81	Morang, Tankesunwari	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-38	
83	Morang, Madhumalla	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-40	
85	Morang, Sorabhag	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-42	
	Morang, Itahara	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-39	
	Morang, Jhorahat	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-45	
	Morang, Pichhra	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-41	
	Morang, Katahari	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-44	
86	Jhapa, Shani-Arjun	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	3			3-46	
89	Jhapa, Prithivinagar	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-48	
90	Jhapa, Topgachi I	Butterfly valve / D=150mm (wafer type with hand lever), Bolts and nuts	pc	1			3-50	
91	Jhapa, Topgachi II	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-51	
93	Jhapa, Topgachi III	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	1			3-52	
94	Jhapa, Juropani	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-53	
69	Jhapa, Chandragadhi I	Sluice valve / D=125 mm, Flange connection PN10, Bolts and nuts	pc	1			3-54	
70		Washout valve / D=125 mm, Flange connection PN10, Bolts and nuts	pc	1			3-54	GI
		Check valve / D=125 mm, Flange connection PN10, Bolts and nuts	pc	1			3-54	
69		Sluice valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	2			3-54	
70		Washout valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	2			3-54	GI
		Check valve / D=150 mm, Flange connection PN10, Bolts and nuts	pc	2			3-54	
95		Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	3			3-54	
2		Necessary materials (Pipe, flanges and fittings etc.)	set	1			3-54	
97	Jhapa, Chandragadhi II	Pressure gauge / 0-1.0 MPa, Stop valve, pipe and fittings	pc	2			3-55	
Total				214				

BILL OF QUANTITY

Package No. :

Name of Work : Supply and Delivery of Safety Tools

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
1	Bardiya, Rajapur	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
2	Bardiya, Guleriya II	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
3	Bardiya, Kusumba	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
4	Bardiya, Naulapur	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
5	Dang, Bharatpur	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
6	Dang, Chaughera	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
7	Dang, Narayanpur	15 Ltr., Plastic Bucket	pc	3			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	3			
		1000 ml, Beaker with Handle	pc	3			
		1000 ml, Plastic Measuring Cylinder	pc	3			
		500 ml, Plastic Measuring Cylinder	pc	3			
		200 ml, Plastic Measuring Cylinder	pc	3			
		100 ml, Plastic Measuring Cylinder	pc	3			
		Rubber Gloves for Strong Alkali Solution	set	15			
		Safety Mask for Bleaching Powder	pc	6			
		Safety Goggles for Strong Alkali Solution	pc	15			
		Rubber Boots for Strong Alkali Solution	set	15			
		Insulating Tools	pc	3			
		Insulating Gloves	set	6			
8	Dang, Jhakredhunga	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
9	Nawalparasi, Rajahar	15 Ltr., Plastic Bucket	pc	3			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	3			
		1000 ml, Beaker with Handle	pc	3			
		1000 ml, Plastic Measuring Cylinder	pc	3			
		500 ml, Plastic Measuring Cylinder	pc	3			
		200 ml, Plastic Measuring Cylinder	pc	3			
		100 ml, Plastic Measuring Cylinder	pc	3			
		Rubber Gloves for Strong Alkali Solution	set	15			
		Safety Mask for Bleaching Powder	pc	6			
		Safety Goggles for Strong Alkali Solution	pc	15			
		Rubber Boots for Strong Alkali Solution	set	15			
		Insulating Tools	pc	3			
Insulating Gloves	set	6					
10	Nawalparasi, Gaidakot	15 Ltr., Plastic Bucket	pc	5			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	5			
		1000 ml, Beaker with Handle	pc	5			
		1000 ml, Plastic Measuring Cylinder	pc	5			
		500 ml, Plastic Measuring Cylinder	pc	5			
		200 ml, Plastic Measuring Cylinder	pc	5			
		100 ml, Plastic Measuring Cylinder	pc	5			
		Rubber Gloves for Strong Alkali Solution	set	25			
		Safety Mask for Bleaching Powder	pc	10			
		Safety Goggles for Strong Alkali Solution	pc	25			
		Rubber Boots for Strong Alkali Solution	set	25			
		Insulating Tools	pc	5			
Insulating Gloves	set	10					
11	Nawalparasi, Agauli	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
12	Devdaha, Rupandehi	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
Insulating Gloves	set	4					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
13	Anandaban, Rupandehi	15 Ltr., Plastic Bucket	pc	5			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	5			
		1000 ml, Beaker with Handle	pc	5			
		1000 ml, Plastic Measuring Cylinder	pc	5			
		500 ml, Plastic Measuring Cylinder	pc	5			
		200 ml, Plastic Measuring Cylinder	pc	5			
		100 ml, Plastic Measuring Cylinder	pc	5			
		Rubber Gloves for Strong Alkali Solution	set	25			
		Safety Mask for Bleaching Powder	pc	10			
		Safety Goggles for Strong Alkali Solution	pc	25			
		Rubber Boots for Strong Alkali Solution	set	25			
		Insulating Tools	pc	5			
		Insulating Gloves	set	10			
14	Sainamaina, Rupandehi	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
15	Sauraha Farsatikar, Rupandehi	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
16	Sundarbazar, Lamjung	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
		Insulating Gloves	set	4			

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
17	Bhoteodar, Lamjung	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
18	Lasunekhola, Lamjung	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
Insulating Gloves	set	4					
19	Nijgadh, Bara	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
Insulating Gloves	set	4					
20	Simara, Bara	15 Ltr., Plastic Bucket	pc	4			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	4			
		1000 ml, Beaker with Handle	pc	4			
		1000 ml, Plastic Measuring Cylinder	pc	4			
		500 ml, Plastic Measuring Cylinder	pc	4			
		200 ml, Plastic Measuring Cylinder	pc	4			
		100 ml, Plastic Measuring Cylinder	pc	4			
		Rubber Gloves for Strong Alkali Solution	set	20			
		Safety Mask for Bleaching Powder	pc	8			
		Safety Goggles for Strong Alkali Solution	pc	20			
		Rubber Boots for Strong Alkali Solution	set	20			
		Insulating Tools	pc	4			
Insulating Gloves	set	8					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
21	Jitpur Gadmai, Bara	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
22	Dumbarbana, Bara	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
23	Bharatgunj, Bara	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
Insulating Gloves	set	4					
24	Dhalkebar, Dhanusa	15 Ltr., Plastic Bucket	pc	4			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	4			
		1000 ml, Beaker with Handle	pc	4			
		1000 ml, Plastic Measuring Cylinder	pc	4			
		500 ml, Plastic Measuring Cylinder	pc	4			
		200 ml, Plastic Measuring Cylinder	pc	4			
		100 ml, Plastic Measuring Cylinder	pc	4			
		Rubber Gloves for Strong Alkali Solution	set	20			
		Safety Mask for Bleaching Powder	pc	8			
		Safety Goggles for Strong Alkali Solution	pc	20			
		Rubber Boots for Strong Alkali Solution	set	20			
		Insulating Tools	pc	4			
Insulating Gloves	set	8					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
25	Hariyon, Sarlahi	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
26	Bharathwa, Sarlahi	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
27	Ishworpur, Sarlahi	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
28	Ramechaap, Ramechaap	15 Ltr., Plastic Bucket	pc	3			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	3			
		1000 ml, Beaker with Handle	pc	3			
		1000 ml, Plastic Measuring Cylinder	pc	3			
		500 ml, Plastic Measuring Cylinder	pc	3			
		200 ml, Plastic Measuring Cylinder	pc	3			
		100 ml, Plastic Measuring Cylinder	pc	3			
		Rubber Gloves for Strong Alkali Solution	set	15			
		Safety Mask for Bleaching Powder	pc	6			
		Safety Goggles for Strong Alkali Solution	pc	15			
		Rubber Boots for Strong Alkali Solution	set	15			
		Insulating Tools	pc	3			
		Insulating Gloves	set	6			

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
29	Melamchi, Sindhupalcho wk	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
30	Barhabise, Sindhupalcho wk	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
Insulating Gloves	set	4					
31	Urlabari, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
32	Bayarban, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
33	Pathri-Sanischare, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
34	Jamunagachhi, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
35	Rangeli, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
36	Tankisunwari, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
37	Itahara, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
38	Madhumalla, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
39	Pichra, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
40	Sorhabaag- Karsiya, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
41	Katahari, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
42	Jhorahat, Morang	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
43	Shaniarjun, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
44	Shivasatachi, Jhapa	15 Ltr., Plastic Bucket	pc	2			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	2			
		1000 ml, Beaker with Handle	pc	2			
		1000 ml, Plastic Measuring Cylinder	pc	2			
		500 ml, Plastic Measuring Cylinder	pc	2			
		200 ml, Plastic Measuring Cylinder	pc	2			
		100 ml, Plastic Measuring Cylinder	pc	2			
		Rubber Gloves for Strong Alkali Solution	set	10			
		Safety Mask for Bleaching Powder	pc	4			
		Safety Goggles for Strong Alkali Solution	pc	10			
		Rubber Boots for Strong Alkali Solution	set	10			
		Insulating Tools	pc	2			
		Insulating Gloves	set	4			

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
45	Prithivinagar, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
46	Topgachhi I, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
47	Topgachhi II, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					
48	Topgachhi III, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkali Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkali Solution	pc	5			
		Rubber Boots for Strong Alkali Solution	set	5			
		Insulating Tools	pc	1			
Insulating Gloves	set	2					

S.No.	Name of Project	Description of Work	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Remarks
49	Juropani, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkai Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkai Solution	pc	5			
		Rubber Boots for Strong Alkai Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
50	Chandragadhi I, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkai Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkai Solution	pc	5			
		Rubber Boots for Strong Alkai Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
51	Chandragadhi II, Jhapa	15 Ltr., Plastic Bucket	pc	1			
		Weighing Scale Capacity 20 kg., Outdoor Use	pc	1			
		1000 ml, Beaker with Handle	pc	1			
		1000 ml, Plastic Measuring Cylinder	pc	1			
		500 ml, Plastic Measuring Cylinder	pc	1			
		200 ml, Plastic Measuring Cylinder	pc	1			
		100 ml, Plastic Measuring Cylinder	pc	1			
		Rubber Gloves for Strong Alkai Solution	set	5			
		Safety Mask for Bleaching Powder	pc	2			
		Safety Goggles for Strong Alkai Solution	pc	5			
		Rubber Boots for Strong Alkai Solution	set	5			
		Insulating Tools	pc	1			
		Insulating Gloves	set	2			
		Sub Total =					
		Transportation 5% of Sub Total =					
		Total =					
		VAT @ 13 % of Total =					
		Grand Total =					

Appendix 2.25

Procured Equipment and Installed Status

Status of procured items for target WUSCs under WASMIP-II

*As per informations till 2021 May

S.No.	Name of Project	Flowmeter				Valves				Chlorination Unit		Pressure Gauge		Test kits	pH/EC meter	Electric Devices	Safety Tools	Aeration Filter Media		Covid Response support
		Received		Installed		Received		Installed		Received	Installed	Received	Installed	Received	Received	Received	Received	Received	Installed	
		Size	No.	Size	No.	Size	No.	Size	No.	Set	Set	No.	No.	Set	Set	Set	Set	Set	Set	
68	Jhapa, Chandragadhi II	100mm, 1.0 MPa, Flange connection	1	100mm, 1.0 MPa, Flange connection	1					1	1			1	1	1	1			

Installation Status of procured Items in all WUSCs:

1) Flowmeter:

Completely Installed : 38
 Partially installed : 7
 No installation : 12
 Total: 57

2) Valves:

Completely Installed : 5
 Partially installed : 1
 No installation : 0
 Total: 6

3) Chlorination:

Completely Installed : 48
 Partially installed : 2
 No installation : 2
 Total: 52

4) Pressure Gauge:

Completely Installed : 2
 Partially installed : 1
 No installation : 4
 Total: 7

5) ENPHO Test Kits:

Received : 68
 Not Received: 0
 Total: 68

6) Electric Devices:

Received : 59
 Not Received: 9
 Total: 68

7) Safety Tools:

Received : 68
 Not Received: 0
 Total: 68

8) Aeration Filter Media:

Installed: 2
 Not Installed: 0
 Total: 2

9) Overall:

WUSCs with at least one item installed: 64
 WUSCs with no item installed: 0
 WUSCs with no items: 4
 Total: 68

Appendix 2.26

Training Materials for ToT of On-site

Training of Trainers Instruction of On-site Training



On-site Training for Water Users and
Sanitation Committees in Semi-Urban Towns

1

1

1. ToT of On-site Training

■ The Objectives of Training of Trainers (ToT)

- Trainer acquires the **knowledge, skills and teaching method** for training execution.
- Trainer understands the **concrete method of training**.
- Strengthen **troubleshooting ability** of trainer.
- Knowledge gained through past training activities etc. is **shared**.

2

2

2. On-site Training Outline

- **Trainer:** FWSSMP Engineers
- **Observer:** Nagarpalika/ Gaupalika Engineers
- **Target:** WUSC semi-urban towns after taking lectures
- **Method:** Interview with Board member, manager
- **Duration:** 1 day
- **Text:** Management check sheet, Schematic Flow Diagram, SOPs

3

3

3. On-site Training Objectives

Understanding how and where to apply the knowledge acquired in the Basic Training

1. To confirm the situation of O&M of Water Treatment Plant
2. To check the O&M records
3. To confirm the situation of collection Key Performance Indicators (KPIs)
4. To confirm the schematic flow diagrams (water supply system drawings) compared to current system
5. To confirm other knowledge and skills acquired in the Basic Training
6. To conduct interview survey to WUSCs with the Management check sheet

4

4

4. The situation of O&M of Water Treatment Plant

- a. Treatment process
- b. Expansion and/or plan of Water Treatment Plant
- c. Purified water quality if it meets the standard
- d. Cleaning facilities
- e. Out of order in facilities
- f. Water Quality Test Kits usage
- g. Electrical Devices usage for maintenance

5

5

5. Delivered Maintenance Devices



ENPHO Water Quality Test Kit



Insulation continuity tester



Digital clamp meter



Earth tester

SOP instructs how to use devices

6

6

6. O&M records Sheets

No.	Frequency	Facility/Item
1	Daily	Intake volume, Operation, Pump, Inspection, Supplied water volume
2	Weekly	Electrical inspection
3	Monthly	Intake volume summary, Electrical inspection, Supplied water volume summary
4	Yearly	Intake volume summary, Electrical inspection, Supplied water volume summary
5	Need Basis	Distribution pipe, valve box, Water meter, Repair work (civil, pipe, electrical, mechanical)

Practice: Confirming the Record sheets

7

7

7. Key Performance Indicators (11 KPIs)

KPI	Unit	Average of 51 WUA/WUSC in 2014
1. Water Supply Ratio	%	65.4
2. Service Hours	hours	12.2
3. Water Quality Compliance	%	No Data
4. Staff Ratio		6.5
5. Metered Ratio	%	94.0
6. Production Ratio	liter/c/d	89.2
7. Consumption Ratio	liter/c/d	69.8
8. Non-Revenue Water	%	21.7
9. Unit Production Cost	NRs./m ³	10.3
10. Operation Ratio		0.86
11. Collection Ratio	%	98.7

8

8

8. KPIs Formulation (1)

KPI	Formula (Required Information)
1. Water Supply Ratio (%)	Population with access to water services / Total population within service area
2. Service Hours (hours)	Water service hours (dry and rainy seasons)
3. Water Quality Compliance (%)	Total number of samples passed / Total number of samples tested
4. Staff Ratio	Number of staff / Number of house connections x 100
5. Metered Ratio (%)	Number of connections paid on meter users / Total number of house connections
6. Production Ratio (liter/capita/day)	Water production volume per a day / Population with access to water
7. Consumption Ratio (liter/capita/day)	Water consumption volume of all connections per a day / Population with access to water
8. Non-Revenue Water (%)	$1 - (\text{Consumption water volume} / \text{Production water volume})$

9

8. KPIs Formulation (2)

KPI	Formula (Required Information)
9. Unit Production Cost (NPR/m ³)	Operating yearly expense / Water production yearly volume
10. Operation Ratio	Operating yearly expense / Operating yearly Income from water tariff
11. Collection Ratio (%)	Operating yearly Income from water tariff / Billed yearly amount of water tariff

Using Basic Information sheet for collecting data for 11 KPIs

10

10

9. Schematic Flow Diagrams (Water Supply System Drawings)

- a. Expansion of distribution pipelines, development of new water resource, new construction facilities (reservoirs, over head tank)
- b. Installation of an essential equipment (flow meter, chlorination unit, valve, pressure gauge)

Drawing sample is shown

11

11

10. Other Knowledge and Skills acquired in the Basic Training

- 1) Understanding dosing amount of chlorine solution
- 2) Using safe tools (goggles, mask, gloves) for making the solution
- 3) Confirming slow sand filter / washing of scraped sand (if any)
- 4) Confirming sampling points in water supply systems for water quality tests
- 5) Conducting periodically water quality tests included outsourcing
- 6) Developing / updating distribution pipeline maps with fundamental information
- 7) Using domestic water meter calculation method of instrumental error
- 8) Referring the troubleshooting for water supply facilities

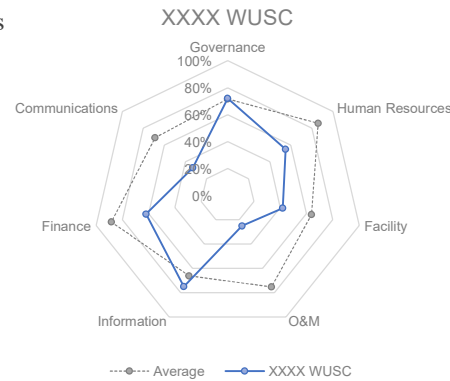
12

12

11. Interview survey with the Management check list (1)

50 Items (145 Questions) in 7 Key Management Areas

- 1) Governance: 9 items,
- 2) Human Resources: 7 items
- 3) Facility: 10 items
- 4) O&M: 9 items
- 5) Information: 3 items
- 6) Finance: 6 items
- 7) Communication: 6 items



13

13

11. Interview survey with the Management check list (2)

- Using **two sheets**, one is for an inspector, the other is for WUSC
- Interview with Board member and/or Manager with **both Signatures**
- Inspector take a photograph/scan of the check sheet and send it to NWSSTC.
- e-mail address; nwsstc@gmail.com

NWSSTC confirm the situation and refer it to make a curriculums for WUSCs

Practice using the check list

14

14

【Appendix】 Basic Training Outline

- ❑ Target Persons
Chair Person, Manager, Key Technician ⇒ **Manager**
- ❑ Schedule
4 days
- ❑ Training Curriculum and Materials
 - ✓ **8 modules**
 - ✓ **Provision of Video Materials**
 - ✓ **More Exercise for each module**

15

15

The Objectives of Basic Training

■ The Objectives of Basic Training

- ❑ WUSC personnel learn/understand the SOP for **independent management** of water supply facilities to provide **safe drinking water** to consumers **stably** and **efficiently**.
- ❑ WUSC personnel analyze the current management situation and make improvement plan from the point of view of stability, efficiency, safety and independence.

16

16

Basic Training Contents

▣ Details of Training Curriculum

2nd Basic Training

Module 1: Introduction

Module 2: Management of Water Supply Facilities (1)- Outline –

Module 3: Management of Water Supply Facilities (2)
- Daily Inspection and Keeping Records –

Module 4: Management of Water Supply Facilities (3)
- Periodic Inspection -

Module 5: Water Quality Management

Module 6: 1) Water Distribution Facility,
2) Household Connections and Water Meters

Module 7: Analysis of Water Supply Management

Module 8: Planning of Water Supply Management

Training of Trainers on On-site Training

Concept and Outline

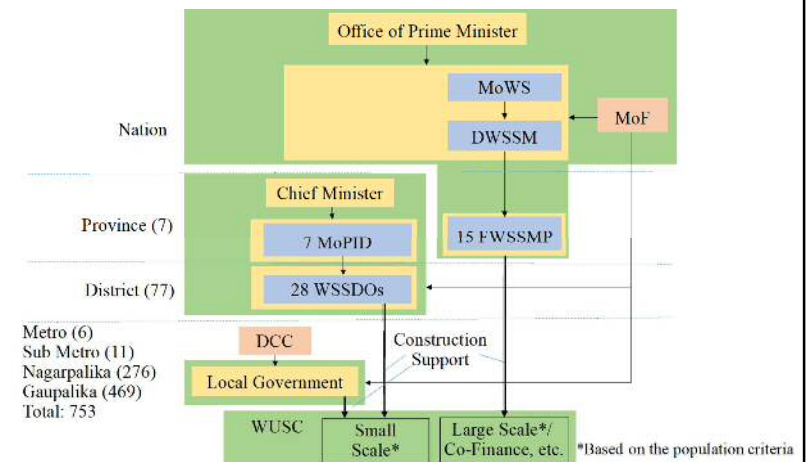


On-site Training for Water Users and Sanitation Committees in Semi-Urban Towns

1

1

1. Supporting WUSCs in Federal System



2

2

2. Criteria and definitions of the Project Construction

Area	Federal	Provincial	Local
Mountains	More than 1,000	500-1,000	Up to 500
Hill	More than 5,000	3,000-5,000	Up to 3,000
Plain	More than 15,000	5,000-15,000	Up to 5,000

Based on the design population
Source: Budget and Program FY BS 2076/77

3

3

2.1 Operation and Maintenance

Roles and Responsibilities of Local Government

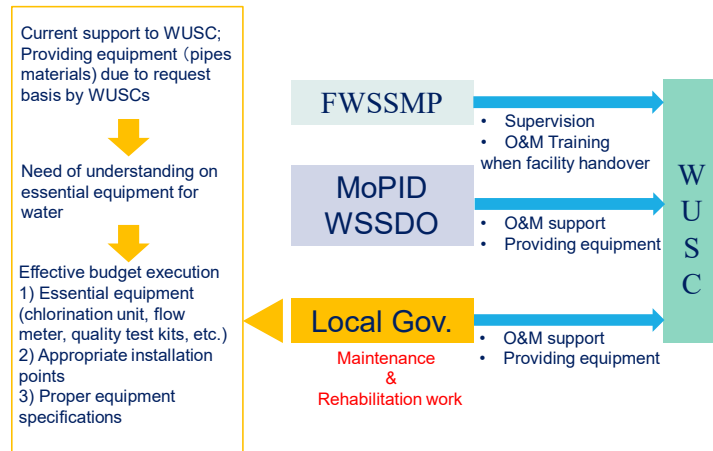
- 1) **Water supply service and its monitoring** in local level
- 2) Raising awareness on sanitation
- 3) Operating wastewater management system
- 4) Projects providing access of water supply and sanitation to the specified population of specified area
- 5) **Maintenance and rehabilitation work of water supply and sanitation projects operated in local level**

Source: "Draft WaSH Bill" prepared by MoWS

4

4

3. Roles of Supporting WUSCs on O&M



5

5

4. Issues/Challenges in Nagarpalika / Gaupalika

- **Shortage of water** compared to water demand
- **Need of capacity on O&M** of water supply system to WUSC support
- **Lack of manpower** on support of water supply system
- Need of knowledge on **design and cost estimation**
- Need of **management skills** of construction /rehabilitation works
- **Insufficient budget** for water supply construction/O&M
- Consumers prefer to use shallow tube wells because **consumers do not want to pay tariff.**
- **Lack of awareness on safe water** among consumers

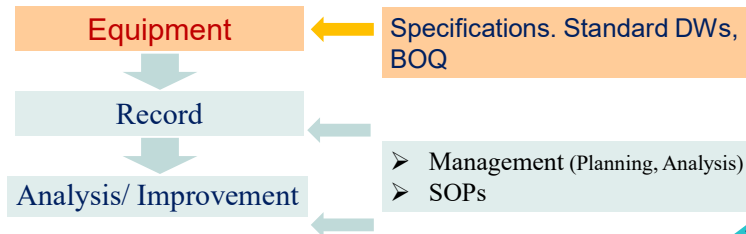
6

6

5. Sound Water Supply System

Rehabilitation Works on water supply facilities

- Detection of essential equipment**
- To measure supplied water → Flow meter
 - To provide safe water → Chlorination unit, Test kits
 - Long life time of facilities → Valves / Pressure gage



7

7

6. Capacity Category on WUSC

Level	Situation	Cause
1	NO Installation of Equipment	NO understanding of equipment importance/ proper positions, NO fittings/ Insufficient budget
2	Installation but NO Record	NO understanding of record importance
3	Keep recording, but NO Analysis	NO understanding of data analysis, how to analyze data
4	Analyzing data and Detecting/ Preventing Errors	- Next stage: securing budget, human resources

8

8

7. WASMIP-II Project Purpose

Support to the WUSCs in semi-urban towns is provided and strengthened by DWSSM and NWSSTC using government and non-government organizations' personnel(*)

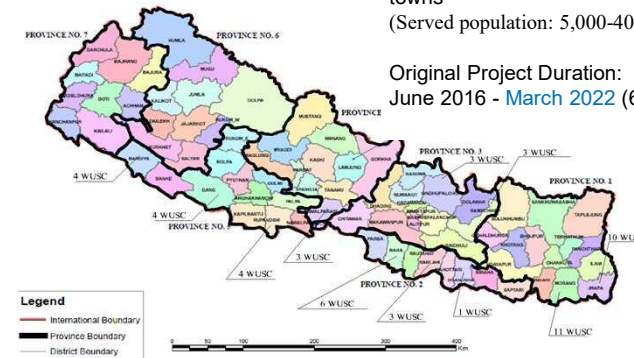
(*) [MoPID](#), [WSSDO](#), NGOs, academic institutions, etc.

9

8. Project Sites (WASMIP-II)

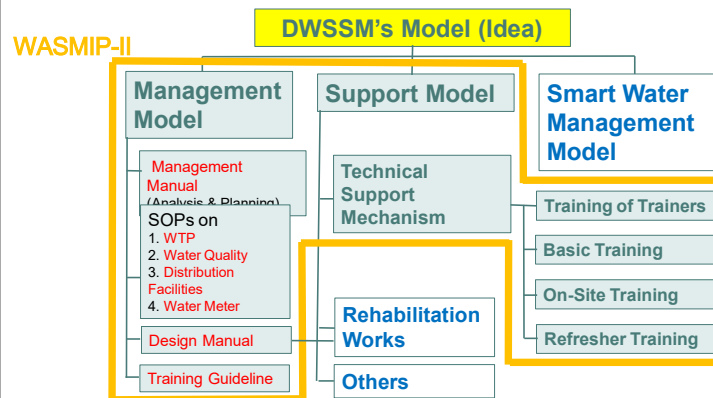
Total: **68** WUSCs in semi-urban towns
(Served population: 5,000-40,000)

Original Project Duration:
June 2016 - **March 2022** (6 years)



10

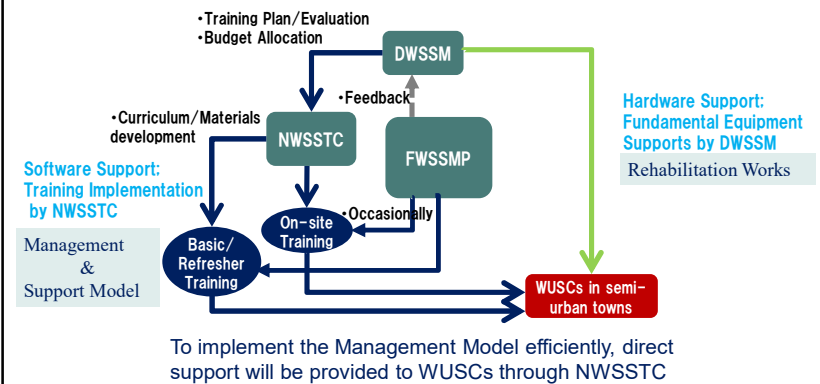
9. Management Model and Support Model



11

11

10. Technical Support Mechanism

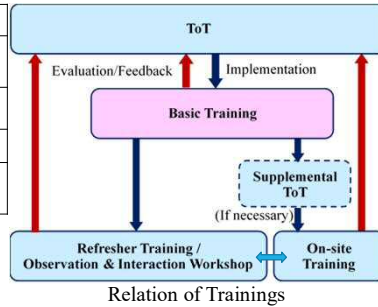


12

12

11. Software Support (Trainings)

Training	Objectives
Training of Trainers	Understanding Basic training contents, key points, teaching skills
Basic Training	Knowledge, skills and management on water supply business
On-site Training	Applying knowledge to sites
Refresher Training	Feedback from Basic training, Sharing Good practice & Key issues



Training Implementation Guideline (draft) developed by WASMIP: the administrative training procedures

13

13

12. Basic Training



14

14

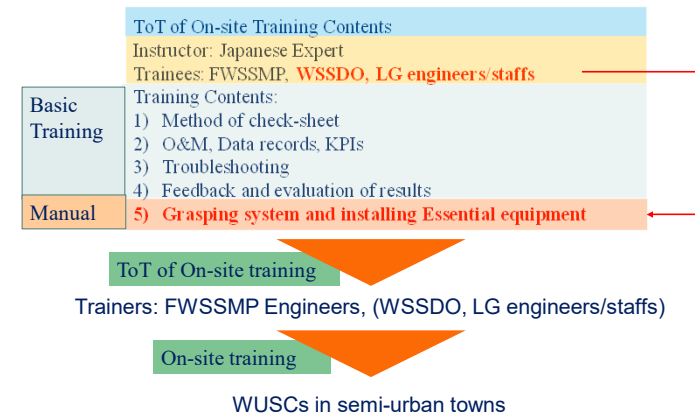
13. Refresher Training



15

15

14. On-site Training



16

16

15. WASMIP-II Slogan

Preventive maintenance is like a
“Bishwakarma puja”
पुर्व-मर्मत भनेको विश्वकर्मा पुजा जस्तै नै हो ।



17

17

16. WASMIP-II Slogan-II

Knowledge Sharing is like a

“Saraswati Vandana”



18

18

Manual of Specifications on Rehabilitations for WUSC in semi- urban towns Draft Manual ver.2



On-site Training for Water Users and
Sanitation Committees in Semi-Urban Towns

1

1

1. Overview and Introduction (1)

1. **Functionality / sustainability with efficient O&M**, upgrading the water service level, and rehabilitations of completed water supply schemes
2. Think about the indicators like **available quantity, quality, accessibility** and **reliability**

Source: Water Safety Plan Handbook Nepal, 2013

2

2

1. Overview and Introduction (2)

In this manual;

Rehabilitation Works is providing WUSCs with **essential equipment** to recover proper function

Essential equipment:

- 1) **Chlorination unit**
- 2) **Water meter**
- 3) **Valve**

3

3

2. Sound Water Supply System

1. **To supply sufficient water amount**

To **measure/grasp the supplied water amount**, with bulk/flow meters.

2. **To provide safe water**

To conduct **water quality test**, and grasp if the water quality meets the Water Quality Standards.

3. **To extent the facility life time**

Without the **maintenance** to the facility, the facility performance might be **gradually deteriorating** and finally, facility function suspends.

4

4

3. Importance of Equipment



Flow Meter



ENPHO Water Quality Test Kit



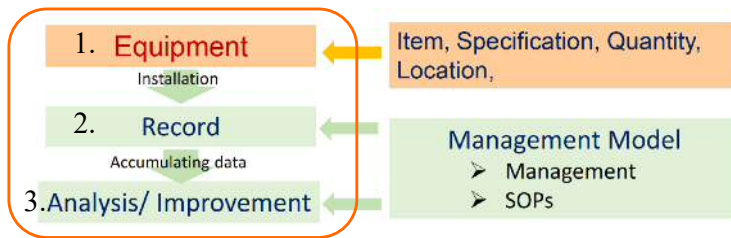
Chlorination Unit

4. National Drinking Water Quality Standards

No.	Parameter	Concentration Limit	No.	Parameter	Concentration Limit
Physical Requirements			14	Lead	0.01 mg/L
1	Turbidity	5 (10)* NTU	15	Ammonia	1.5 mg/L
2	pH	6.5-8.5	16	Chloride	250 mg/L
3	Color	5 (15)* TCU	17	Sulphate	250 mg/L
4	Taste and Odor	Non-objectionable	18	Nitrate	50 mg/L
5	TDS	1,000 mg/L	19	Copper	1 mg/L
6	Electrical Conductivity	1,500 µS/cm	20	Total Hardness (as CaCO ₃)	500 mg/L
Chemical Requirements			21	Calcium	200 mg/L
7	Iron	0.3 (3)* mg/L	22	Zinc	3 mg/L
8	Manganese	0.2 mg/L	23	Mercury	0.001 mg/L
9	Arsenic	0.05 mg/L	24	Aluminium	0.2 mg/L
10	Cadmium	0.003 mg/L	25	Residual Chlorine	0.1-0.2 mg/L
11	Chromium	0.05 mg/L	Microbiological Requirements		
12	Cyanide	0.07 mg/L	26	<i>E.Coli</i> (MPN/100mL)	0
13	Fluoride	0.5-1.5 mg/L	27	Total Coliform (MPN/100mL)	0 in 95% samples

* Values in parenthesis refers the acceptable values only when alternative is not available.

5. Sound Operation and Maintenance



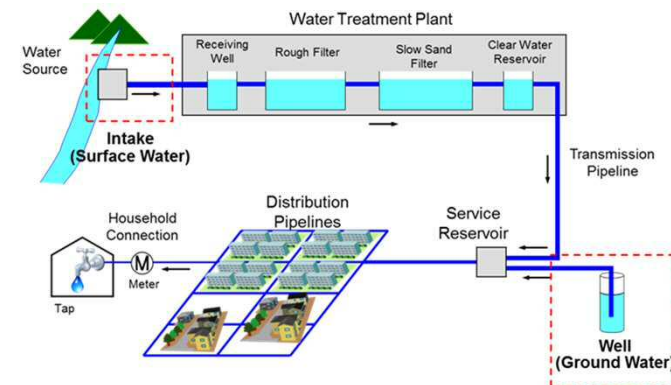
1. Equipment Installation

- 1) Identify installation location and quantity
- 2) Determine specifications
- 3) Procure/install

2. Record Keeping on O&M

3. Analysis Data and Improvement of O&M Activities

6. What is Water Supply System (1)



6. What is Water Supply System (2)

1. Intake Facility

To extract raw water from sources such as surface water or groundwater from the designated intake point.

2. Raw Water Transmission Pipeline

To convey raw water from an intake point to water treatment plant and/or service reservoir.

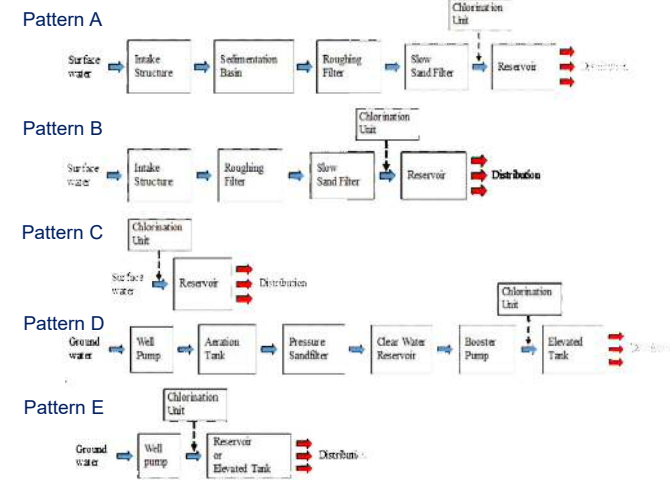
3. Water Treatment Plant (WTP)

To purify raw water and produce clear water meets with the water quality standards (National Drinking Water Quality Standards).

9

6. What is Water Supply System (3)

Water treatment processes in WUSC semi-urban area are classified as five patterns.



10

6. What is Water Supply System (4)

4. Service Reservoir

Functions are; 1) absorption of water demand fluctuation, 2) water storage for firefighting, 3) water storage for emergency.

5. Water Distribution Pipelines

To distribute clear water (purified and disinfected water) from service reservoirs to water supply service areas.

6. Household Connection and Domestic Water Meter

To extract pipe water from a distribution pipe into a household.

Water meters are equipped on household connection pipes to measure water consumption of users.

11

11

7. How to Use Manual

The targets of this manual are for [FWSSMP](#) and [WUSC](#).

The objective of this manual is

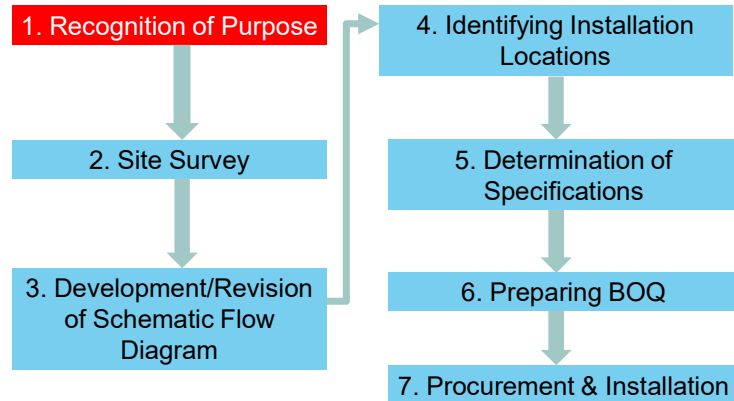
To understand the procedure of rehabilitation works.

Planning, Procuring and Installing the essential equipment

12

12

7.0 Procedure of Rehabilitation Works



13

13

7.1 Recognition of Purpose

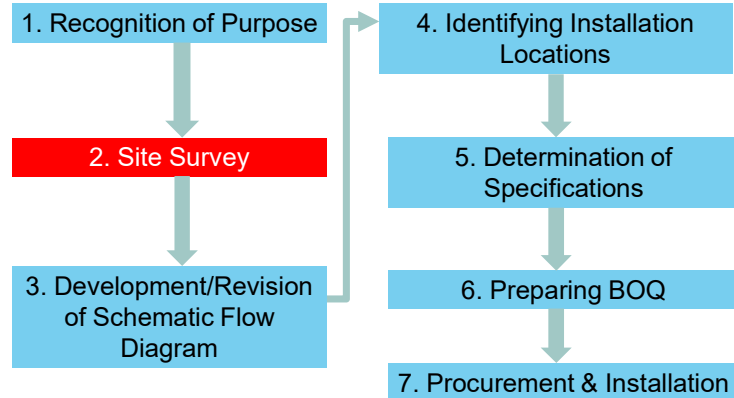


1. To Measure supplied and distributed water → **Flow Meter**
2. To Provide safe water by disinfection → **Chlorination Unit**
3. To perform proper O&M with longer life time → **Valves**

14

14

7.0 Procedure of Rehabilitation Works



15

15

7.2 Site Survey for Developing Schematic Flow Diagram (1)

1. Contact a chairperson or manager of WUSC and decide a schedule of site survey.
2. Bring camera, measuring tape, check list (Necessary information).
3. Start the survey from water source and/or intake.
4. Identify water source/intake facility (type and number) with taking pictures.
5. Identify the transmission pipelines from the intake to WTP and reservoirs.
 - Check and note the pipe diameter and material by using measure tape.
 - If the pipe is inaccessible/invisibility, verify pipe by excavating.
 - Identify locations of flow meter, valve and washout.
 - Check reservoir type and capacity (m³)
 - Take pictures of the facilities.
 - Draw a rough flow diagram based on the acquired information

16

16

7.2 Site Survey for Developing Schematic Flow Diagram (1)

6. Identify pipeline and water supply facility /equipment within WTP

- Check and note pipe diameter and material
- Identify location of T-junction, bypass, valves, washout, dosing point of chlorine and flow meter.
- Check and note operating condition of facilities (Sedimentation Tank, Roughing Filter, Slow Sand Filter, Aeration Tank, Pressure Filter, Lifting Pump, Chlorination Unit in WTP)

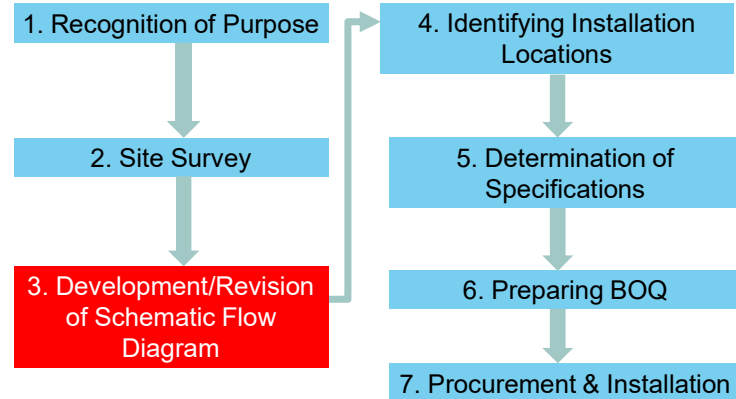
7. Identify transmission pipelines from WTP to reservoir

8. Identify transmission pipelines from reservoir to service area

17

17

7.0 Procedure of Rehabilitation Works



18

18

7.3 Development of Schematic Flow Diagram

Necessary Information (1)

	Facility	Confirmation	Answer
1	Intake	Number of water resources/intakes	
		Resource Type: surface water, springs, groundwater	
2	Raw water transmission pipeline	Pipe diameter	
		Pipe material (ductile cast iron, GI pipe, HDPE)	
		Bulk meter installed or not	
3	Water Treatment Plant	Pattern A	
		Pattern B	
		Pattern C	
		Pattern D	
		Pattern E	
4	Service Reservoir	Ground Type & Capacity/Volume/Size (m ³)	
		Elevated Type & Capacity/Volume/Size (m ³)	
	Bulk meter	Is there bulk meter for each reservoir?	Yes or No
		Number of units	

19

19

7.3 Development of Schematic Flow Diagram

Necessary Information (2)

	Facility	Confirmation	
5	Chlorination unit location	Number of units	
		Location	
		Type (Automatic or Manual)	
6	Water Service Areas	Number of service areas	
7	Valve, Pressure gage	Location, number	
8	Water Quality Test Kit	Is there any kit?	Yes or No
		If yes, What kind of kit (kit name)	
9	New project	Is there New Project?	Yes or No
		Status (Planning or under construction)	
		If in planning phase, when does it start?	
		If in construction phase, when dose it complete?	

20

20

7.3 Development of Schematic Flow Diagram

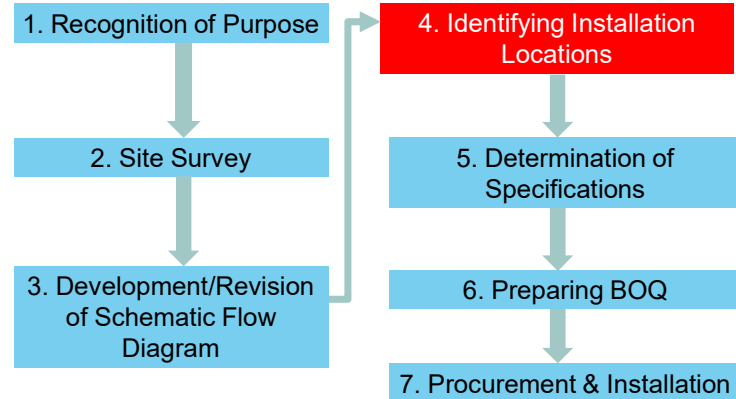
Procedure to Develop/Revise Schematic Flow Diagram

- 1) The diagram must include intake (type), intake facility, pipe diameter and material, main facility/equipment in WTP, reservoirs (type, capacity), flow meter, chlorination unit/dosing point, valves etc.
- 2) The direction of flow should be denoted by an arrow and note survey date.
- 3) In case that any equipment, material and/or instrument is installed newly, reinstalled to another location or removed, revise/update the diagram.

21

21

7.0 Procedure of Rehabilitation Works



22

22

7.4 Identifying Installation Locations (1)

1. Flow meter

a) Installation Location

- To be installed at easily accessible location for reading, installation and maintenance
- Proper installation location is where relatively close to the ground. If the meter is installed under the ground, a chamber should be constructed to protect it.
- Priority of installation location should be given to the location where total volume of supplied water from WTP can be measured.

b) Minimizing number

The number of flow meter shall be minimized for reading and O&M

23

23

7.4 Identifying Installation Locations (2)

2. Chlorination Unit

a) Installation Location

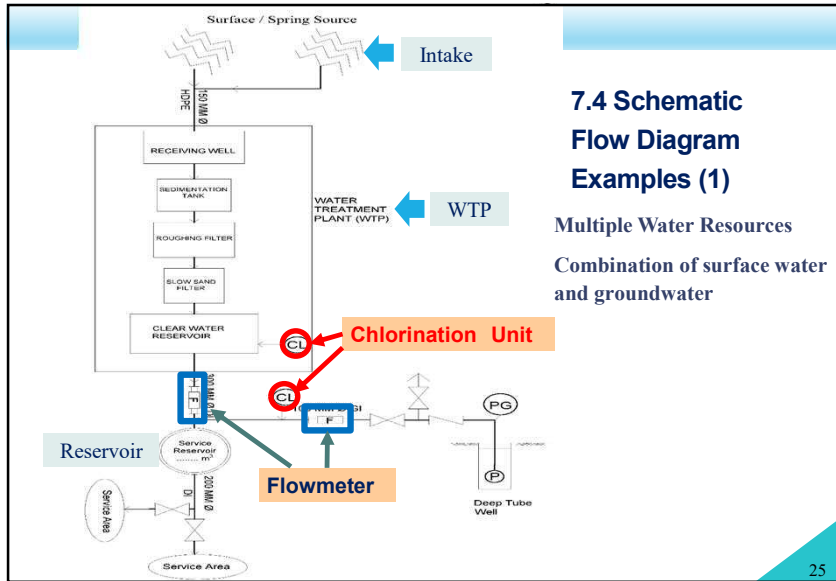
- O&M works such as preparation of chlorine solution can be performed easily and safely. (Roof, ventilation, electrical power supply and clear water supply shall be considered.)
- The prepared chlorine solution can be injected properly with required amount and pressure.

b) Dosing Point

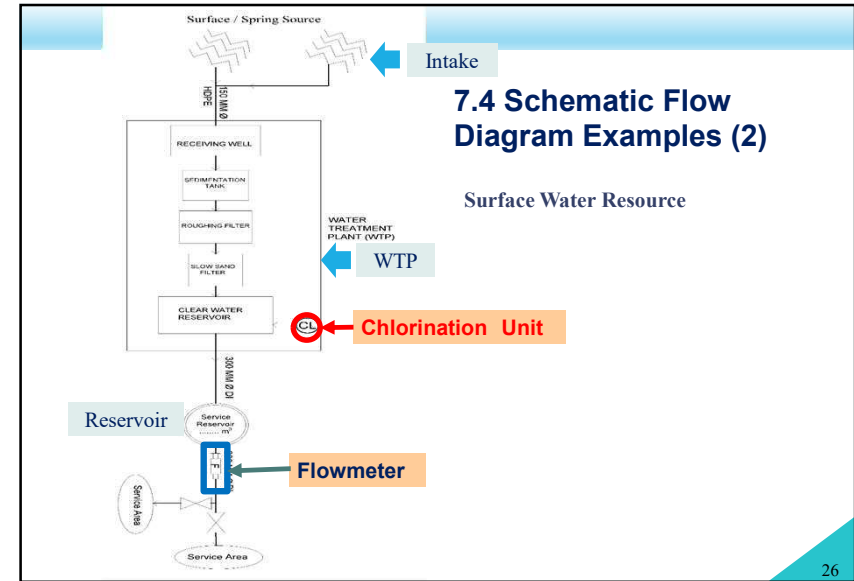
- Dosing point of chlorine should be selected/decided to disinfect all the supplied water.
- Recommended dosing point of chlorine is upstream of reservoirs

24

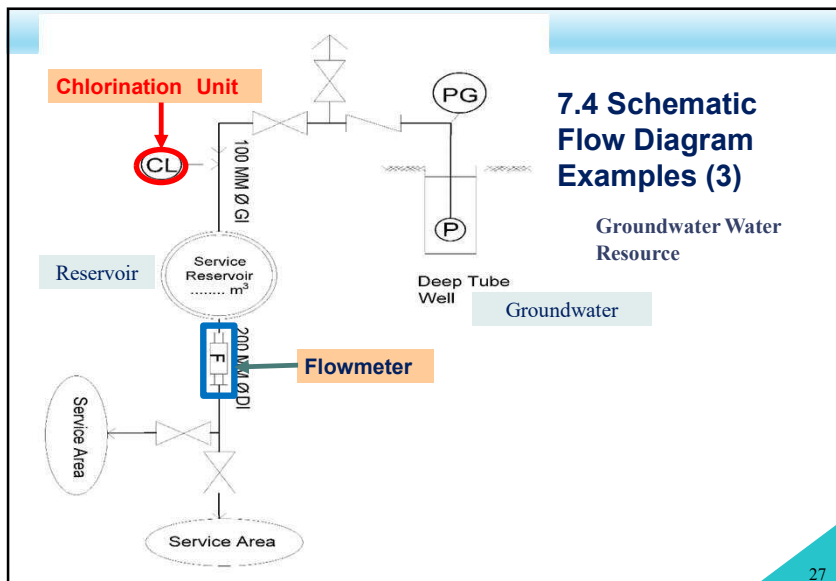
24



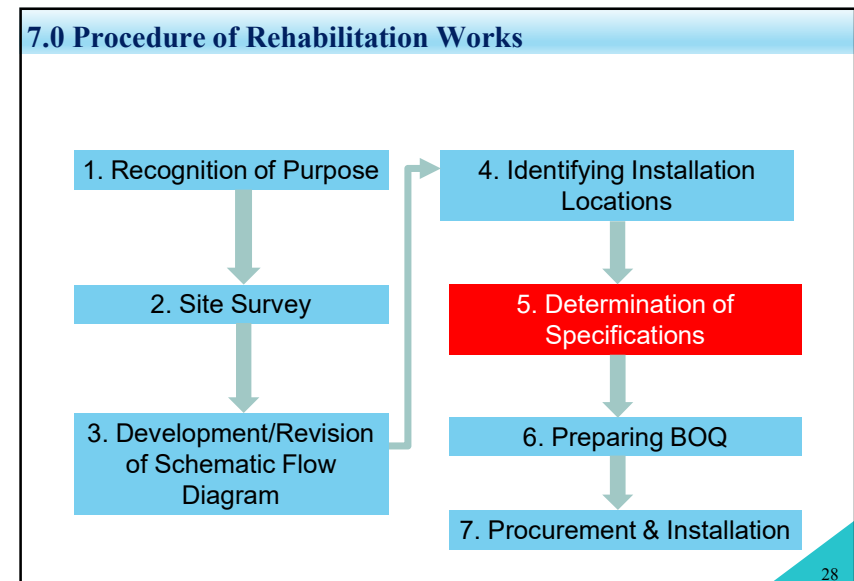
25



26



27



28

7.5 Determination of Specification (1)

1. Chlorination Unit

- Pump type chlorination unit is installed in case that desirable power supply is available.
- In case of no power supply near WTP/reservoir, gravity type chlorination unit which injects chlorine solution by gravity flow is applied.

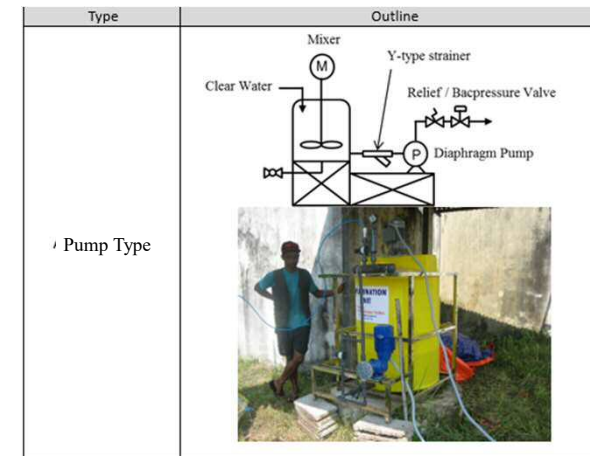
(1) Pump type chlorination unit

- 1) Chemical storage tank with base-frame.
- 2) Propeller type mixer
- 3) Chemical dosing pump
- 4) Other components: Y-strainer, Relief valve, Pressure gauge, Back pressure valve, tube and fittings
- f) Electrical Control panel

29

29

Pump Type Chlorination Unit



30

30

7.5 Determination of Specification (2)

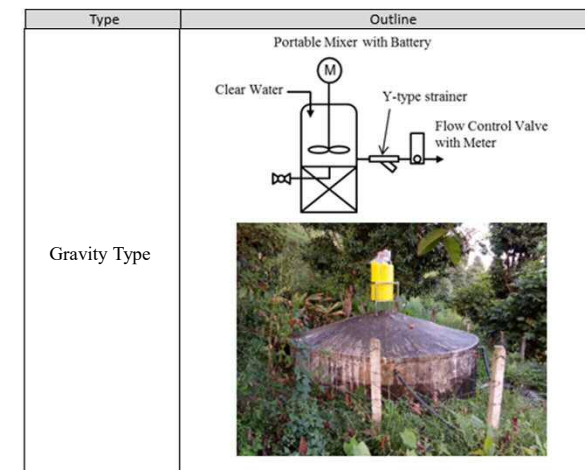
(2) Gravity type chlorination unit

- 1) Chemical storage tank with base-frame
- 2) Propeller type mixer (operated by solar power or generator)
- 3) Flow control valve with flow meter
- 4) Other components: Y-strainer, tube and fittings

31

31

Gravity Type Chlorination Unit



32

32

7.5 Determination of Specification (3)

(3) Flow meter (Bulk meter)

- 1) Type of flow meter shall be impeller type integrating flow meter
- 2) The diameter shall be clarified based on the diameter of target pipe.
- 3) Maximum pressure: 1.0 MPa in general
- 4) Connection type: flange type in general

33

33

Practice on Schematic Flow Diagrams

1) Selection of Flowmeter installation points

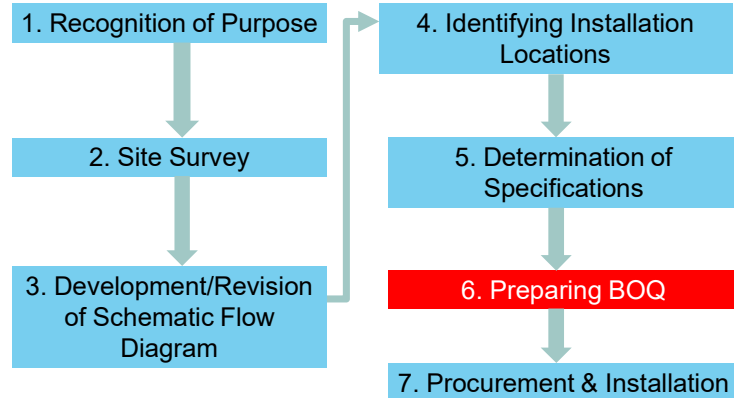
2) Selection of Chlorination Unit installation points

- Measure **ALL** production/supplied water volume
- Minimize the number of equipment
- **ALL** Distributed water must be treated by chlorine

34

34

7.0 Procedure of Rehabilitation Works



35

35

7.6 Preparing Bill of Quantity (BOQ) Example (1)

Chlorination Unit

[Pump Type]

S.N	Specification	Unit	Quantity
1	Diaphragm Pump; 7-30 L/hr × 1.0MPa × 0.1kW (motor driven) ×2 set (1 set shall be delivered as spare)	pc	2
2	Chemical Tank; PE, 200L with iron base ×1 set	pc	1
3	Mixer, propeller type, SS (SUS304), 0.07 kW ×1 set	pc	1
4	Backpressure Valve, 0.5MPa ×1 set, Relief Valve ×1 set, Y-type Strainer ×1 set, tube & fittings	pc	1
5	Electrical Panel Three Phase, 400 V, 600mm L x 500mm W x 300mm D (reference dimension) with key lock for front door, analog voltage and ampere meter with 3 phase selector switches, main MCCB (Molded Case Circuit Breaker) 30A, under/over voltage relay, respective feeder for the diaphragm pump and mixer with on/off push button switches, on/off indication, fault indication lamps, ELCB (Earth Leakage Circuit Breaker), MC (Magnetic Contactor), and over load relay, a spare feeder and socket, wire connection terminal at bottom with a plastic cover, all other internal wires and ducts to be functionally completed, 20m length power cable with conduits and fittings for incoming line and the respective load.	pc	1

[Gravity Type]

S.N	Specification	Unit	Quantity
1	Flow Control Valve with Flow Meter; 3-14 L/hr × 2set	pc	2
2	Chemical Tank; PE, 200L with iron base ×1set	pc	1
3	Mixer with motor operated by solar power; propeller type, SS (SUS304) ×1set	pc	1
4	Y-type Strainer ×1 set, tube & fittings	pc	1

* xx part shall be clarified/determined based on the actual condition.

36

36

7.6 Preparing Bill of Quantity (BOQ) Example (2)

(2) Flow Meter (Bulk Meter)

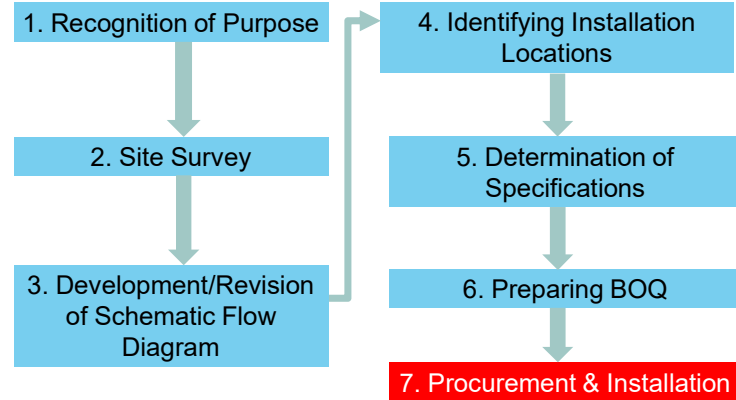
S.N	Specification	Unit	Quantity
1	75mm, 1.0 MPa, Flange connection	pc	1
2	100mm, 1.0 MPa, Flange connection	pc	1
3	200mm, 1.0 MPa, Flange connection	pc	1

* x part shall be clarified/determined based on the actual condition.

37

37

7.0 Procedure of Rehabilitation Works



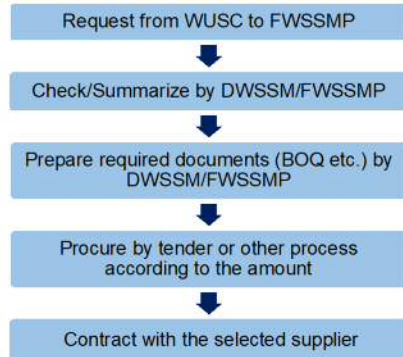
38

38

7.7 Procurement and Installation

(1) General Rules of Procurement

1) In case of using DWSSM budget for procurement, the following procedure is required generally.



2) Basically, flow meter, valve, pressure gauge and other consumables shall be procured by WUSC.

39

39

7.7 Procurement and Installation

(2) General Rules of Installation

- 1) Basically, installation work, commissioning and O&M training of procured equipment such as chlorination unit shall be conducted by the contractor.
- 2) The employer (generally FWSSMP or Local Government) and/or responsible person of WUSC shall conduct necessary supervision and inspection for the above works by the contractor, and give necessary instructions as required.
- 3) As to flow meter, valves etc. which can be installed by WUSC staff, the contractor shall procure and transport them to the designated place in accordance with the contract.
- 4) Necessary explanation of the warranty/guaranty period shall be provided by the contractor.
- 5) Necessary documents such as test report and instruction manual shall be provided by the contractor.

40

40

7.7 Procurement and Installation

(3) Chlorination unit

- 1) Confirm the installation location of chlorination unit and its dosing point with WUSC staff.
- 2) Ensure the availability of power supply
- 3) A shed shall be prepared to protect the dosing unit from rain and direct sunlight
- 4) The unit shall be installed horizontally
- 5) Leakage and/or other abnormality shall be checked and rectified if any
- 6) Performance curve (calibration curve) shall be provided

41

41

7.7 Procurement and Installation

(4) Flow meter

- 1) Confirm the installation location of flow meter..
- 2) If necessary, flow meter chamber shall be constructed before installation of the meter..
- 3) The meter shall be installed horizontally..
- 4) Leakage and/or other abnormality shall be checked and rectified if any.
- 5) For further information, refer to SOP (Chapter 3, Section 4, Household Connections and Water Meter).

42

42

8. Preventive Maintenance (1)

Maintenance management is categorized into the following;

- 1)Corrective Maintenance
- 2)Preventive Maintenance

1) Corrective Maintenance

Corrective Maintenance is repair / restoration work after malfunction.

- To install the new equipment at the required / desired point

43

43

8. Preventive Maintenance (2)

2) Preventive Maintenance

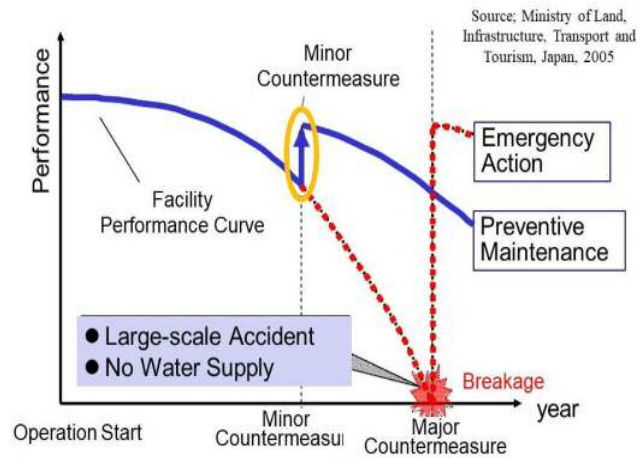
Preventive Maintenance is preliminary maintenance activities such as planned inspection and replacement, etc. to prevent any unplanned downtime and expensive costs from unexpected malfunction of equipment.

- To decrease malfunction of equipment
- To prevent equipment from deterioration by conducting planned inspection
- To analyze /utilize the obtained data from operational records and inspection results
- To replace the deteriorated /damaged equipment which exceed equipment lifetime.

44

44

8. Preventive Maintenance (3)



45

8. Preventive Maintenance (4)

Concept of Preventive Maintenance

- 1) The initial performance of facilities is set at the beginning of the operation start.
- 2) The facility performance has been gradually decreasing according to time passing.
- 3) Without any maintenance, repair and replacement of facilities/equipment, the facility performance finally reaches zero function that means facility breakage, no function and no water supply.
- 4) However, regular and routine maintenance help keep equipment up and running. This maintenance can minimize the repair and/ replace costs, and can recovery the facility performance up to near original performance level.
- 5) Finally, Preventive Maintenance achieves facility longer life time and the cost minimization for total time.

46

Appendix 2.27

Trainer List

Trainer List

S.N.	Name	Organization	Post
1	Mr. Narayan Prasad Khanal	Retired	Ex-Chief of Water quality section
2	Mr. Rajit Ojha	DWSSM	Chief of ISSAU
3	Mr. Rameswor Parajuli	Dhulikhel WUSC	Manager
4	Mr. Binod Prasad Gajurel	NWSSTC	Engineer
5	Mr. Santosh Kumar Shrestha	MoPID	Engineer
6	Mr. Basanta Kumar Dulal	MoPID	Engineer
7	Mr. Krishna Hari Budhathoki	KUKL	Engineer
8	Mr. Neeraj Adhikari	Advanced College	Lecturer
9	Mr. Kiran Acharya	FWSSMP, Kanchanpur	Engineer
10	Mr. Bidur Jha	DWSSM	Engineer
11	Mr. Shekhar Khanal	DWSSM	Engineer
12	Mr. Tilak Neupane	MoPID	Engineer
13	Mr. Dilip Kumar	MoPID	Engineer
14	Mr. Sudhir Kumar Sah	FWSSMP, Ramechaap	Engineer
15	Mr. Ratna Prasad Lamichane	Bharatpur Municipality	Engineer
16	Mr. Laxmi Prasad Upadhyaya	DWSSM	Engineer
17	Mr. Lokendra Prasad Yadav	PID	Engineer
18	Mr. Mahesh Neupane	FWSSMP, Jumla	Engineer
19	Mr. Bipul Kumar Lal Das	FWSSMP, Biratnagar	Engineer
20	Mr. Kesab Lochan Sharma	Free Lancer	Freelancer
21	Mr. Bhojendra Aryal	DWSSM	Sociologist
22	Mr. Lok Bahadur Chaulagai	MoPID	Engineer
23	Mr. Chok Prasad Dhital	MOWS	Engineer
24	Mr. Rajesh Kushawa	FWSSMP, Janakpur	Engineer
25	Dr. Kamal Raj Sharma	DWSSM	Sociologist
26	Mr. Sita Ram Kafle	WSSDO, Jhapa	Engineer
27	Mr. Shiva Prasad Amatya	Leknath WUSC	Manager
28	Ms. Jyoti Tamang	C.I.A.A	Engineer
29	Mr. Kashi Kant Thakur	Free Lancer	Freelancer
30	Mr. Pradeep Kumar Shah	DWSSM	Engineer
31	Mr. Atulesh Kumar Karna	FWSSMP, Hetauda	Engineer
32	Mr. Aashutosh kumar Thakur	MoPID	Engineer
33	Mr. Prakash Bahadur Rawal	FWSSMP Kailali	Engineer
34	Mr. Dibakar Ghimire	DWSSM	Engineer
35	Mr. Kamal Aryal	Different Ministry	Engineer
36	Mr. Sujit Mahato	FWSSMP, Biratnagar	Engineer
37	Mr. Bamdev Poudel	MoPID	Engineer
38	Mr. Mohan Kunwar	MoPID	S.D.E
39	Mr. Ram Kumar Shrestha	MoWS	P.D
40	Mr. Satya Narayan Lakhey	DWSSM	Engineer
41	Mr. Jagarnath Das	FWSSMP Chitwan	S.D.E
42	Mr. Purna Prasad Upadhyay	DWSSM	S.D.E
43	Mr. Tilak Ram Shrestha	MoPID	Engineer
44	Mr. Bikesh Wadhantha chyya	DWSSM	S.D.E
45	Mr. Kamal Adhikari	Other Organization	Sociologist
46	Mr. Tikaram Shrestha	Other Organization	Engineer
47	Mr. Tika Adhikari	Other Organization	Engineer
48	Mr. Sanjaya Devkota	STWSSMP/Consultant	Program Dev. Officer/STWSSSP
49	Mr. Manina Baidhya	MoPID	S.D.E
50	Mr. Raju Budathoki	Urlabaari WUSC	Manager
51	Mr. Saroj subedi	MoFAGA	Account Officer
52	Mr. Pushparaj Singh	FWSSMP,Janakpur	Engineer
53	Mr. Ramesh Thapa	UWSSSP/TSTWSSP, Nepalgunj	Engineer
54	Ms. Sunam Thapa	FWSSMP, Pokhara	Engineer
55	Mr. Maheshi Mahato	FWSSMP, Birgunj	Engineer
56	Mr. Bed Raj Regmi	DWSSM	Engineer
57	Mr. Naresh Regmi	FWSSMP, Lamung	Engineer
58	Mr. Kul Prasad Paudel	FWSSMP, Pokhara	Engineer
59	Mr. Madhu Timilsina	DWSSM	Engineer
60	Mr. Samit Kumar Yadav	FWSSMP, Surkhet	Engineer
61	Mr. Rishi Prasad Rimal	DWSSM	Engineer
62	Mr. Ankit Man Shrestha	TSTWSSSP, Itahari	Engineer
63	Mr. Pradeep Regmi	FWSSMP, Myagdi	Engineer
64	Mr. Chetnarayan Shrestha	DWSSM	Engineer
65	Mr. Jiblal Bashyal	DoF	Accountant
66	Ms. Sujata Joshi	FWSSMP, Khotang	Engineer
67	Mr. Sanjiv Kumar Shah	MOPID, Hetauda	Engineer
68	Mr. Binod Kumar Bishwakarma	WSSDO, Bhaktapur	Engineer
69	Mr. Ram Bikram Dahal	Different organization	Engineer
70	Mr. Ganga Prasad Mahoto	FWSSMP, Janakpur	S.D.E
			Total

Source: Administration Section, DWSSM (As of April, 2021)

Appendix 2.28

ToT and Basic Training Materials



Small text below the top-left logo.

Training of Trainers

Introduction




**Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns**



The Objectives of Training of Trainers (ToT)

■ The Objectives of Training of Trainers (ToT)

- ToT aims to provide skill development to implement “Basic Training” to the trainer candidates, as well as knowledge enhancement on “Standard Operating Procedure (SOP) ” and “Management” which stipulates the O&M and management standard for semi-urban WUSCs.
- 

Revised Points from the 1st Basic Training

- Revised Points from the 1st Basic Training

- Target Persons

Chair Person, Manager, Key Technician **Manager**

- Schedule

6 days **5 days**

- Training Curriculum and Materials

✓ 13 modules **8 modules**

✓ **Provision of Video Materials**

✓ **More Exercise for each module**





Revised Points from 1st Basic Training

- ❑ Details of Revised Training Curriculum and Materials (2)



Basic Training for Water Users and Sanitation Committees in Semi-Urban Towns

Training of Trainers, Introduction

Version 1: 25 August, 2019



WASMiP



Department of Water Supply and Sewerage Management
DWSSM Building, Panipokhari, Maharajgunj, Kathmandu, Nepal

For providing safe and quality drinking water to people

National Water Supply and Sanitation Training Center
Training Center, Nagarkot, Bhaktapur, Nepal





Module 1

Introduction



Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns

1-1 Water Users and Sanitation Committee

Water Users and Sanitation Committee



WUSC Legal Rationale

Prevailing Acts and Rules

✓ Water Resource Act 2049, (1992)

✓ Water Resource Rules 2050, (1993)

~~Future Acts and Rules~~ Water Resource Rules 2055, (1998)

✓ “WaSH Bill” (coming soon)

Page 1 of 10



1-1 Water Users and Sanitation Committee

Water Supply Organizations in Nepal



1-1 Water Users and Sanitation Committee

Key Roles of WUSC

- 7. Change and extension of water supply systems**
- 8. Inventory management of properties**
- 9. General assembly and periodic election**
- 10. Annual auditing of financial transaction**
- 11. Development and implementation of business plans and
Standard Operation Procedures**
- 12. Compilation and submission of annual report**

1-2 Objectives of Water Supply Management

Watch the Following Video Materials;

- No.3: Objectives of Water Supply Management (3)

1-2 Objectives of Water Supply Management

Sustainability

□ Sustainable Water Supply Management

- ✓ WUSC delivers appropriate level of services at any time
- ✓ WUSC is operated and maintained at a local level;
- ✓ WUSC is resistant to disasters and incidents;
- ✓ WUSC operates with less negative impacts on environment



1-2 Objectives of Water Supply Management

Accountability

□ Accountable Water Supply Management

- ✓ WUSC adapts proper decision making procedures;
- ✓ WUSC processes financial transactions transparently;
- ✓ WUSC charges for the services properly to the customer;
- ✓ WUSC provides services equally to the customers;

Analysis Method

□ Qualitative Analysis

- ✓ Checklist

□ Quantitative Analysis

- 50 Questions in 7 Key Management Areas

- ✓ Key Performance Indicators & Benchmarking

- 11 Key Performance Indicators

Module 2

Management of Water Supply Facilities (1) **- Outline -**



Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns

2-1 The Purpose and Category of Operation & Maintenance

■ Watch the Following Video Materials;

- No.4: Objectives of Operations and Maintenance 1 (1:50)
- No.5: Objectives of Operations and Maintenance 2 (2:36)



2-1 The Purpose and Category of Operation & Maintenance

■ Operation and Maintenance (O&M) of Water Supply

Facilities consists of the following two elements.

1. Operational Control

2. Maintenance Management





2.1 The Purpose and Category of Operation & Maintenance Management

Maintenance Management is

- ✓ To complement function degradation of equipment and maintain its original function.
- ✓ To decrease **Life Cycle Cost (LCC)** of equipment by prolongation of its lifetime etc.



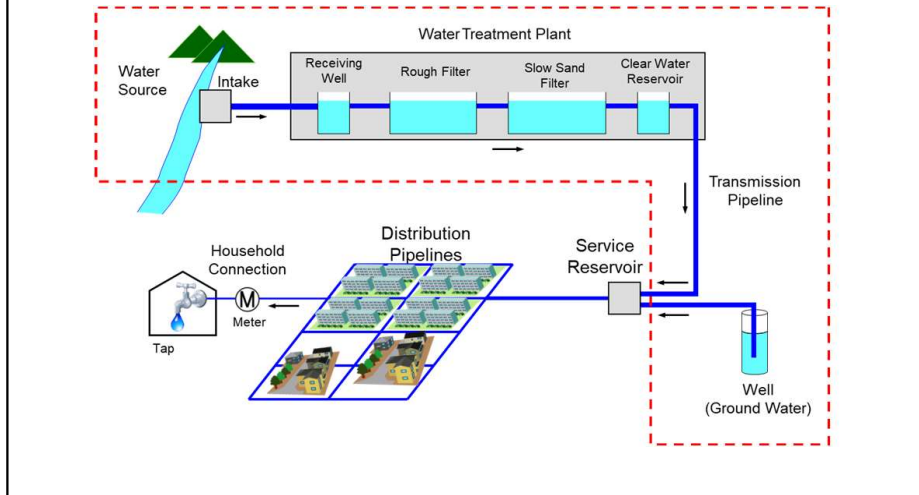
2.1 The Purpose and Category of Operation & Maintenance Management

- ❑ **Preventive Maintenance** is preliminary maintenance activities such as planned inspection and part replacement etc. to prevent from malfunction of equipment.
- ❑ **Collective Maintenance** is repair / restoration work after malfunction.



2-2 The Outline of Water Supply Facilities

■ Scope of Water Supply Facilities covered by Module 2



■ Typical Water Treatment Process in Nepal

< Surface Water >

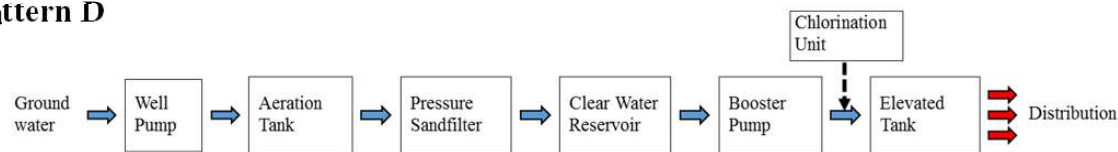
2-2 The Outline of Water Supply Facilities

2-2 The Outline of Water Supply Facilities

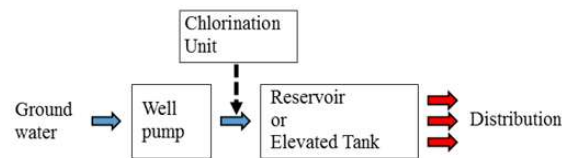
■ Typical Water Treatment Process in Nepal

< Ground Water >

Pattern D



Pattern E



■ Watch the Following Video Materials;

2-2 □ In Our Surface Water Supply Facilities (411)



2-2 The Outline of Water Supply Facilities

■ Water Supply Facilities of Surface Water Source

□ Types of Intake Facility

Stream Water Intake



River Water Intake

2-2 The Outline of Water Supply Facilities

■ Water Supply Facilities of Surface Water Source

□ Types of Receiving Well / Collection Chamber

Rectangular Receiving Well
(Dhulabari WUSC)



Ground Type Collection Chamber
(Besisahar WUSC)

2-2 The Outline of Water Supply Facilities

■ Water Supply Facilities of Surface Water Source

□ Types of Sedimentation Tank

Basically, Sedimentation Tank is classified into two types;

- ✓ Chemical Sedimentation Tank or Coagulation-sedimentation Tank
- ✓ Plain sedimentation tank

Furthermore, sedimentation tank can be classified by shape, flow direction etc.



2-2 The Outline of Water Supply Facilities

■ Water Supply Facilities of Surface Water Source

□ Types of Sedimentation Tank

- ✓ Other Type of Sedimentation Tank (*for reference*)

Circular Sedimentation Tank

(Singda WTP, India)

Up-flow Tube Settler

(Kitachiba WTP, Japan)

2-2 The Outline of Water Supply Facilities

■ Water Supply Facilities of Surface Water Source

□ Types of Roughing Filter

Horizontal Flow Roughing Filter

Vertical Flow Roughing Filter

(Pragatinagar WUSC)

(Kilinochchi WTP, Sri Lanka)

(for reference)





2-2 The Outline of Water Supply Facilities

- Water Supply Facilities of Surface Water Source

- Types of Slow Sand Filter

Pragatinagar WUSC

Beljhundi WUSC





2-2 The Outline of Water Supply Facilities

- Water Supply Facilities of Surface Water Source

- Types of Rapid Sand Filter

Gravity Type

Pressurized Type





2-2 The Outline of Water Supply Facilities

■ Watch the Following Video Materials;

- No.7: Groundwater Facilities (2:00)



2-2 The Outline of Water Supply Facilities

■ Water Supply Facilities of Ground Water Source

□ Types of Aeration Facility

Packed Tower Type

Cascade Type





2-2 The Outline of Water Supply Facilities

- Water Supply Facilities of Ground Water Source

- Types of Rapid Sand Filter

Gravity Type

Pressurized Type



2-2 The Outline of Water Supply Facilities

■ Watch the Following Video Materials;

- No.8: Chlorination and Reservoir (2:05)



2-2 The Outline of Water Supply Facilities

■ Function of Chlorination Unit

- ✓ Disinfect treated water by dosing chlorine.
- ✓ Oxidize dissolved metal such as iron (Fe) or manganese (Mn) etc.
- ✓ Control/keep proper Residual Chlorine value at water tap.
(0.1 to 0.2 mg/L)



2-2 The Outline of Water Supply Facilities

■ Function of Clear Water Reservoir

- ✓ To adjust the imbalance between the flow rate of filtration and that of transmission.
- ✓ To storage the required amount of treated water in preparation for a sudden accident, facility inspection etc.

** In most cases, Clear Water Reservoir is used as Service Reservoir.*





2-2 The Outline of Water Supply Facilities

- Typical System of Volute Pump





2-2 The Outline of Water Supply Facilities

■ Typical Composition of the Electrical Panel Surface





2-2 The Outline of Water Supply Facilities

■ Typical Composition of the Devices Inside Panel



2-2 The Outline of Water Supply Facilities

■ Function of Electrical Panel

- ✓ To provide the electrical power from the commercial power supply for the related mechanical equipment such as well pump, volute pump, chlorination unit (pump type) etc.
- ✓ To operate and control the above mechanical equipment.
- ✓ To stop providing the electrical power in case of abnormal condition such as over current, leakage of electricity (short circuit) etc. by the protecting device.



2-2 The Outline of Water Supply Facilities

■ Function of Stand-by Generator

- ✓ To provide the electrical power for the related mechanical equipment such as well pump, volute pump, chlorination unit (pump type) etc. in case of power cut or emergency.
- ✓ Stand-by Generator consists of engine part and generator part. Fuel is required for the engine to rotate the generator in order to generate electricity.



Basic Training for Water Users and Sanitation Committees in Semi-Urban Towns

Module 2: Management of Water Supply Facilities (1)

Version 2: 9 November, 2020



WASMiP



Department of Water Supply and Sewerage Management
DWSSM Building, Panipokhari, Maharajgunj, Kathmandu, Nepal

For providing safe and quality drinking water to people

National Water Supply and Sanitation Training Center
Training Center, Nagarkot, Bhaktapur, Nepal



Module 3

Management of Water Supply Facilities (2) **- Daily Inspection and Keeping Records -**



Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns

3-1 The Purpose of Daily Inspection and Keeping Records

■ Watch the Following Video Material;

- No.11: Objective of Daily Operation and Maintenance
(2:16)**



3-1 The Purpose of Daily Inspection and Keeping Records

■ The Purpose of Daily Inspection & Keeping Records

- The purpose of Keeping Records;
 - ✓ To share the operation data and inspection results with the related person.
 - ✓ To utilize the obtained data for not only diagnosing / evaluation of facility / equipment condition, but also calculating KPIs.



3-2 Method of Daily Inspection and Trouble Shooting

■ Location, Point and Method of Daily Inspection


- Basically, Daily Inspection for each water supply facility / equipment shall be conducted in accordance with the SOP.
- Location, point and method of Daily Inspection for each water supply facility / equipment are shown in the following slides and video materials.





3-2 Method of Daily Inspection and Trouble Shooting


□ Intake Facility / Surface Water Source

- ✓ In case that garbage or floating wood etc. is found at the Intake, it shall be removed manually.
 - ✓ In case that oil or other abnormalities related to water quality is found at the Intake, proper measure shall be taken in accordance with SOP.
- 



3-2 Method of Daily Inspection and Trouble Shooting

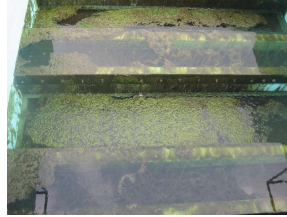
Sedimentation Tank

- ✓ Turbidity of Inlet Water
 - ✓ pH of Inlet Water
 - ✓ Oil or other abnormalities
 - ✓ Scum or Algae
- 

3-2 Method of Daily Inspection and Trouble Shooting

□ The Timing of Hydraulic Cleaning for RF

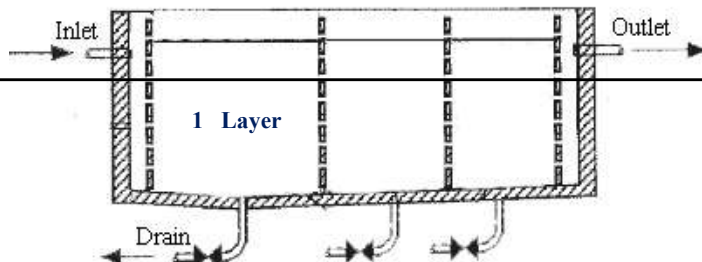
- ✓ Turbidity of outlet water exceeds 10 NTU.
- ✓ Water level reach to the high water level.
- ✓ Abnormal condition (algae bloom etc.)
- ✓ **At least once a month**



13

□ Procedure of Hydraulic Cleaning for RF

3-2 Method of Daily Inspection and Trouble Shooting



2 Layer 3 Layer

- ✓ Open the Drain Valve to wash out the inside mud /silts of 1 layer.
- ✓ After finishing the cleaning, close the Drain Valve of 1 Layer.
- ✓ Continue the above procedure for 2 and 3 Layer sequentially.



3-2 Method of Daily Inspection and Trouble Shooting

- Trouble Shooting of RF



3-2 Method of Daily Inspection and Trouble Shooting

□ Daily Inspection Points of SSF (2)

Filtration rate can be measured/checked by flow meter (if installed) or the overflow depth at V-notch. Figure-1 shows an example of filtration rate calculation in case of V-notch.

$$Q = C \times h$$

$$C = 1.35 + (0.004/h) + (0.14 + 0.2/W) (h/B - 0.09)$$

Q (m³/s): Flow Rate

h (m): Overflow Depth (0.07 to 0.26 m and less than B/3 m)

B (m): Width of Channel (0.5 to 1.2 m)

W (m): Height from the Bottom of Channel to the Bottom of V-notch (0.1 to 0.75 m)

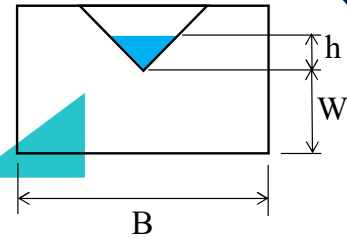


Figure-1. Example of Filtration Rate Calculation (V-notch)

5/2

1/2

3

□ Trouble Shooting of SSF

3-2 Method of Daily Inspection and Trouble Shooting



3-2 Method of Daily Inspection and Trouble Shooting

- Watch the Following Video Material;

- No.14: Daily Operation and Maintenance: Groundwater Facilities (3:54)





3-2 Method of Daily Inspection and Trouble Shooting

□ Daily Inspection Points of Well Pump (1)





3-2 Method of Daily Inspection and Trouble Shooting

□ Major Trouble Shooting of Well Pump (1)





3-2 Method of Daily Inspection and Trouble Shooting

□ Major Trouble Shooting of Well Pump (3)



3-2 Method of Daily Inspection and Trouble Shooting

☐ Daily Inspection Points of Aeration Facility (2)

- ✓ Water level
- ✓ Pressure (as per the design value)



☐ Trouble Shooting of Aeration Facility

3-2 Method of Daily Inspection and Trouble Shooting

3-2 Method of Daily Inspection and Trouble Shooting

□ Daily Inspection Points of Pressure Filter (1)

- ✓ Turbidity (Outlet)
- ✓ Appearance and abnormalities
- ✓ Flow rate of inlet (as per the design value)
- ✓ Pressure of Inlet / Outlet (as per the design value)

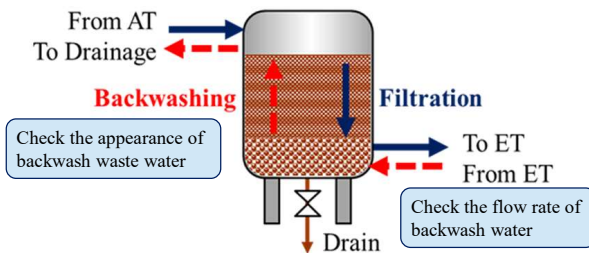


29

□ Daily Inspection Points of Pressure Filter (2)

3-2 Method of Daily Inspection and Trouble Shooting

- ✓ Appearance of backwash waste water



30

3-2 Method of Daily Inspection and Trouble Shooting

□ Key Points of Backwash for Pressure Filter

✓ Timing

✓ **Filtration resistance** (differential pressure between inlet and outlet of Pressure Filter) increase.

✓ **Once in a day** is recommended.

It depends on the filtration resistance of pressure filter.

The desirable back-wash duration is **at least 10 minutes**.

It depends on the condition/dirtiness of filter media.



3-2 Method of Daily Inspection and Trouble Shooting

- Trouble Shooting of Pressure Filter (1)



3-2 Method of Daily Inspection and Trouble Shooting

■ Watch the Following Video Material;

- No.15: Daily Operation and Maintenance: Chlorination
Unit (3:45)



3-2 Method of Daily Inspection and Trouble Shooting

□ Daily Inspection Points of Chlorination Unit (2)

- ✓ Heat generation of mixer
- ✓ Heat generation of pump (for Pump Type)



37

□ Daily Inspection Points of Chlorination Unit (3)

3-2 Method of Daily Inspection and Trouble Shooting

- ✓ Liquid Level of Tank
- ✓ Discharge Pressure (for Pump Type)



38

3-2 Method of Daily Inspection and Trouble Shooting

☐ Daily Inspection Points of Chlorination Unit (4)

- ✓ Used Amount of Bleaching Powder
- ✓ Stock of Bleaching Powder



☐ Weekly Inspection Points of Chlorination Unit (1)

- ✓ Check / measure the actual dosing amount by using measuring cylinder at least once a week.

3-2 Method of Daily Inspection and Trouble Shooting

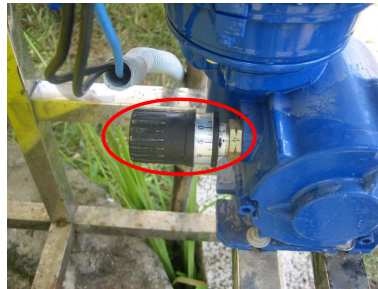
3-2 Method of Daily Inspection and Trouble Shooting

□ Weekly Inspection Points of Chlorination Unit(2)

- ✓ In case that the measured dosing amount exceeds or lacks comparing with the design value, adjust the pump stroke by the stroke adjusting screw.

Don't touch the stroke adjusting screw during the pump is stopped.

The calibration curve provided by the Contractor shall be referred.



□ Weekly Inspection Points of Chlorination Unit (Reference)

3-2 Method of Daily Inspection and Trouble Shooting

- ✓ Dosing rate of chlorine shall be set in accordance with the following table.

Water Source	Dosing Rate (mg/L)
Spring	1.5 to 2.0
Deep Well	0.5 to 1.0
Shallow Well	1.0 to 1.5

(Design Guidelines for Community Based Gravity Flow Rural Water Supply Schemes Vol. VI, 2002, DWSS)

3-2 Method of Daily Inspection and Trouble Shooting

□ Weekly Inspection Points of Chlorination Unit

(Reference)

- ✓ Dosing amount of chlorine solution shall be calculated by the following formula;

$$W = Q \times Rs \times (100/C) \times (1/\rho) \times 10$$

W : Dosing amount (L/hr)

Q : Flow Rate (m³/hr)

Rs: Dosing Rate of Chlorine (mg/L)

C : Concentration of Chlorine Solution (%) 1.0 %, normally

ρ : Specific Gravity approx. 1.0

3

1



3-2 Method of Daily Inspection and Trouble Shooting

□ Procedure to Prepare Chlorine Solution (2)

- ✓ Pour water up to half of the tank.
- ✓ Start mixing (Push the start switch on the control panel).
- ✓ Add the bleaching powder gradually in order to prevent from generating un-dissolved lumps as shown below.





3-2 Method of Daily Inspection and Trouble Shooting

- Trouble Shooting of Chlorination Facility (1)



3-2 Method of Daily Inspection and Trouble Shooting

☐ Daily Inspection Points of Clear Water Reservoir

- ✓ Turbidity (Outlet)
- ✓ pH (Outlet)
- ✓ Color (Outlet) *if possible
- ✓ Taste and Odor (Outlet)
- ✓ Residual Chlorine (Outlet)
- ✓ Water level



☐ Trouble Shooting of Clear Water Reservoir

3-2 Method of Daily Inspection and Trouble Shooting



3-2 Method of Daily Inspection and Trouble Shooting

- Typical System of the Volute Pump



3-2 Method of Daily Inspection and Trouble Shooting

□ Daily Inspection Points of Volute Pump (1)

- ✓ Appearance, leakage or other abnormalities
- ✓ Abnormal noise, vibration and sound
- ✓ Lubricant level
- ✓ Excessive heat generation of the gland packing
- ✓ Discharge / suction pressure, flow rate, water level of the related tank
- ✓ Voltage and current (Control Panel)

□ Daily Inspection Points of Volute Pump (2)

- ✓ Excessive heat generation of the gland packing can be monitored by sense of touch.

3-2 Method of Daily Inspection and Trouble Shooting

Surface Temperature	Sense of Touch	Remarks
40 °C	Somewhat warm	Feeling Slightly to the touch.
45 °C	Warm	Feel comfortably warm.
50 °C	Somewhat hot	Palm of the hand reddens if placed on the unit for extended periods.
60 °C	Hot	Can hold your hand on the unit for 3-4 seconds.
70 °C	Extremely hot	Can hold one finger on the unit for 3 seconds.
80 °C	Extremely hot	Can hold one finger on the unit for only 1 seconds.

3-3 How to keep Daily Operation / Inspection Record

□ Keeping Record of Daily Intake Amount

- ✓ Read and record the value of each intake flow meter at the designated time.
- ✓ Calculate the daily intake amount of each water source.
- ✓ Record the calculated value on the sheets.

Daily Intake of Water Source Record Sheet



□ Example (Refer to Form 3.1-1)

3-3 How to keep Daily Operation / Inspection Record

Name of the Source				
Month/Year		A source	Approved by	
Month/Year		Aug-19	Prepared by	
Day	Time of Meter (hour:minute)	Meter Reading Value (m)	Daily Intake Amount (m /day)	Remarks
1	55 10:00	1,354	408	
2	10:00	1,762	396	
3		2158	472	
4		2630		
5				

- i. Fill in the v
name. 28
- ii. Fill in the n
of the recor

3-3 How to keep Daily Operation / Inspection Record

□ Keeping Record of Daily Distribution Amount

- ✓ Read and record the value of each distribution flow meter at the designated time.
- ✓ Calculate the daily distribution amount.
- ✓ Record the calculated value on the sheets.

Daily Water Distribution Flow Record Sheet



□ Example (Refer to Form 3.3-1)

3-3 How to keep Daily Operation / Inspection Record

Daily Water Distribution Flow Record Sheet				
		A Reservoir		
		Jul-2018		
Day	Time of Meter (hour:minute)	Meter Reading Value (m)	Daily Water (m /day)	Remarks
1	10:00	1,354	408	Approved by
2	10:00	1,762	396	Prepared by
3	10:00	2,158	472	
4	10:00	2,630		
5				
6	57			



3-3 How to keep Daily Operation / Inspection Record

- **Daily Operation Record (Refer to Form 3.2-1 to 3.2-3)**
- ✓ Keep the necessary record of operation condition, water quality and other related information on the Daily Operation Record Sheet every day.

Daily Operation Record Sheet (Pattern A, B, C)

3-4 Group Work (Exercise)

■ Group Discussion: 20 min (according to the situation)

- Try to calculate the dosing amount of chlorine solution in case of the following conditions;

$$Q = 1,500 \text{ m}^3/\text{day}$$

$$R_s = 0.5 \text{ mg/L}$$

$$C = 1.0 (\%)$$

$$\rho = 1.05$$

$$W = Q \times R_s \times (100/C) \times (1/\rho) \times 10 = \underline{71.4 \text{ (L/day)}}$$

- Short Presentation: 1 min / group (according to the situation)

1

■ Exercise

1

-3

3-4 Group Work (Exercise)

□ Operation and Inspection of Chlorination Unit

- ✓ Understand how to operate and inspect a Chlorination Unit by practicing the following activities;
- Preparing 1 % of Chlorine Solution
- Operation of Pump
- Daily & Periodic Inspection

Basic Training for Water Users and Sanitation Committees in Semi-Urban Towns

Module 3: Management of Water Supply Facilities (2) -Daily Inspection and Keeping Records-

Version 2: 9 November, 2020



WASMiP



For providing safe and quality drinking water to people

Department of Water Supply and Sewerage Management
DWSSM Building, Panipokhari, Maharajgunj, Kathmandu, Nepal

National Water Supply and Sanitation Training Center
Training Center, Nagarkot, Bhaktapur, Nepal

3-4 Group Work (Exercise)

- **Group Discussion: 20 min (according to the situation)**
- Try to calculate the dosing amount of chlorine solution in case of the following conditions;

$$Q = 1,500 \text{ m /day}$$

$$R_s = 0.5 \text{ mg/L}$$

$$C = 1.0 (\%)$$

$$\rho = 1.05 \quad 3$$

$$W = Q \times R_s \times (100/C) \times (1/\rho) \times 10 = \underline{\hspace{2cm}} \text{ (L/day)}$$

- **Short Presentation: 1 min / group (according to the situation)**



Module 4

Management of Water Supply Facilities (3) - Periodic Inspection -



Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns



4-1 The Purpose of Periodic Inspection and Keeping Records

■ The Purpose of Periodic Inspection

- ✓ To conduct the detail inspection which can check / inspect the inside of each water supply facility / equipment periodically in order to evaluate the soundness of them.



4-2 Method of Periodic Inspection

■ Watch the Following Video Material;

- No.16: Periodic Inspection and Maintenance: Intake Facilities (1:37)
- No.17: Periodic Inspection and Maintenance: Sedimentation Tank (3:33)



4-2 Method of Periodic Inspection

❑ Receiving Well, Collection Chamber

- ✓ Strainer / net shall be checked and cleaned. (Monthly Inspection)
- ✓ Crack or Leakage on the body of civil structure shall be checked. (Yearly Inspection)



7

7

❑ Sedimentation Tank

4-2 Method of Periodic Inspection
✓ Amount of sediment shall be checked by observation. (Weekly Inspection)

- ✓ Crack or Leakage on the body of civil structure shall be checked. (Yearly Inspection)
- ✓ Cleaning inside shall be performed. (Yearly Maintenance)



8

8

4-2 Method of Periodic Inspection

■ Watch the Following Video Material;

- No.18: Periodic Inspection and Maintenance: Roughing Filter (2:02)
- No.19: Periodic Inspection and Maintenance: Slow Sand Filter (3:40)



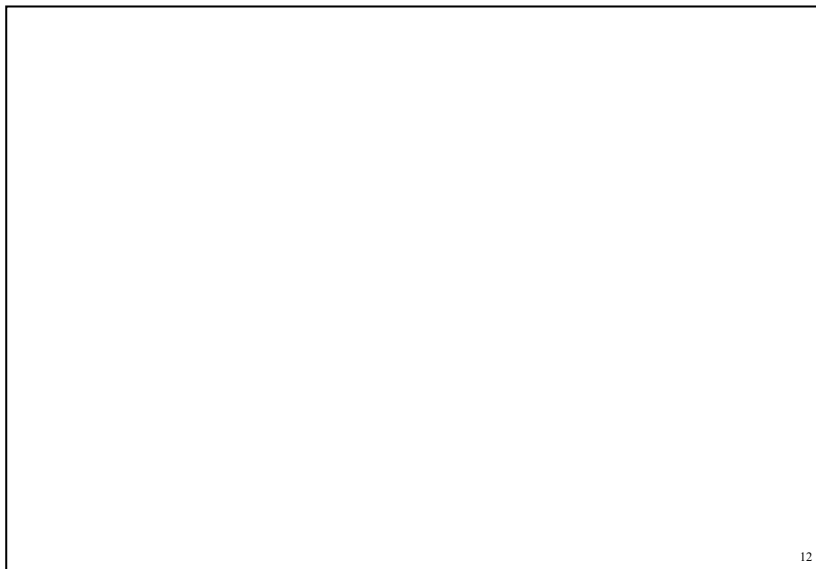
4-2 Method of Periodic Inspection

☐ Slow Sand Filter (SSF)

- ✓ Crack or Leakage on the body of civil structure shall be checked. (Yearly Inspection)

11

11



12



4-2 Method of Periodic Inspection

□ SSF / Procedure of Scraping Sand





4-2 Method of Periodic Inspection

SSF / Washing of Scraped Sand (2/3)

- ✓ Sand Washer

(Refer to the O&M Manual of Dhulabari WTP)





4-2 Method of Periodic Inspection

- SSF / Re-sanding



4-2 Method of Periodic Inspection

■ Watch the Following Video Material;

- No.20: Clamp Meter(3:37)
- No.21: Insulation Tester (1:26)
- No.22: Periodic Inspection and Maintenance: Pumps
(4:32)



4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Well Pump

(Recommended frequency: Every 2 to 3 Years)



4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Volute Pump (Monthly)

23



4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Volute Pump

(Recommended frequency: Every 1 to 4 Years)

25



4-2 Method of Periodic Inspection

■ Watch the Following Video Material;

- No.23: Periodic Inspection and Maintenance: Electrical Panel (1:44)



4-2 Method of Periodic Inspection

- Typical Composition of the Devices Inside Panel



4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Electrical Panel (Weekly)

Frequency of Inspection	Monitoring / Inspection Points	Method
Weekly	✓ Intrusion path (Inside Panel)	✓ Check whether there is no hole or crack on enclosure.
	✓ Noise (Inside Panel)	✓ Check whether there is no noise from components.
	✓ Cable (Inside Panel)	✓ Check whether there is no cut.

31

31

□ Periodic Inspection Points of Electrical Panel (Monthly)

Frequency of Inspection	Monitoring / Inspection Points	Method
Monthly	✓ Voltage by clamp meter	<ul style="list-style-type: none"> ✓ Measure voltage by using clamp meter. ✓ Acceptance criteria is $\pm 10\%$ of rating voltage.
	✓ Voltage on voltage meter (panel surface)	<ul style="list-style-type: none"> ✓ Check voltage value shown on the meter. ✓ Acceptance criteria is $\pm 3\%$ of clamp meter value.
	✓ Ampere by clamp meter	<ul style="list-style-type: none"> ✓ Measure ampere by using clamp meter. ✓ Acceptance criteria is less than rating ampere.
	✓ Ampere on ampere meter (panel surface)	<ul style="list-style-type: none"> ✓ Check ampere value shown on the meter. ✓ Acceptance criteria is $\pm 3\%$ of clamp meter value.

32

32

4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Electrical Panel (Monthly)

Frequency of Inspection	Monitoring / Inspection Points	Method
Monthly	✓ Over/under Voltage Relay	<ul style="list-style-type: none"> ✓ Check whether over-voltage trip test button works properly. ✓ Check whether under-voltage trip test button works properly.
	✓ Thermal Relay	<ul style="list-style-type: none"> ✓ Check whether trip test button works properly.

33

33

□ Periodic Inspection Points of Electrical Panel (Yearly)

Frequency of Inspection	Monitoring / Inspection Points	Method
Yearly	✓ Continuity of Circuit Breaker	<ul style="list-style-type: none"> ✓ Check the continuity by using insulation continuity tester.
	✓ Continuity of Magnetic Contactor	<ul style="list-style-type: none"> ✓ Check the continuity by using insulation continuity tester.
	✓ Insulation between lines	<ul style="list-style-type: none"> ✓ Measure the insulation by using insulation continuity tester. ✓ Criteria is shown as below; More than 1.0 MΩ: Good More than 0.4 MΩ: Need to clean up or care Less than 0.4 MΩ: Repair immediately
	✓ Earth Resistance	<ul style="list-style-type: none"> ✓ Measure the earth resistance by using earth tester. ✓ Acceptance criteria is less than 10Ω

34

34

4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Electrical Panel (General)

These instruments are used in accordance with the instruction manual.

Especially, in case of checking / measuring the following items, **Circuit**

Breaker must be turned off for safety.

- ✓ Over/under Voltage Relay (Monthly)
- ✓ Thermal Relay (Monthly)
- ✓ Continuity of Circuit Breaker (Yearly)
- ✓ Continuity of Magnetic Contactor (Yearly)
- ✓ Insulation between lines (Yearly)
- ✓ Earth Resistance (Yearly)





4-2 Method of Periodic Inspection

□ Periodic Inspection Points of Stand-by Generator

- ✓ Periodic inspection and O&M works for Stand-by Generator shall be conducted in accordance with the manufacturer's instruction manual.





4-2 Method of Periodic Inspection



4-3 How to keep Periodic Inspection Record

Periodic Inspection Record for M&E Equipment (1)

- ✓ The results of Periodic Inspection for M&E equipment shall be recorded properly.

A Sample of Weekly Record Sheet (Form 3.2-5)



Location:
(Facility):

Sr. Inspection Date
No. (mm-dd)

4-3 How to keep Periodic Inspection Record

[YEARLY] CHECK LIST
(Pump Facility)

Periodic Inspection Record for M&E Equipment (3)

DATE (yyyy-mm-dd)
from _____ to _____

Location:
(Facility):

Inspection Items for Electrical Panel Condition **!DISCONNECT POWER SUPPLY BEFORE CHECKING!** Motor & Pump Conditions

Continuity Test of Components
by Clamp-multi Tester

Insulation Test

Earth Resistance
Vibration and Temperature

Motor Specification:
 Rated Capacity (kW/HP) _____
 Rated Voltage (V) _____ Rated Current(A) _____
 Efficiency _____ Power Factor _____ RPM _____

Sr.
No.

Sr. No.	MCCB	MCB1	MCB2	K1	K2	K3	Fuse	Panel side			Drive End	Drive End	Temperature
								U1-V1	V1-W1	W1-U1			
1													
2													
3													

A Sample of Yearly Record Sheet (Form 3.2-5)

* These items s
supplier or ma

Basic Training for Water Users and Sanitation Committees in Semi-Urban Towns

Module 4: Management of Water Supply Facilities (3) -Periodic Inspection-

Version 2: 9 November, 2020



WASMiP



For providing safe and quality drinking water to people

Department of Water Supply and Sewerage Management
DWSSM Building, Panipokhari, Maharajgunj, Kathmandu, Nepal

National Water Supply and Sanitation Training Center
Training Center, Nagarkot, Bhaktapur, Nepal



Module 5

Water Quality Management



Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns

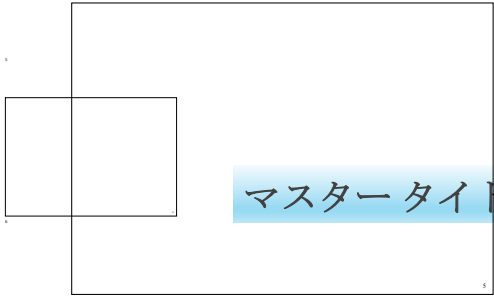


5-1 Scope of Water Quality Management

■ Watch the Following Video Material;

- No.25: Water Quality Management (3:12)

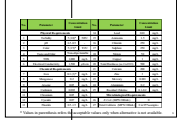




マスタータイトルの書式設定

マスタータイトルの書式設定





品名	単価	数量	金額
りんご	100	10	1000
バナナ	80	10	800
みかん	120	10	1200
梨	90	10	900
ぶどう	150	10	1500
いちじく	110	10	1100
みもも	130	10	1300
なし	100	10	1000
りんご	100	10	1000
バナナ	80	10	800
みかん	120	10	1200
梨	90	10	900
ぶどう	150	10	1500
いちじく	110	10	1100
みもも	130	10	1300
なし	100	10	1000

マスタータイトルの書式設定



マスタータイトルの書式設定



No.	Parameter	Concentration Limit
Physical Requirements		
1	Turbidity	≤ 1.0 NTU
2	pH	6.5-8.5
3	Color	≤ 15 PCU
4	Total Chlorine	Non-Detectable
5	Electrical Conductivity	≤ 500 µS/cm
Chemical Requirements		
6	Iron	0.3 mg/L
7	Manganese	0.05 mg/L
8	Asbestos	0.01 mg/L
9	Fluoride	0.5-1.5 mg/L
10	Ammonia	≤ 1.0 mg/L
11	Nitrate	≤ 50 mg/L
12	Total Hardness (as CaCO ₃)	≥ 50 mg/L
13	Calcium	≥ 20 mg/L
14	Residual Chlorine	≥ 0.2 mg/L
Microbiological Requirements		
15	E. Coli (MPN/100ml)	0
16	Total Coliforms (MPN/100ml)	0 in 10% samples

データの書式設定

マスタータイトルの書式設定

5-3 Procedure of Water Quality Test

■ Watch the Following Video Material;

- No.27: Turbidity Tube and Visual Inspection (1:48)
- No.28: ENPHO Test Kit (2:09)
- No.30: Free Residual Chlorine (1:33)
- No.31: pH (1:50)



5-3 Procedure of Water Quality Test
Measurable Parameters of each Test Kit (1/2)

POTATEST (Wagtech)



**Turbidity, pH, R-Cl,
E.coli, Total Coliform**

ENPHO Water Test Kit



**pH, Iron, Ammonia, Chloride,
Nitrate, Total Hardness, R-Cl,
E.coli, Total Coliform,
Temperature, Phosphate**

Measurable Parameters of each Test Kit (2/2)

In daily water quality monitoring, **at least 4 parameters;**
Turbidity, pH, Taste & Odor, Residual Chlorine shall be measured.

- As for Color, visual examination shall be conducted in case that Color Meter is not available.
- Other parameters shall be measured at DWSS Regional Lab, DWSS Central Lab or other private Lab in accordance with NDWQS and Directives.

5-4 Procedure of Water Quality Management

- **Watch the Following Video Material;**

- No.26: Sampling Point of Water (2:00)





5.4 Procedure of Water Quality Management

- Target Water Quality at each Location of Pattern A to C
- 

5-4 Procedure of Water Quality Management

☐ Water Quality Monitoring and Control

The following parameters shall be measured every day, and the results shall be recorded in **Form 3.2-1**.

- ✓ Turbidity
- ✓ pH
- ✓ EC (if possible)





5-4 Procedure of Water Quality Management

☐ Water Quality Monitoring and Control

The following parameters shall be measured every day, and the results shall be recorded in **Form 3.2-1**.

- ✓ Turbidity
- ✓ pH





5.4 Procedure of Water Quality Management

☐ Water Quality Monitoring and Control (1/2)

The following parameters shall be measured every day, and the results shall be recorded in **Form 3.2-1**.

- ✓ Turbidity



5-4 Procedure of Water Quality Management

■ Water Quality Management at Slow Sand Filter (d)

- Example of sampling point



- ✓ Outlet of Slow Sand Filter is suitable for sampling.

■ Water Quality Management at Slow Sand Filter (d)

- Point for sampling

5-4 Procedure of Water Quality Management

It is necessary to avoid slip, falling down or unusual positions by using water sampler as shown below.

5.4 Procedure of Water Quality Management

☐ Water Quality Monitoring and Control (1/2)

The following parameters shall be measured every day, and the results shall be recorded in **Form 3.2-1**.

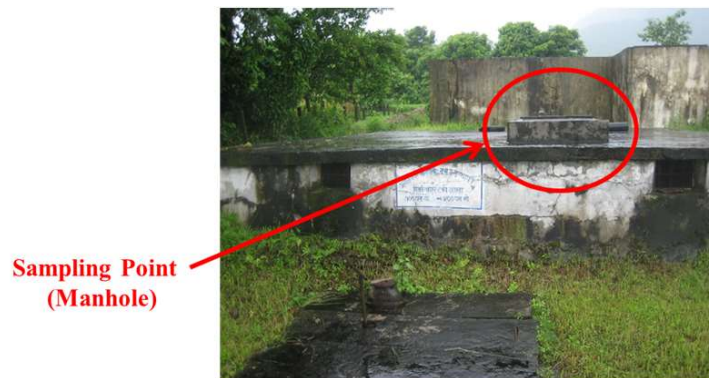
- ✓ Turbidity



5-4 Procedure of Water Quality Management

Water Quality Management at Clear Water Reservoir (e)

- Example of sampling point



- ✓ **Manhole of Clear Water Reservoir** is suitable for sampling.
- ✓ It is necessary to avoid slip, falling down or unusual positions by using water sampler.

- Water Quality Monitoring and Control (1/2)

The following parameters shall be measured every day, and

5-4 Procedure of Water Quality Management

the results shall be recorded in **Form 5.2-1.**

- ✓ Turbidity: Target value is **less than 5 NTU**
- ✓ pH: Target value is **6.5 to 8.5**
- ✓ Taste and Odor: Target value is **non-objectionable**
- ✓ Residual Chlorine: Target value is **0.1 to 0.2 mg/L (at the end point)**
- ✓ Color (if possible) : Target value is less than 5 TCU



5-4 Procedure of Water Quality Management

■ Surface Water / Pattern B

- Location to be Checked and Monitored Water Quality

Check/monitor the point **a**, **c**, **d** and **e** as shown below.

The results of water quality shall be recorded in **Form 3.2-1**.





5-4 Procedure of Water Quality Management

■ Ground Water / Pattern D

- Location to be Checked and Monitored Water Quality



5-4 Procedure of Water Quality Management
■ Water Quality Management at Intake/Well (a)

- Example of sampling point



- ✓ Wash out is suitable for sampling.

- Water Quality Monitoring and Control

The following parameters shall be measured every day, and

5-4 Procedure of Water Quality Management
the results shall be recorded in Form 3.2-2.

- ✓ Turbidity
- ✓ pH
- ✓ EC (if possible)

5-4 Procedure of Water Quality Management

Water Quality Management at Pressure Filter (b)

□ Example of sampling point



- ✓ **Drainage** is suitable sampling point to check the treated water of each Pressure Filter.
- ✓ In case that the drain valve can't be operated easily due to the problem with accessibility, the inlet of Clear Water Reservoir is also applicable as sampling point.

□ Water Quality Monitoring and Control

The following parameter shall be measured every day, and the results shall be recorded in Form 3.2-2.

- ✓ Turbidity

5-4 Procedure of Water Quality Management

Water Quality Management at Elevated Tank (c) or Clear

Water Reservoir (c')

- Example of sampling point



- ✓ **Wash out installed on the outlet pipe or Drainage** is suitable for sampling of the Elevated Tank.
- ✓ In case that the above points can't be used, the manhole of Clear Water Reservoir is applicable for sampling.

- Water Quality Monitoring and Control

The following parameters shall be measured every day, and

the results shall be recorded in Form 5.2-2.

- ✓ Turbidity: Target value is **less than 5 NTU**
- ✓ pH: Target value is **6.5 to 8.5**
- ✓ Taste and Odor: Target value is **non-objectionable**
- ✓ Residual Chlorine: Target value is **0.1 to 0.2 mg/L (at the end point)**
- ✓ Color (if possible) : Target value is less than 5 TCU



5-4 Procedure of Water Quality Management

■ Ground Water / Pattern E

- Location to be Checked and Monitored Water Quality

Check/monitor the point **a** and **c/c'** as shown below.

The results of water quality shall be recorded in **Form 3.2-2**.



5.4 Procedure of Water Quality Management

□ Points of Methods and Sampling

- ✓ distribution pipeline in gravity fed and pumping schemes.
- ✓ each 5 km of primary, secondary and tertiary distribution pipelines.
- ✓ public stand posts
- ✓ private tap connected with the shortest connection pipe
- ✓ a sampling point should be on the distribution pipe line itself
- ✓ the outlet of the water tank or reservoir



5-4 Procedure of Water Quality Management

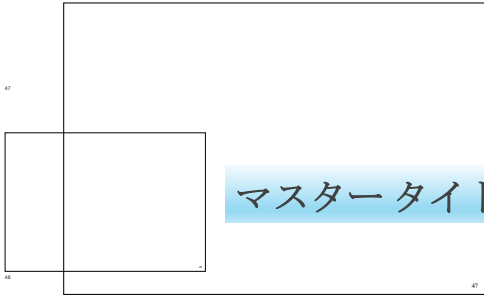
- Exercise: Which point is/are suitable for water sampling in this distribution system ?

5-5 Trouble Shooting

■ Action at water quality trouble (1/2)

In case of water quality trouble, the following measures should be taken in order to minimize its influence.

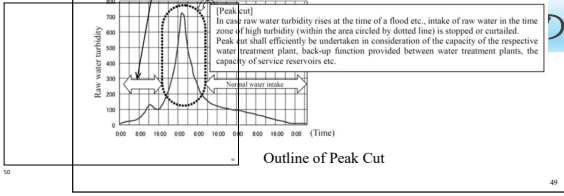
- ✓ Investigate the source
- ✓ Identify the causative substance
- ✓ Remove the causative substance (If impossible, it is necessary to stop water intake and distribution)
- ✓ Inform consumers / stakeholders



マスタータイトルの書式設定

マスタータイトルの書式設定

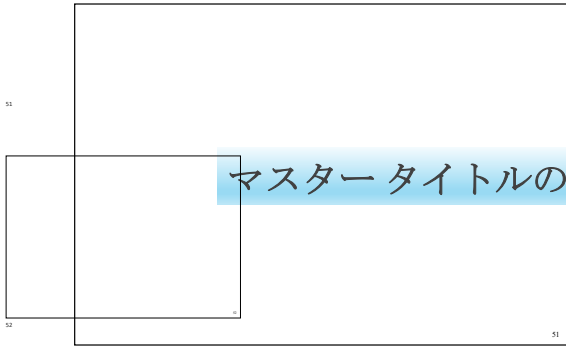




書式設定

マスタータイトルの書式設定

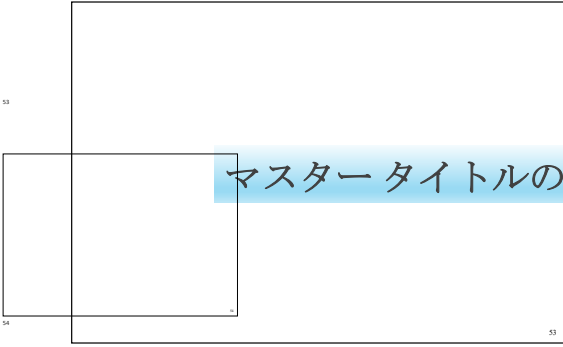




マスタータイトルの書式設定

マスタータイトルの書式設定





マスタータイトルの書式設定

マスタータイトルの書式設定



55

55

マスタータイトルの書式設定



マスタータイトルの書式設定



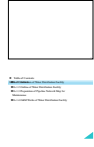
5-6 Practical Training of Water Test Kit

■ Practical Training of ENPHO Water Test Kit

□ Exercise in Groups

- ✓ The detail procedure is also shown in the Operational Manual attached with the test kit.
- ✓ At least 3 daily parameters; turbidity (by using tube type turbidity meter), pH, residual chlorine shall be learned perfectly.





Module 6-1

Water Distribution Facility




Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns



6-1.1 Definition of Water Distribution Facility

■ Watch the Following Video Material;

- No.36.1: Distribution Network 1 (2:59)
 - No.36.2: Distribution Network 2 (2:40)
 - No.37: Valve and Fire Hydrant (3:30)
- 

6-1.2 Outline of Water Distribution Facility

■ Service Reservoir

□ Function of Service Reservoir

- ✓ Absorption of water demand fluctuation

- ✓ Water storage for fire fighting

- ✓ Water storage for emergency

* To fulfill its function, Service Reservoir shall have sufficient capacity. Generally, water demand fluctuation of the smaller scale water supply system is larger.



6-1.2 Outline of Water Distribution Facility

■ Distribution Pipeline

□ Function of Distribution Pipeline

- ✓ Distribute treated water from a service reservoir to a town
- ✓ Provide water for fire fighting

□ Material of Pipeline

- ✓ Common material in Nepal: DCI, GI, HDPE



Ductile Cast Iron



Galvanized Iron



High Density Polyethylene



6-1.2 Outline of Water Distribution Facility

■ Valves

□ Type of Valves

- ✓ Generally, Gate Valve, Butterfly Valve, Air Valve and Fire Hydrant are used in a water distribution network.



Gate Valve



Butterfly Valve



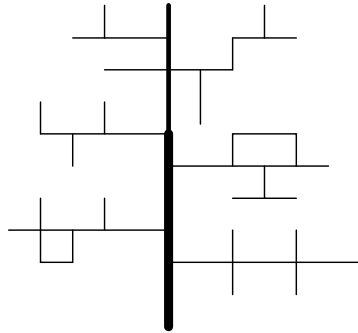
Air Valve



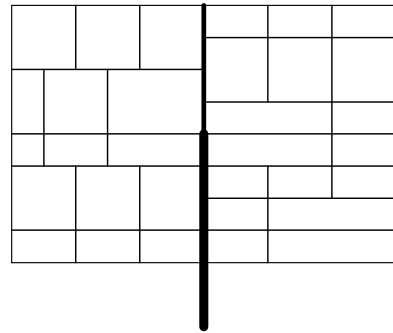
Fire Hydrant

6-1.3 Distribution Network System

■ Type of Distribution System



Tree Type Distribution System



Grid Type Distribution System

マスタータイトルの書式設定

13

マスタータイトルの書式設定

13

6-1.4 Preparation of Pipeline Network Map for Maintenance

■ Pipeline Network Map

□ Necessity of the Map

- ✓ Difficult to confirm condition of pipelines because they are buried
- ✓ Enormous length and various material pipelines are buried in various environments
- ✓ To conduct appropriate maintenance of pipelines like this, putting the information of pipelines together is necessary.



6-1.4 Preparation of Pipeline Network Map for Maintenance

- ❑ Periodical Update of the Map
 - ✓ Timing: after laying of new pipelines and/or replacement of old pipelines
 - ✓ Frequency of update: once a year (recommended)
- ❑ Idea of Map Utilization for Other Purpose
 - ✓ Put marks on the map where consumers complain about water supply service (e.g. water pressure, water quality)
 - ✓ WUSCs are able to make a water supply improvement plan using the information, and carry out the plan.



6-1.5 O&M Works of Water Distribution Facility

■ Procedures for Distribution Flow Management

□ Procedure-1: Preparation

- ✓ Make a plan for bulk meter reading
- ✓ The plan shall include;
 - Time schedule of meter reading,
 - Staff allocation,
 - Transportation,
 - Record management, etc.



マスタータイトルの書式設定



6-1.5 O&M Works of Water Distribution Facility

☐ Form 3.3-2 (in case of two water sources)

①

②					
③					
				Month/Year	Jul-2018
				Approved by	④
Daily Water Distribution Flow Prepared by					
Day	A Reservoir (m /day)	B Reservoir (m /day)	Reservoir C (m /day)	Reservoir D (m /day)	Total (m /day)
1	208	408			616
2	236	396			632
3	238	472			710
29	238	372			610
30	223	386			609
31	231	412			643
Total (m /month)	7,200	12,556			19,756
					637
					710
					602

Daily Average
 Daily Maximum
 Daily Minimum

3

3

3

3



①

②

6-1.5 O&M Works of Water Distribution Facility

■ Procedures for Daily Inspection

□ Procedure-1: Make an Inspection Plan

- ✓ Make a daily inspection plan for reservoir(s)
- ✓ The plan shall include;
 - Staff allocation,
 - Transportation,
 - Record management, etc.



6-1.5 O&M Works of Water Distribution Facility

■ Procedures for Cleaning Inside of Service Reservoir

□ Procedure-1: Before Cleaning

- ✓ Announce the duration of water supply suspension to customers (if necessary)

□ Procedure-2: Cleaning Inside of Service Reservoir

- ✓ Close an inlet valve of the reservoir
- ✓ Stop chlorine injection (if necessary)
- ✓ Close an outlet valve of the reservoir after water level of the reservoir sinks



6-1.5 O&M Works of Water Distribution Facility


□ Example of Frequency of Pipeline Patrol

Category	Frequency	Remarks
Old Pipelines	1 cycle per month	40 years and more after construction
Other Pipelines	4 cycle per year	



6-1.5 O&M Works of Water Distribution Facility

■ Watching the Following Video Material;

- Patrol Inspection for Water Distribution Facility (Gate Valve)
 - Patrol Inspection for Water Distribution Facility (Fire Hydrant)
- 

Basic Training for Water Users and Sanitation Committees in Semi-Urban Towns

Module 6-1: Water Distribution Facility

Version 2: 9 November, 2020



WASMiP



Department of Water Supply and Sewerage Management
DWSSM Building, Panipokhari, Maharajgunj, Kathmandu, Nepal

For providing safe and quality drinking water to people

National Water Supply and Sanitation Training Center
Training Center, Nagarkot, Bhaktapur, Nepal



Module 6-2

Household Connections and Water Meters



Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns



6-2.1 Outline of Household Connection and Water Meter

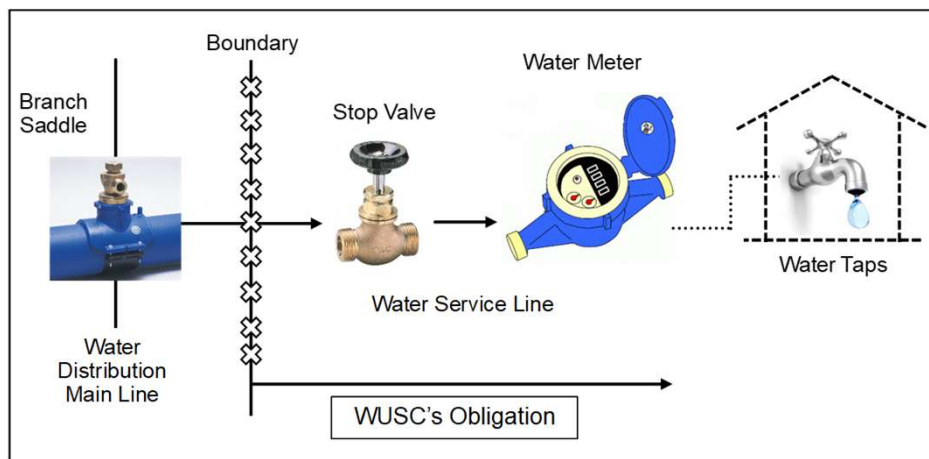
■ Watch the Following Video Material;

- No.38: Water Meter (1:38)



6-2.1 Outline of Household Connection and Water Meter

■ Pipes for Household Connections





6-2.1 Outline of Household Connection and Water Meter

- **Water Meters**

- **Functions**

- To measure water consumption

- For water charges and management of water demand



6-2.1 Outline of Household Connection and Water Meter

□ Rotary Index

Rotary index of water meter starts sensitivity

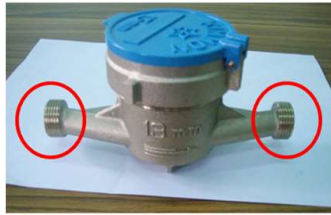
(trace flows such as water leakage)



6-2.2 Installation of Water Meter

□ Safe Meter Installation

- ✓ Not to drop
- ✓ Not to touch directly a screw joint part
- ✓ To put on cotton work gloves
- ✓ To use appropriate tools (wrench for plumbing)
- ✓ Not to pour hot water into water meter



11

11

□ Water Meter Storage

- ✓ Not to give water meter strong shock & vibration
- ✓ To cover nozzles
 - Wind cannot blow into inside
 - To prevent entering alien substances



12

12

6-2.2 Installation of Water Meter

❑ Proper Water Meter Location

- ✓ Easy place for installation and replacement
- ✓ Easy meter reading
- ✓ Not submerged
- ✓ No influence of vibration



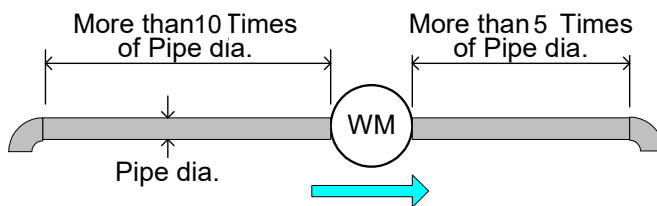
13

❑ Proper Water Meter Installation

- ✓ To set the meter horizontally with indicator upward

6-2.2 Installation of Water Meter

- ✓ To prevent the influence of turbulence causing inaccurate weighing



6.2.2 Installation of Water Meter Responsibility of Installation and Maintenance for

Household Connection

Item	Category	WUSCs	Customers
			○
		Supply	○
Household Connection Installation		Installation	
		Cost Allocation	○
		Supply	
Water meter		Installation	



6.2.3 Water Meter Calibration

E (%) = $\frac{I - Q}{Q} \times 100$ Method of Instrumental Error

E: Instrumental error (%) (It shall be smaller than use tolerance)

I: Measured flow of tested water meter (L)

Q: Measured flow of master water meter (L)

$E(\%) < \pm 10\%$



6-2.3 Water Meter Calibration Procedure for Tolerance Test: Form 3.4-3

Use Tolerance Test Record Sheet		
		Approved by
		Prepared by
		Date of Test
Category	Item	Information
User Information	Tap Number	
	User Name	
	Address	
Tested Meter	Initial Value	
	Final Value	
	Difference (I)	
Master Meter	Initial Value	
	Final Value	
	Difference (Q)	
Use Tolerance	Cause of Malfunction	$E(\%) = (I-Q)/Q \times 100$, E is 10% and less => O.K. / over 10% => N.G.
Photo (Test Situation)		Signature
		User
		WUSC

19

■ Calculation Example 1

6-2	Type of Water Meter	Initial Value	Final Value	Difference
	Tested Meter	20.410 m	20.477 m	+0.0410 m (I)
		$E(\%) = (I-Q)/Q \times 100 = (0.0410 - 0.0400) / 0.0400 \times 100 = 2.5\%$		
		(User = 2.5% < 10% OK!)		
	Master Meter	20.3782 m	20.4182 m	+0.0400 m (Q)

3

3

3

3

3

3

6.2.3 Water Meter Calibration

Calculation Example 2

Type of Water Meter	Initial Value	Final Value	Difference
Tested Meter (User's)	109.1067 m	109.1417 m	+0.0350 m (I)
Master Meter	20.3782 m	20.4182 m	+0.0400 m (Q)

$$E (\%) = \frac{(I-Q)}{Q} \times 100$$

$$= \frac{(0.0350-0.0400)}{0.0400} \times 100$$

$$= -12.5 \% > 10\% \quad \text{N.G!}$$

(Replace Tested Meter)

3

3

3

3

3

3



6-2.4 Common Problems and Countermeasures for Water Meter

■ Major Problems of Water Meter (2)

5. **Leakage from meter:** Phenomenon of leakage from meter or surroundings of meter.
6. **Unclearness of meter:** It is not easy to read a meter due to unclearness of meter indicator and plate glass.
7. **Meter damage:** Phenomenon that water meter is partially damaged due to external factors such as collision.

Please refer to the countermeasures as shown in **Table 1.4 to Table 1.10** in **Section 4** of **SOP**, and take proper action.

23

■ Procedure for Household Connection Facilities

6-2.5 ~~Management~~ O&M Works of Household Connections and Water Meters

New Water Meter Installation

- i. Make a water meter installation record immediately after new water meters are installed (**Form 3.4-1**).

6-2.5 O&M Works of Household Connections and Water Meters

Water Meter Replacement

- i. Replace water meter if malfunction of water meter is found out.
- ii. Carry the replaced water meter back to WUSC's office. Then analyze causes of water meter malfunction.
- iii. Make a water meter replacement record after completion of cause analysis (**Form 3.4-1** and **Form 3.4-2**).
- iv. Submit the record sheet to WUSC's manager.

Meter Record

No.

Form 3.4-1: Water Meter Installation/Replacement Sheet

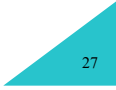
6-2.5 O&M Works of Household Connections

6-2.5 O&M Works of Household Connections and Water Meters

27

Cause Analysis of Water Meter Malfunction Record Sheet								
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Approved by</td> <td style="width: 70%;"></td> </tr> <tr> <td>Prepared by</td> <td></td> </tr> <tr> <td>Repair Work Period</td> <td></td> </tr> </table>	Approved by		Prepared by		Repair Work Period	
Approved by								
Prepared by								
Repair Work Period								
Category	Item	Information						
User Information	Tap Number							
	User Name							
	Address							
Meter Problem Information	Replacement Date							
	Life of Water Meter							
	Category of malfunction	<input type="checkbox"/> no proceeding indicator, <input type="checkbox"/> delay of indicator, <input type="checkbox"/> inverse rotation of indicator, <input type="checkbox"/> derangement, <input type="checkbox"/> leakage from meter, <input type="checkbox"/> unclearness of meter, <input type="checkbox"/> meter damage						
	Cause of Malfunction							
Photo (cause of malfunction)		Photo (cause of malfunction)						

28



27



Module 7

Analysis of Water Supply Management



**Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns**

Analysis Method

□ **Qualitative Analysis**

□ **Quantitative Analysis**

✓ KPI & benchmarking

Check List

□ 50 Questions in 7 Key Management Areas

- ✓ Governance
- ✓ Human Resources
- ✓ Facilities
- ✓ Operations and Maintenance
- ✓ Information Management
- ✓ Finance
- ✓ Communications

7-2 Key Performance Indicator

Key Performance Indicator

7-1 Analysis Method

Key Performance Indicators

9. Unit Production Cost

10. Operation Ratio

11. Collection Ratio



4-2 Benchmarking

Benchmarking

1. Water Supply Ratio

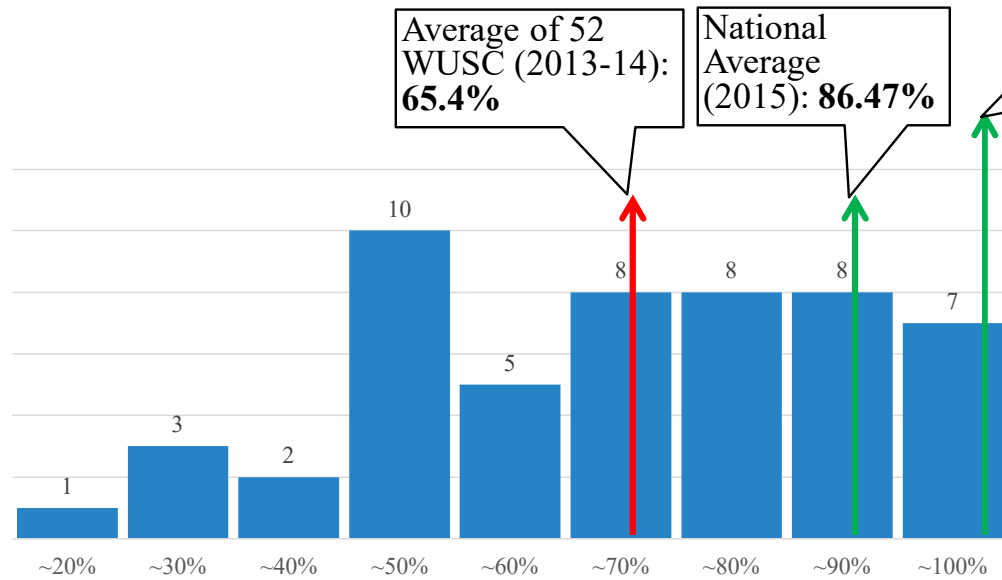
- ✓ Ratio of population who benefited from WUSC in the
- ✓ “Population with access to water service” is the total private connection and public connection.
- ✓ There is a need to estimate the average number of household average number of users of public tap.
- ✓ “Total population within service area” is obtainable from Census or other reliable statistics.

7-2 Key Performance Indicator

1. Water Supply Ratio

□ Benchmarking

- ✓ National average in 2015 is **86.47%**
- ✓ National target (SDG) in 2030 is **99%**





7-2 Key Performance Indicator

2. Service Hours

□ Example

- ✓ Service hours in dry months (October-May): 4 hours
- ✓ Service hours in rainy months (June-September): 6 hours

7-2 Key Performance Indicator

7-2 Key Performance Indicator

3. Water Quality Compliance

□ Example

	Source A		Source B			Source A	
	Tested	Passed	Tested	Passed		Tested	Passed
Month 1	11	10	11	11	Month 7	11	10
Month 2	11	10	11	10	Month 8	11	10
Month 3	12	11	12	11	Month 9	12	12
Month 4	11	11	11	10	Month 10	11	11
Month 5	11	11	11	11	Month 11	11	11
Month 6	12	12	12	12	Month 12	16	16

✓ Count the number of samples that all parameters are p

7-2 Key Performance Indicator

4. Staff Ratio

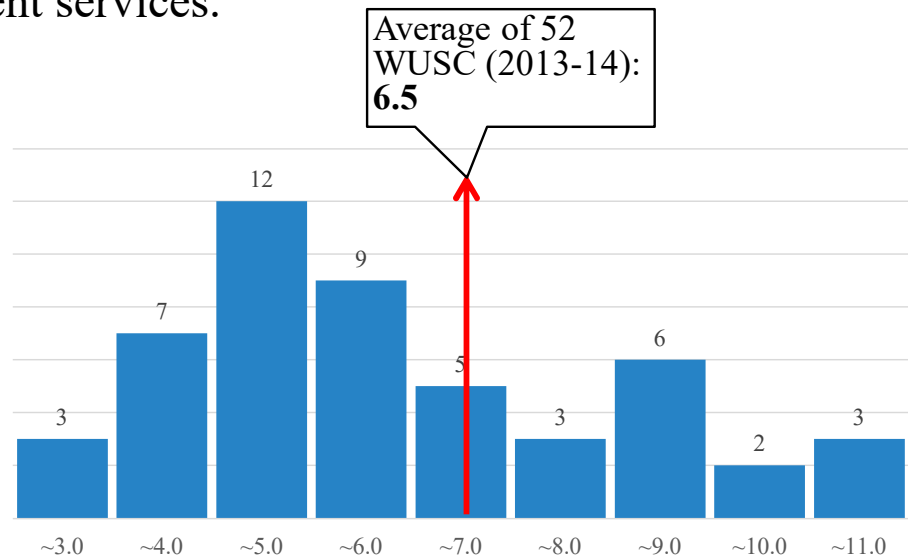
- ✓ Number of WUSC staff work per 1,000 connections;
- ✓ Staff Ratio is used to evaluate the adequacy and efficiency of resources of WUSC.
- ✓ If Staff Ratio is too low, WUSC may be understaffed.
- ✓ If Staff Ratio is too high, WUSC may be inefficient.
- ✓ In general, bigger WUSC should have lower Staff Ratio (merit”)

7-2 Key Performance Indicator

4. Staff Ratio

□ Benchmarking

- ✓ If Staff Ratio is high, need to consider whether WUSC
- ✓ If Staff Ratio is low, need to consider whether WUSC sufficient services.





7-2 Key Performance Indicator

5. Metered Ratio

□ Example

- ✓ Number of connections: household 600; public taps 5
- ✓ Meters are installed for all connections
- ✓ Household users are required to pay based on meter use
30 household users pay on flat rate, because meters are
- ✓ Public tap users are required to pay on flat rate

7-2 Key Performance Indicator

6. Production Ratio

□ Example

- ✓ WUSC has two water production facilities. In the last year (surface water) produced a total of 1,25,000 m³ and the (groundwater) produced a total of 15,000 m³.
- ✓ WUSC has a total of 650 connections consisting of 600 and 50 public taps. The total population with access to water is estimated at 7,600.

$$\frac{(1,25,000 \text{ m}^3 + 15,000 \text{ m}^3) \div 365}{7,600}$$

$$0.0505 \text{ m}^3/\text{c}/\text{d} =$$

3

3

7-2 Key Performance Indicator

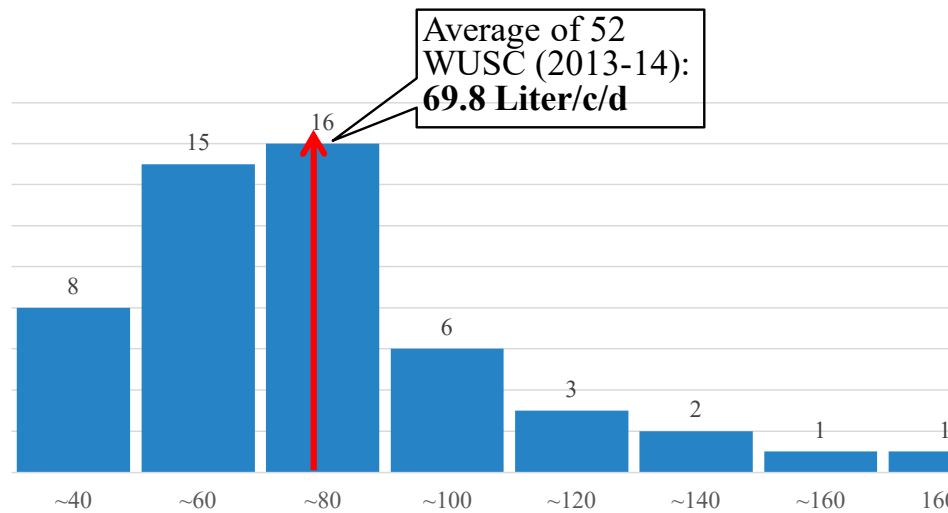
7. Consumption Ratio

- ✓ Water volume consumed by customers per capita;
- ✓ If all connections are metered, water consumption is calculated by meter reading and calculated precisely.
- ✓ In case of malfunctioning metered connections or unmetered connections, the consumption amount must be estimated. It is necessary to select a method to obtain reasonable estimation.
- ✓ If no difference of consumption trend is anticipated regarding the working status of water meters, the same consumption estimation method may be applied.

7. Consumption Ratio

□ Benchmarking

- ✓ If Consumption Ratio is too high, there may be a need for awareness on water conservation.



7-2 Key Performance Indicator

8. Non-Revenue Water (NRW)

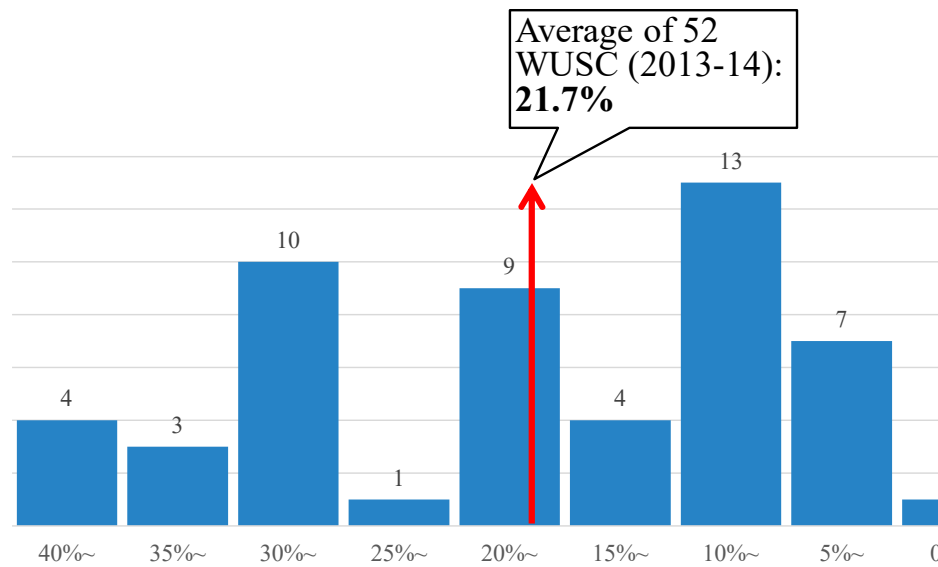
- ✓ Gap between production and consumption;
- ✓ NRW is from 0% (best) to 100% (worst);
- ✓ Lower NRW is more efficient. Produced water is efficient and consumed by customers
- ✓ Common reasons of high NRW;
 - water leakage from distribution network
 - water theft
 - non working meters

7-2 Key Performance Indicator

8. Non-Revenue Water

□ Benchmarking

✓ High NRW means that there is a big gap between production and consumption. Need to check water leakage (distribution system), malfunctions of water meters (production, consumption)



9. Unit Production Cost

□ Example^{NRs./m}

- ✓ Water production in last year: A : 1,25,000 m³ Facility
- ✓ According to the Income Statement, the total expense is 17 Lakh NRs. with the following breakdown:

Item	(NRs.)	Item
Personnel	10,00,000	Office Equipment & Consumables
Energy	1,00,000	Transport & Communication
Chemicals	50,000	Service Charges
Maintenance	1,50,000	Other Non-Operating Expenses
Other Operating Expense	50,000	

9. Unit Production Cost

□ Benchmarking

- ✓ “Unit Production Cost” may vary depending on a lot of factors such as: 21
 sources; geographical distribution of service areas; salaries

7-2 Key Performance Indicator

7-2 Key Performance Indicator

1.42

10. Operation Ratio

7-2 Key Performance Indicator

10. Operation Ratio

Example

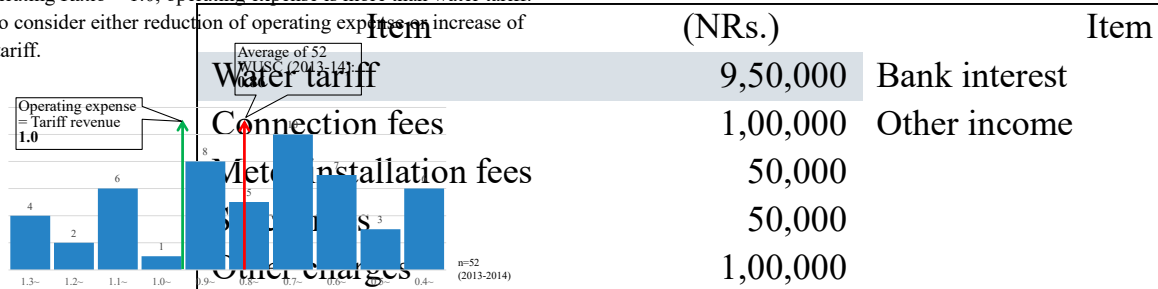
□ Benchmarking

The operating expense of WUSC was 13.5 Lakh NRs. Operating expense was 3.5 Lakh NRs.

✓ The total income of WUSC was 18 Lakh NRs. with the

breakdown:

✓ If Operating Ratio > 1.0, operating expense is more than water tariff.
Need to consider either reduction of operating expenses or increase of water tariff.



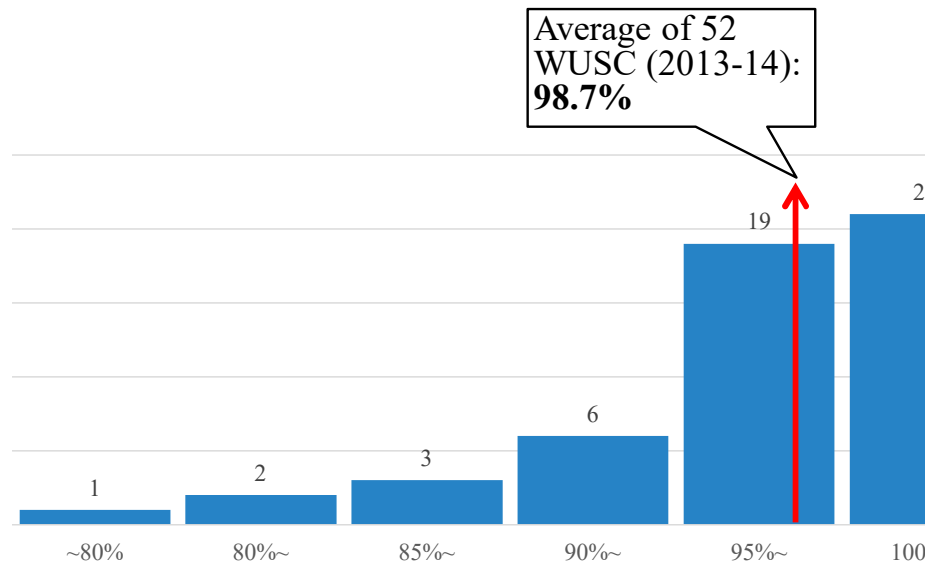
11. Collection Ratio

- ✓ Proportion of collected tariff among the billed amount
- ✓ If WUSC has a billing system, billed amount of water obtainable from the billing system;
- ✓ Even if WUSC does not have a billing system, the billed amount can be estimated from Income Statement and Balance Sheet
- ✓ Billed amount of water tariff is divided into:
 - “Billed and paid”: Operating Income from Water Tariff (Income Statement)
 - “Billed but unpaid”: Account Receivable (Balance Sheet)

11. Collection Ratio

□ Benchmarking

✓ Collection Ratio may become over 100%, if the water previous year was collected during the survey period.





Page 1 of 100

© 2010, the property of the Ministry of Health
© 2010, the property of the Ministry of Health
© 2010, the property of the Ministry of Health
© 2010, the property of the Ministry of Health

Module 8

Planning of Water Supply Management



**Basic Training for Water Users and Sanitation
Committees in Semi-Urban Towns**



8-1 Business Plan

Utilizing Analysis Results



マスタータイトルの書式設定

8-1 Business Plan

□ Example



8-1 Business Plan

Example

9

(a. Facilities
b. Finance
c. Feasibility)

(a. qualitative
b. quantitative
c. qualified)

マスタータイトルの書式設定

(a. in absolute assessment
b. in comparison with others.
c. by user language experience.)

(a. total population within service area.
b. total household within service area.
c. total household within province.)

(a. ten.
b. eleven.
c. twelve.)

10

9

マスタータイトルの書式設定

11

- a. a sum of dry and wet months.
- b. a weighted average between dry and wet months.
- c. an unweighted average of every month.

12

- a. If Staff Ratio is too low, WUSC is not affected.
- b. If Staff Ratio is too high, WUSC is not affected.
- c. In general, bigger WUSC should be better.

- a. Water Quality Compliance
- b. Water Supply Ratio
- c. Production Ratio

- a. excluded, but non-working meters included.
- b. included, but non-working meters excluded.
- c. excluded, and also non-working meters excluded.

11

マスタータイトルの書式設定

マスタータイトルの書式設定

- a. per diem.
- b. per capita.
- c. per one NRs.

マスタータイトルの書式設定

- a. Consumption Ratio / Production Ratio - 1
- b. Production Ratio / Consumption Ratio - 1
- c. 1 - Consumption Ratio / Production Ratio
- d. 1 - Production Ratio / Consumption Ratio

- a. estimated.
- b. regarded as zero.
- c. pending.

- a. operating expense
- b. non-operating expense
- c. operating expense and non-operating expense

- a. Water theft
- b. Low population
- c. Non working meters

マスタータイトルの書式設定

15

- a. Good performance in water volume.
- b. Bad performance in water consumption.
- c. Good performance in water tariff coverage.
- d. Bad performance in WUSC staff service.

マスタータイトルの書式設定

- a. Developing business plan follows identifying priority areas.
- b. Identifying priority areas follows developing business plan.
- c. Neither precedes nor follows the other.

- a. Low impact and high feasibility
- b. High impact and high feasibility
- c. High impact and low feasibility
- d. To identify the priority projects only.

Account Receivable on Balance Sheet.

Account Receivable on Income Statement.

Operating Income from Water Tariff on Balance Sheet.

Operating Income from Water Tariff on Income Statement.

15

マスタータイトルの書式設定

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: _____

Survey Date: _____

Inspector Name: _____

Respondent Name: _____

(Position: _____)

)

Category	No	Item	Q	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	1	* WUSC holds an Annual General Meeting.			
			2	* The schedule of Annual General Meeting is notified to all users.			
			3	* Management Board member, attendance Rate of Annual General Meeting is high.			
			4	* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.			
			5	* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.			
				MoPID (Ministry of Physical Infrastructure Development), WSSDO (Water Supply and Sanitation Division Office) FWSSMP (Federal Water Supply and Sewerage Management Project)			
	2	Election	6	* The members of Management Board are selected by election.			
			7	* The election is conducted regularly in a transparent way.			
			8	* The election is conducted with participation of all members of users committee.			
3	Management Board	9	* Management Board holds regular meeting.				
		10	* The minutes of Management Board meeting are recorded.				
		11	* Management Board gives necessary instructions to Manager timely.				
4	Sub Committees	12	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)				
		13	* Each sub-committee holds meeting regularly.				
		14	* Each sub-committee makes decisions effectively.				
5	Internal Audit	15	* Internal Audit Committee is established.				
		16	* Internal Audit Committee submits findings and recommendations to Management Board regularly.				
		17	* An improvement plan is implemented according to the recommendations by Internal Audit Committee.				
6	Social Considerations	18	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.				
		19	* WUSC has adapted a policy on consideration for poor households.				
		20	* WUSC has adapted a policy on consideration for disabled people.				
7	Goal Management	21	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)				
		22	* All staff know such mission statement or vision.				
8	Mid-Term Plan	23	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.				
		24	* The mid-term management plan includes rehabilitation and/or replacement of facilities.				
9	Annual Report	25	* WUSC compiles and submits annual report timely.				
		26	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.				
Human Resources	10	Code of Conduct	27	* WUSC has stipulated Code of Conduct for staff.			
			28	* All staff recognize and comply with Code of Conduct.			
	11	Job Descriptions	29	* The duties of manager and each staff are explicitly described in job descriptions.			
			30	* The workload of manager and each staff are appropriate.			
			31	* The workload of manager and each staff are evenly distributed.			
	12	Staff Communications	32	* Staff reports their duties and problems regularly.			
			33	* Manager visits, monitors and advises staff regularly.			
34			* Communication among staff to share problems is frequent.				
13	Staff Appraisals	35	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.				
		36	* Staff can receive incentives/acknowledgement for his/her good performance.				
14	Motivation		* Staff have high motivation to work.				
			* Staff retention is high enough.				
15	Knowledge and Skills		* The knowledge and skills required for manager and staff have been identified.				
			* Manager and Staff have sufficient knowledge and skills for their duties.				
			* Manager has sufficient management skills. (e.g., leadership, team building, time management)				
16	Training		* Staff receive training to increase knowledge and skill for their duties.				
			* Training materials are archived for knowledge sharing among staff.				
			* WUSC conducts induction training for new staff.				
			* WUSC dispatch staffs to training in NWSSTC when they are invited.				
Facility	17	Water Source		* Existing water sources can provide sufficient volume of water.			
				* Existing water sources can provide safe water.			
				* WUSC has a plan to increase new water resource (surface/groundwater).			
	18	Facility for Water Volume		* Water Treatment Plant has sufficient capacity to respond to water demand (answer "Yes" if no water treatment plant).			
				* WUSC has expansion and/or new Water Treatment Plant constructions (answer "Yes" if no water treatment plant).			
				* Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.			
	19	Facility for Water Quality		* Water Treatment Plant has necessary facilities to improve water quality (answer "Yes" if no water treatment plant).			
				* Water Treatment Plant is backwashed and/or maintained in a timely manner (answer "Yes" if no water treatment plant).			
			* WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant (answer "Yes" if no water treatment plant).				
20	Measurement Equipment		* Water production facilities are equipped with meter and gauge for water volume and pressure.				
			* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)				
			* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)				
21	Maintenance Equipment		* WUSC has toolkit for maintenance and repair of facilities.				
			* WUSC has cleaning tools for facilities.				
			* WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)				
			* WUSC has safety tools and equipment.				
22	Distribution Network		* WUSC maintains (develops and/or updates) a map of distribution network.				
			* Household connections are high enough.				
			* Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.				
23	Disaster management		* WUSC has disaster management plan.				
			* Facilities are resistant/protected to natural disaster.				
			* WUSC has an insurance for water supply facilities.				
24	Power Supply		* Power supply is stable.				
			* WUSC has backup generator in case of power failure.				

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Q	Descriptions	Yes	No	If No, Reason
	25	Lifetime of Facility		* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant (answer "Yes" if no water treatment plant).			
	26	Office		* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.			
O&M Operation and Maintenance	27	Security and Safety		* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)			
	28	Utilization of Facilities		* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (answer "Yes" if no slow sand filter). * WUSC has Schematic Flow Diagram (water supply system drawing).			
	29	Manuals		* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.			
	30	Water Quality		* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.			
	31	Water Leakage		* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.			
	32	Periodical Operations		* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.			
	33	Troubleshooting		* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.			
	34	Inventory Management		* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.			
	35	Office		* Water treatment facilities and water source are cleaned regularly (answer "Yes" even if no water treatment facility). * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.			
	Information	36	Operation Record		* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.		
37		ICT		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)			
38		Document Management		* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.			
Finance	39	Water Tariff		* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.			
	40	Cost Management		* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.			
	41	Tariff Collection		* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.			
	42	Accounting		* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.			
	43	Procurement		* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.			
Communications	44	Financial Analysis		* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.			
	45	Customers Management		* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.			
	46	Information Disclosure		* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).			
	47	Public Awareness		* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)			
	48	Online Services		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)			
	49	Government		* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.			
	50	WUSC Network		* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.			

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

Signature

Signature

Appendix 2.29

3rd Basic Training Report on December 12, 2020









	Module	Activates	Exercise	Achievements	WUSC's Comments/Questions	Trainer's Comments/Answer	Issues	Required improvement points
Day 1	1	Mr. Kabindra Bikram Karki made presentation on Module 1. Mr. Karki explained prevailing laws and draft acts and rules regarding water supply operation. Mr. Karki also explained about WUSC's role like keeping records and preparing annual reports.	N/A	WUSC got deeper understanding on prevailing laws. WUSC's understood importance of record keeping. Some WUSCs like Shankarnagar shared that they have been keeping all the financial and managerial records.	Local bodies has not been helpful towards WUSCs and in many cases local bodies themselves has destroyed distribution pipelines during road construction.	Water supply is one of the responsibility of Local bodies. Hence, they have to be cooperative with WUSCs and work for goodwill of community. Meanwhile, WUSC shall report their activities to local government to maintain harmonious relationship.	Participants requested training on use of water test kit to NWSSTC.	Online training guideline shall be provided to the participants before the training. Such as turning off mic, using chat, raise hand etc. by Mr. Kabindra Karki
	2	Mr. Bhojendra Aryal made presentation on Module 2. Mr. Aryal explained category of water supply facilities (A-E) and functions of various components of water supply system by using video materials.	Mr. Aryal asked participants to recognize their water supply patterns (A-E) and asked the participants to write in chat.	WUSCs has better understanding in different types of water supply system and their functions.	Karmaiya WUSC asked about rumor of upcoming law that enables Nepal Water Supply Corporation (NWSC) to take over WUSC and its possibility.	Till date NWSC cannot take over WUSC as both organizations are working and formed under different acts. No act and law has been formulated so far that enables NWSC to takeover WUSC. Mr. Kabindra karki and Ram Ghimire (Chairman of Mangadh WUSC) answed	N/A	Different type of Group exercise for online training can be prepared.
	3	Mr. Bedraj Regmi made presentation on Module 3. Mr. Regmi explained Daily Operation and Maintenance works along with methodology of keeping daily O&M records with the help of presentation material and video materials.	N/A	WUSCs understood troubleshoot for various problems that may occur during daily O&M. WUSCs also understood importance and methodology of O&M record keeping.	Using big spoon or ladle to transfer chlorine powder to tank is safer than using just hand.	Yes, it is better but the spoon or ladle should be plastic.	N/A	Discussion and Q&A time shall be allowed in the end of presentation for interactive session between participants and trainer.
Day 2	4	Mr. Bedraj Regmi gave presentation on Module 4. Mr. Regmi explained Periodic Inspection for Water Supply Facilities with the help of presentation material and video materials.	Mr. Regmi asked participants to share their experience and practice on periodic inspection in their WUSCs.	WUSCs shared their practice in periodic inspection of various water utilities.	Pathri Sanisshare WUSC asked possibility of formation of training center in all provinces. Bhotheadar WUSC's flowmeters is damaged. Chlorine dosing unit's dosing pipe is damaged and needs replacement.	Mr. Kabindra Bikram Karki explained it is difficult to establish such facility (training center) with present resources. Presently, Government has not planned to establish such facilities (training center). WUSCs if needs training should contact NWSSTC via NWSSTC websites or by phone. Regarding flowmeters and chlorine dosing, WUSCs should manage new flowmeter and dosing pipes. —This mean is WUSC should repair or replace the equipment/material	Bhotheadar WUSC's flowmeters is damaged. Chlorine dosing unit's dosing pipe is damaged and needs replacement.	
	5	Mr. Ankit maan Shrestha gave presentation on Water Quality Management. Mr. Shrestha explained various parameters, methodology of testing and troubleshooting methodologies to be followed to maintain water quality.	Mr. Shrestha asked participants to share their practice in water quality testing and record keeping.	WUSCs understood importance of water quality testing and record keeping	1.Agyauli WUSC asked if it is necessary to conduct coliform test (e-coli test) if they have been using chlorine dosing unit and has been conducting daily FRC test. (It is necessary to conduct coliform test daily , if FRC test is conducted daily) 2.Shankarnagar WUSC asked if there is any method to remove scaling of pipes.	1.Even after using chlorine dosing, E.coli tests should be conducted to understand effectiveness of chlorination. If E.coli is found that may indicate improper or insufficient chlorination, out dated bleaching powder or leakage in system. (Mr. Ankitman Shrestha answered) 2.Removal of calcium to control scaling has been a great challenge in present context. There are some methods to minimize scaling like ionization method but it is very costly and is not appropriate for WUSCs. (Mr. Kabindra Karki answered)		
	6	Mr. Binod Gajurel gave presentation on Water Distribution System and Water meter. Mr. Gajurel explained various components of distribution system like valves, pipelines, networking etc.	Mr. Gajurel if participants has updated their distribution network map. Mr. Gajurel also asked participants if they have taken records of flowmeter, consumer's complain and other operational records.	WUSCs understood importance of record keeping, preparing distribution map and updating maps.	Karmaiya WUSC asked appropriate value of NRW.	NRW should be minimized as much as possible. In present context, value of NRW near 15-20% is good.		
Day 3	7	Mr. Kabindra Bikram Karki gave presentation on Quantitive and Qualitative analysis of water supply facility. Mr. Karki explained Checklists, KPIs and benchmarking with the help of PowerPoint slides and video materials. —He use video materials in this session. There is No problem to understand them.		WUSCs understood methodology of calculating KPIs and its importance.			Video material nepali texts	
	8	Mr. Kabindra Bikram Karki gave presentation on method of preparing Business plan by identifying and prioritizing problems.	Mr. Karki conducted Q&A session regarding learning in previous sessions.	WUSC's understood method to identify priority areas.			Confusion in question no. 15, 16 of quiz	


Appendix 2.30

4th Basic Training Report on March 1, 2021

4th Basic Training 2021 February 25 to March 1 (5 days)
 Participants: 12 target WUSCs and 3 WUSCs, total 53 people
 Venue: Dalla Community Homestay, Bardiya

Describe all trainers : Mr. Kabindra Bikram Karki (NWSSTC) , Mr. Binod Gajurel (NWSSTC) and Mr. Bedraj Regmi of DWSSM were trainers.

	Module	Activities	Exercise	Achievements	WUSC's Comments/Questions	Trainer's Comments/Answer	Issues	Pictures
Day 1	1	Mr. Binod Gajurel (NWSSTC) made a presentation on Module 1. Mr. Gajurel explained prevailing current laws and future acts and rules regarding water supply operation (Operation and maintenance of water supply system. He also explained the population demarcation for construction of new projects for Federal, Provincial, and Local government). Mr. Gajurel also explained about WUSC's role in keeping records and preparing annual reports for calculating KPIs.	Qualitative analysis of WUSCs using Management Check sheet.	WUSC got deeper understanding on prevailing laws. WUSC's understood importance of record keeping. Some WUSCs like Bhuriagau WUSC explained Thakurbaba Municipality has been cooperative and compensated for destruction of pipelines during road expansion.	Local bodies (Municipalities) has not established WASH sector in their organization. Local bodies has not been helpful towards WUSC.	Water supply is one of the responsibility of Local bodies according to Local Government Operation Act 2074. Hence, they have to be cooperative with WUSCs and work for goodwill of community.	N/A	
	2	Mr. Kabindra Bikram Karki made a presentation on Module 2. Mr. Karki explained category of water supply facilities (A-E) and functions of various components of water supply system with video materials.	Mr. Karki showed photos of various treatment units of WUSCs in Nepal and discussed operational flaws (improper O&M) with participants.	WUSCs have better understanding in different types of water supply system and their functions.	Consumers' complain about smell of chlorine in water.	Smell of chlorine in water indicates water is safe to drink. To ensure proper chlorination check FRC (Free Residual Chlorine) of water daily and disclose test results to consumers	N/A	
Day 2	3	Mr. Bedraj Regmi made a presentation on Module 3. Mr. Regmi explained Daily Operation and Maintenance works along with methodology of keeping daily O&M records with the help of presentation material and video materials.	Mr. Regmi recommended participants to share their experience and practice on periodic inspection in their WUSCs.	WUSCs shared their practice in periodic inspection of various water utilities. Guleriya WUSC disseminates monthly income expenditure records to consumers. Jhakredhunga WUSC started keeping flowmeter records and water quality records.	How to prepare 1% chlorine solution	Mr. Regmi explained proper chlorine solution preparation methodology by the help of SOP table 2.1	N/A	
	4	Mr. Binod Gajurel made a presentation on Module 4. Mr. Gajurel explained importance of periodic inspection and importance of keeping records of periodic inspection.	Mr. Gajurel recommended participants to share their practice in such record keeping.	WUSCs shared their practice of keeping repair records.	How to prepare log books for repair records?	Mr. Gajurel explained record forms can be found in SOP which is distributed to participants.	N/A	
Day 3	5	Mr. Kabindra Bikram Karki made a presentation on Water Quality Management. Mr. Karki explained various parameters, methodology of testing and troubleshooting methodologies to be followed to maintain water quality.	Mr. Karki recommended participants to share their practice in water quality testing and record keeping.	WUSCs understood importance of water quality testing and record keeping	Is it necessary to conduct coliform test if WUSC have been using chlorine dosing unit and has been conducting daily FRC test.	Even after using chlorine dosing, E.coli tests should be conducted to understand effectiveness of chlorination. If E.coli is found that may indicate improper or insufficient chlorination, out dated bleaching powder or leakage in system. Mr. Kabindra mentioned that it is better if WUSC conducts E.coli test once a month and disclose the result to the consumers. It will help WUSC to gain trust from the consumer regarding quality of water.	N/A	
			Water quality tests were demonstrated using ENPHO test kit with active participation from participants.		Is there any method to remove scaling of pipes?	Removal of calcium to control scaling has been a great challenge in present context. There are some methods to minimize scaling like ionization method but it is very costly and is not appropriate for WUSCs. (one of options, in planning phase, pipe size should be bigger in consideration with scaling inside pipe. another options, replacement of pipes)	N/A	
					Where to obtain sand for slow sand filter?	WUSCs should purchase sand which meets quality standard. WUSCs can contact other WUSCs with slow sand filter to get contractor's details.	N/A	
	6	Mr. Binod Gajurel made a presentation on Water Distribution System and Water meter. Mr. Gajurel explained various components of distribution system like valves, pipelines, networking etc.	Mr. Gajurel recommended if participants has updated their distribution network map. Mr. Gajurel also recommended participants if they have taken records of flowmeter, consumer's complain and other operational records.	WUSCs understood importance of record keeping, preparing distribution map and updating maps.	Some WUSCs do not have collection chamber before sedimentation tank. Is it necessary?	Collection chamber helps to reduce turbidity and regulate flow into sedimentation tank. It is installed according to field necessity.	N/A	

					Should WUSC employ survey team to prepare flow diagram?	WUSCs do not need to hire experts to prepare flow diagram. WUSC's technical staffs can prepare a simple flow diagram.	N/A	
Day 4	7	Mr. Kabindra Bikram Karki made a presentation on Quantitative and Qualitative analysis of water supply facility. Mr. Karki explained Checklists, KPIs and benchmarking with the help of PowerPoint slides and video materials.	Participants are asked to calculate KPIs of their WUSCs.	WUSCs understood methodology of calculating KPIs and its importance.	Participants asked questions on method of determining water production volume if flowmeter is not installed.	WUSC can calculate water production by estimating time to fill reservoir or by calculating discharge from washouts and multiplying the value with pump operation hours.	N/A	
	8	Mr. Bed Raj Regmi (Engineer, Planning Section of DWSSM) made a presentation on method of preparing Business plan by identifying and prioritizing problems.	Mr. Kabindra Bikram Karki and Mr. Bed Raj Regmi conducted Q&A session regarding learning in previous sessions.	WUSCs understood method to identify priority areas.	Participants asked questions on determining priority areas for the water supply system for WUSCs to take immediate action.	WUSCs can identify priority areas based upon feasibility and availability of budget and resources.	N/A	
			An example of action plan was distributed among participants and were asked to prepare an action plan.	WUSCs were provided with an opportunity to make a closing remarks. The Chairperson of Gulariya-I WUSC mentioned that Basic training was very fruitful for a wider and deeper understanding of O&M of water supply systems. He expressed commitment to initiate record keeping and calculating KPIs after this training. The chairperson had a positive insights of DWSSM training activities . He was not cooperative before. (This is Good!)			N/A	

Appendix 2.31





5th Basic Training Report on April 11, 2021




Basic Training V, 2021 April 7 to April 11

Venue : Amaltari Community Homestay, Nawalparasi East

Participants 13 WUSCs + 1 WUSC (outside WASMIP), 46 trainees

Trainers : Mr. Kabindra Bikram Karki (Chief of NWSSTC), Mr. Binod Gajurel (Engineer- NWSSTC), Mr. Bedraj Regmi (Engineer- DWSSM)

	Module	Activities	Exercise	Achievements	WUSC's Comments/Questions	Trainer's Comments/Answer	Issues	Pictures
Day 1	1	Mr. Bed Raj Regmi (Engineer-DWSSM) made a presentation on Module 1. Mr. Regmi explained prevailing laws and future acts and rules regarding water supply operation. (Water Resource Act BS2049, Water Resource Rules BS2050, Drinking Water Rules BS2055, and draft WaSH Bill). Mr. Regmi explained the importance of record keeping	Participants were requested to fill Management Check sheet.	WUSCs understood prevailing laws of water supply sector. WUSCs also understood importance of record keeping.	Anandaban and Agyauli WUSC mentioned that, a contractor which Local Government hired destroyed WUSCs pipelines during road construction.	WUSCs should cooperate with Local Government and other agencies (road departments of Provincial and Federal) to reinstate destroyed pipelines. During the EIA (Environment Impact Assessment) or IEE (Initial Environment Examination) phase of the project, WUSCs should cooperate with concerned agencies to add provision of reinstate of pipelines after construction of road projects.	N/A	
	2	Mr. Kabindra Bikram Karki (Chief of NWSSTC) made a presentation on Module 2. Mr. Karki explained category of water treatment methods (pattern A to E) and functions of various components of water supply system with video materials.	Mr. Karki showed photos of various treatment processes of WUSCs in Nepal and discussed improper operation with participants.	WUSCs understood different types of water treatment systems and their functions.	How to solve calcium problem in raw water? The cost of calcination cohesion removal from inside pipes is must be very expensive and not effective.	DWSSM is planning to start calcium removal treatment plant. However, as there is no calcium removal plants in Nepal, there is less or no availability of calcium removal technology in local market (equipment).	N/A	
Day 2	3	Mr. Bedraj Regmi made a presentation on Module 3. Mr. Regmi explained Daily Operation and Maintenance works along with methodology of keeping daily O&M records in the presentation and video materials.	Mr. Regmi requested participants to share their experience and practice on periodic inspection in their WUSCs.	WUSCs shared their practices in periodic inspection of various water utilities. Frequency, target facilities. (before the Basic training practices)	Devdaha WUSC's treatment plant does not have drain installed from sedimentation tank. How to conduct operation and maintenance in this case?	Drainage pipe should be installed and back wash should be conducted in timely manner.	N/A	
	4	Mr. Bedraj Regmi made a presentation on Module 4. Mr. Regmi explained importance of periodic inspection and keeping records of periodic inspection.	Mr. Regmi requested participants to share their record keeping practice.	WUSCs shared their practice of keeping maintenance records.	How to use clamp meter to check voltage and current.	Mr. Binod Gajurel (Engineer- NWSSTC) conducted practical session on use of clamp meter.	N/A	

Day 3	5	Mr. Kabindra Bikram Karki made a presentation on Water Quality Management. Mr. Karki explained various parameters, methodology of testing and troubleshooting to manage water quality.	Mr. Karki requested participants to share their practice in water quality testing and record keeping. Water quality tests (parameters: FRC, Turbidity, pH, iron, coliform) were demonstrated using ENPHO test kit with active participation from participants.	WUSCs understood importance of water quality testing and record keeping and how to test with ENPHO kit.	How to identify good quality sand for slow sand filter?	Sample of sand should be sent to laboratory and pass tests. (grain size) The effective size should be between 0.2 to 0.3 mm.	N/A	
					How do WUSCs get the sand for slow sand filter?	WUSCs should purchase sand which meets quality standard (grain size). WUSCs can contact other WUSCs with slow sand filter to get contractor's details.	N/A	
	6	Mr. Binod Gajurel made a presentation on Water Distribution System and Water meter. Mr. Gajurel explained various components of distribution system like valves, pipelines, network types, etc.	Mr. Gajurel asked if participants has updated their distribution network map. Mr. Gajurel also asked participants if they have taken records of flow meter, consumers' complaints and other operational records.	WUSCs understood importance of record keeping, preparing distribution map and updating maps.	How to identify location of pipelines under ground ?	Preparing and updating distribution pipeline map is the best method to identify pipe locations.	N/A	
					Can bulk meter (not for domestic) be repaired ?	WUSCs can replace inside part which is available in market and use the body of bulk meter.	N/A	
Day 4	7	Mr. Kabindra Bikram Karki made a presentation on Quantitive and Qualitative analysis of water supply management. Mr. Karki explained Checklists, KPIs and benchmarking with the PowerPoint slides and video materials. Mr. Karki also showed KPIs collected by WASMIP.	Participants are asked to calculate KPIs of their WUSCs.	WUSCs understood methodology of calculating KPIs and its importance and how to use KPIs for planning.	How was benchmarking data collected? What is correct value for staff ratio? "Staff Ratio" is defined as number of WUSC staff work per 1,000 connections.	Benchmarking data were collected by phone and visiting the sites. Staff ratio should not be very high or low.	N/A	
	8	Mr. Binod Gajurel made a presentation on method of preparing Business plan by identifying and prioritizing problems.	Mr. Kabindra Bikram Karki and Mr. Bed Raj Regmi conducted Q&A session regarding learning in previous sessions.	WUSC's understood method to identify priority areas.	WUSCs explained their satiations on O&M and management		N/A	

			A copy of action plan (implementation of WUSCs' obligations: providing safe and sufficient water amount, maintaining water supply facilities) was distributed among participants and were asked to prepare an action plan.					
Day 5		Mr. Kabindra Bikram Karki explained about various types of water borne diseases, viruses (specially Covid-19). Mr. Karki explained use of chlorine to disinfect water, hand washing and role of WUSCs to control effect of Covid-19.						

Appendix 2.32




6th Basic Training Report on January 9, 2022


Basic Training VI 2022 Jan 05 to Jan 09


Venue : Letang, Morang ,Province 1

Participants WUSCs : 16 semi-urban WUSCs (14 + 2 WASMIP WUSCs)

Trainers : 1. Mr. Kabindra Bikram Karki - Chief of NWSSTC 2. Mr. Chet Narayan Shrestha - Engineer , NWSSTC 3. Mr. Sujit Mahato - Engineer , FWSSMP Biratnagar 4. Mr. Ankitman Shrestha - Engineer , STWSSSP

	Module	Activites	Exercise	Achievements	WUSC's Comments/Questions	Trainer's Comments/Answer	Issues	Pictures
Day 1	1	Mr. Sujit Mahato gave presentation on Module 1. Mr. Mahato explained prevailing laws and future acts and rules regarding water supply operation. Mr Mahato also talked about WUSC's role like keeping records and preparing annual reports.	N/A	WUSC got deeper understanding on prevailing laws. WUSC's understood importance of record keeping.	Local bodies has not been cooperative with WUSCs and has not given any priority in development of Water supply projects.	Water supply is one of the responsibility of Local bodies. Hence, they have to be cooperative with WUSCs and work for goodwill of community.	N/A	
	2	Mr. Kabindra Bikram Karki gave presentation on Module 2. Mr. Karki explained category of water supply facilities (A-E) and functions of various components of water supply system with video materials.	Mr. Karki showed photos of various treatment units of WUSCs in Nepal and discussed operational flaws with participants.	WUSCs has better understanding in different types of water supply system and their functions.	Consumers complain about smell of chlorine in water.	Smell of chlorine in water indicates water is safe to drink. To ensure proper chlorination check FRC of water daily.	N/A	
	3	Mr. Chet Narayan Shrestha gave presentation on Module 3. Mr. Shrestha explained Daily Operation and Maintenance works along with methodology of keeping daily O&M records with the help of presentation material and video materials.	Mr. Shrestha asked participants to share their experience and practice on periodic inspection in their WUSCs.	WUSCs shared their practice in periodic inspection of various water utilities.	How to prepare 1% chlorine solution	Mr. Regmi explained proper chlorine solution preparation methodology by the help of SOP table 2.1	N/A	
Day 2	4	Mr. Chet Narayan Shrestha gave presentation on Module 4. Mr. Shrestha explained importance of periodic inspection and importance of keeping records of periodic inspection.	Mr. Shrestha asked participants to share their practice in such record keeping.	WUSCs shared their practice of keeping repair records.	How to prepare log books for repair records?	Mr. Shrestha explained record forms can be found in SOP which is distributed to participants.	N/A	

	5	Mr. Kabindra Bikram Karki gave presentation on Water Quality Management. Mr. Karki explained importance of chlorination on Water Supply System, Preparation methodology of 1% chlorine solution	Mr. Karki asked participants to share their practice in water quality testing and record keeping.	WUSCs understood importance of water quality testing and record keeping	Is it necessary to conduct coliform test if WUSC have been using chlorine dosing unit and has been conducting daily FRC test.	Even after using chlorine dosing, Ecoli tests should be conducted to understand effectiveness of chlorination. If Ecoli is found that may indicate improper or insufficient chlorination, out dated bleaching powder or leakage in system	N/A	
		Mr. Sujit Mahato gave presentation on Water Quality Management. Mr. Mahato explained various parameters, testing frequency and methodology	Water quality tests were demonstrated using ENPHO test kit with active participation from participants.		Many WUSCs do not possess water test kits in their WUSCs. How can WUSCs conduct water quality tests.	WUSCs can purchase ENPHO test kit or purchase reagents required for daily tests which may cost around NRs 20000. Expensive tests can be conducted via regional labs.	N/A	
Day 3	6	Mr. Ankitman Shrestha gave presentation on Water Distribution System and Water meter. Mr. Shrestha explained various components of distribution system like valves, pipelines, networking etc.	Mr. Shrestha asked if participants have updated their distribution network map. Mr. Shrestha also asked participants if they have taken records of flowmeter, consumer's complaint and other operational records.	WUSCs understood importance of record keeping, preparing distribution map and updating maps.	Many WUSCs do not possess bulk meters and are unable to keep records.	WUSCs can find approximate production amount by identifying discharge rate of pump or intake and multiplying it with operation hours.	N/A	
		Mr. Chet Narayan Shrestha gave presentation on Water Safety Plan. Mr. Shrestha explained necessity, importance and various steps of water safety plan.	Mr. Shrestha asked WUSCs with water safety plan implemented to share their experience.	WUSCs understood importance and various steps involved in water safety plan.	Can WUSCs form more than one Water safety plan committee?	Yes, WUSC can form more than one committee based on the service area, households and water supply facilities.	N/A	
	7	Mr. Kabindra Bikram Karki gave presentation on Quantitative and Qualitative analysis of water supply facility. Mr. Karki explained Checklists, KPIs and benchmarking with the help of powerpoint slides and video	Participants are asked to calculate KPIs of their WUSCs.	WUSCs understood methodology of calculating KPIs and its importance.			N/A	
Day 4	8	Mr. Kabindra Bikram Karki gave presentation on Sustainable Management of Water Supply System and Service Delivery: Discussion on Business Plan and Benchmarking of Service Providers.	Mr. Karki explained methods to identify high priority points to be included in a business plan. Mr. Karki shared benchmarking data and methods, necessity of benchmarking.	WUSCs understood method to identify priority areas.			N/A	









		Mr. Kabindra Bikram Karki talked about various types of water borne diseases, viruses (specially Covid-19). Mr. Karki explained use of chlorine to disinfect water and role of WUSCs to control effect of Covid-19.					N/A	
Day 5		Mr. Kabindra Bikram Karki shared method of using NWASH platform and its necessity					N/A	
		Field visit to Letang WUSC		WUSC members were able to observe facilities of Letang WUSC (treatment units and Reservoir tank)			N/A	



Appendix 2.33

On-site Training Reports





	Date	Province	District	WUSC name	Trainer				WUSC member	Activities				
					FWSSMP	MoPID	WSSDO	NP/GP		Schematic Flow Diagram	KPIs data (Basic Information)	Management Check	Others	Any Achievements
1	2020/3/3	2	Dhanusha	Dhalkebar	Mr.Birendra Kumar Mahato Engineer				Mr. Bhojraj Karki, V-Chairman Mr. Indra Bdr. Thapa, Secretary Mr. Surendra Ghimire, Board Member Mr. Ambar Bdr. Rai, Board Member Mr. Ranjit Rawat Kurmi, Technician Mr. Sudip Shah, Technician Mr. Kedar Shrestha, Technician	Revision, installation status, WUSC understanding, etc.	11 KPIs, lack of data, collected data	sent (English version)	Suggested to operate chlorination unit	Chlorination units are installed.
2	2020/3/4	2	Sarlahi	Ishworpur	Mr.Birendra Kumar Mahato Engineer				Mr. Aaita Bdr. Bomjan, Chairman Ms. Ramita Chaudhary, Manager Mr. Sukh Bdr. Kuswaha, Technician	New tube well in operation, Some flowmeters installed	data collected	sent (English version)	Suggested to install remaining flowmeters and change chlorine dosing point for effective dosing	Installed flowmeter, started keeping maintenance records
3	2020/3/5	2	Sarlahi	Hariwon	Mr.Kishan Kumar Singh Engineer				Mr. Yagya Binod Dhungel, Chairman Mr. Ram Chandra Gautam, Secretary Mr. Bidur Subedi, Manager Mr. Yuvraj Bogati, Technician	No changes	data collected	sent (English version)	Suggested to install flowmeters and conduct water quality tests by test kit	
4	2020/3/6	2	Sarlahi	Barahathawa	Mr.Kishan Kumar Singh Engineer				Mr. Dukhi Mahato, Chairman Mr. Thakan Mahato, secretary	No changes	lack of data, WUSC is not in operation	sent (English version)	Suggested to cooperate with WSSDO, FWSSMP to operate WUSC	
5	2020/3/9	2	Sarlahi	Karmaiya	Mr.Chandan Kumar Adhikari Engineer			Sagar Poudel Engineer	Mr. Ripumardan Ale, Chairman Mr. Dil Bahadur Acharya, Manager Mr. Prakash Chandra Acharya, Meter Reader Mr. Gobinda Bhusal, Technician	Minor changes (location of sluice valve and check valve)	data collected	sent (English version)	Suggested to use PC to archive	Started keeping monthly record of flowmeter, water quality, distribution map and maintenance record
6	2020/3/11	2	Bara	Nijgadh	Mr.Chandan Kumar Adhikari Engineer				Mr. Ramhari Wagle, Treasurer Mr. Kedar Poudel, Manager Mr. Hari Ghimire, Technician	Some flowmeters installed and change in location of valves	data collected	sent (English version)	Suggested to change chlorine dosing points for effective dosing	
7	2020/3/12	2	Bara	Dumarwana	Mr.Chandan Kumar Adhikari Engineer				Mr. Ram Prasad Lamichhane, Chairman Mr. Dal Bdr. Ghale, V-Chairman Mr. Sharad Bhattarai, Secretary Ms. Lalita Basnet, Manager Ms. Hema KC, Board Member Mr. Mohan Limbu, Technician	Valves added, change in location	data collected	sent (English version)	Suggested to install remaining flowmeters, conduct water quality tests using test kit and conduct awareness program to convince consumers to use WUSC water.	Prepared distribution map
8	2020/3/13	2	Bara	Simara	Mr.Chandan Kumar Adhikari Engineer				Mr. Kasim Hussain, Chairman Mr. Sashi Kumar Gautam, Treasurer Mr. Suraj Baidhya, Manager Mr. Biju Chaudhary, Technician	Changes in scheme-3 and some changes in location of sluice valve and check valve	data collected	sent (English version)	Suggested to install flowmeter in a newly constructed elevated tank	Started keeping daily record of flowmeter, panel board record, consumer complain, water quality, distribution map and maintenance record

Onsite Training at Morang district of Province 1.








Trainer Did DWSSM issue the invitation letters to FWSSMP.										Activities					
Date	Province	District	WUSC name	FWSSMP	MoPID	WSSDO	NP/GP	WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Others	Any Achievements	COVID-19 Affliction (infected staff, supply operation slowdown, etc.)	photos
2020/12/31	1	Morang	Pichhra	Mr. Humendra Deo Ms. Pabina Moktan (Engineers)				Mr. Radheshyam Kattel - Secretary Mr. Dhurbaraj Koirala - Vice Secretary Ms. Tara Ojha - Treasurer Mr. Shyam Rajbanshi - Member Mr. Manoj Poudel - Manager Mr. Jitendra Khadka - Pump Operator Ms. Tara Parajuli - Pump Operator Mr. Bikram Yadav - Plumber	1. New set of Aeration tank and Pressure Filter tank were installed. 2. Automated Chlorination unit was installed in the distribution pipeline. 3. 3 Flow meters in the deep well and distribution pipelines were malfunctioned.	1. No record keeping of operation and maintenance. 2. No knowledge of methodology to calculate KPIs. 3. No water quality data.	Attached as a next sheet	1. Less number of house connections. 2. Collection ratio of new connection is low. Approximately 50% is collected.	1. Advised and provided consultation of the importance of record keeping. 2. Practical training on using water quality test kit was conducted to grasp the water quality data. 3. Suggested to disclose water quality data to consumers. It may be helpful in getting new connections.	1 staff infected. Now recovered. Normal operation of water supply. No supply operation slowdown.	
2021/1/1	1	Morang	Mangadh	Mr. Humendra Deo			Mr. Shyam Sundar Singh - Engineer	Mr. Ram Bahadur Ghimire - Chairperson Ms. Devimaya Bastola - Vice Chairperson Mr. Rajendra Kumar Pokharel - Secretary Mr. Deepak Ghimire - Board Member Mr. Bholanath Ghimire - Board Member Ms. Annapurna Pokharel - Board Member Ms. Purbhanga Khatiwada - Board Member Mr. Ranglal Dhakal - Office Manager Mr. Hari Shrestha - Computer Operator Mr. Manish Ghimire - Pump Operator	1. New construction (Elevated tank and 2 deep well pumps) are ongoing. 2. Co finance project is ongoing in two areas. 3. No major changes in the schematic drawing.	1. Record keeping is maintained. 2. Community mobilizers (Data collectors) are recruited for data collection. 3. KPIs are calculated.	Attached as a next sheet	1. Black water (Water with high manganese content) in a house connection tap. 2. Filter media is replaced as a countermeasure to black water.	1. Advised and provided consultation to communicate with related stakeholders for the mitigation of pipe damages by road construction. 2. Suggested to transfer technical knowledge among staffs. Chairperson has educated staffs on using SOPs for effective O&M of facilities. 3. Advised to prepare a distribution pipeline maps for easy maintenance works. (Need to revise based on the extension of pipelines.)	2 staffs infected and recovered. Regular water supply to the consumers. No shutdown or supply operation slowdown.	
2021/1/2	1	Morang	Jhorahat	Mr. Humendra Deo			Mr. Shyam Sundar Singh - Engineer	Mr. Madan Pudasaini - Chairperson Mr. Ram Prasad Neupane - Secretary Mr. Bholanath Neupane - Office Manager Mr. Narayan Khatiwada - Operator	1. No any changes in a schematic flow diagram. 2. New office building was constructed by MoPID's aid and it is in operation.	1. Operation record is maintained. 2. Low skill to calculate KPIs. No knowledge to calculate KPIs.	Attached as a next sheet	High water demand and required new connections as compared to the water production capacity.	1. Advised to maintain daily records of all O&M activities. 2. Advised to maintain consumer complaints records. (Leakages in a pipeline are major complaints.) 3. Suggested to disclose water quality data to the consumers.	No infection to staffs and board members. Normal water supply operation.	
2021/1/3	1	Morang	Katahari	Ms. Pabina Moktan			Mr. Anil Kumar Singh - Engineer	Mr. Bidyanand Chaudhary - Chairperson Mr. Devraj Chaudhary - Secretary Mr. Dharmal Singh - Treasurer Mr. Ghuran Majhi - Board Member Mr. Kiran Rajbanshi - Office Manager Mr. Harilal Paswan - Pump Operator Mr. Mukesh Kamat - Plumber Mr. Ranjit Rajbanshi - Meter Reader	1. New deep well is under construction. 2. Chlorine dosing unit is needed. 3. Flowmeters need to be replaced.	1. Most of the operation records have been maintained. 2. KPIs are calculated based on the methodology of Basic Training.	Attached as a next sheet	1. Low water production capacity as compared to demand of new connections.	1. Chlorine dosing has been regularly operated. 2. Production record has been maintained based on the pump operation hours. (Flowmeters are malfunctioned.) 3. Advised to follow SOPs.	No infection to staffs and board members. Normal water supply operation.	
2021/1/4	1	Morang	Karsiya	Ms. Pabina Moktan			Mr. Anil Kumar Singh - Engineer	Mr. Chetraj Shrestha - Chairperson Ms. Upashi Devi Rajbanshi - Vice Chairperson Mr. Tej Kumar Basnet - Secretary Ms. Pushpalata Shrestha - Office Manager Mr. Banduram Rajbanshi - Pump Operator Mr. Laxman Pokharel - Meter Reader	1. 3 Flow meters need to be replaced. 2. Filtration tank is (There is no WTP) needed because the iron content is higher than guideline.	1. Pump Operation records have been maintained.	Attached as a next sheet	1. Lack of staffs. 2. Lack of awareness on quality of water. (Both staffs and consumers.)	1. Regular Chlorine dosing. 2. Pump operation records have been maintained. 2. Demonstrated to use the portable water quality test kit.	No infection to staffs and board members. Normal water supply operation.	
2021/1/5	1	Morang	Rangeli	Ms. Pabina Moktan			Mr. Shyam Sundar Singh - Engineer	Mr. Pradip Kumar Shah - Chairperson Mr. Shivraj Dahal - Office Manager Mr. Sambhu Mandal - Pump Operator Mr. Pramod Mandal - Plumber Ms. Laxmimaya Khatri - pump Operator	1. Chlorine unit is not working due to malfunction. (Dosing pump) 2. Flowmeters are not installed. (Lack of pipe fittings)	1. Most of the operation records have been maintained. 2. Low skill and knowledge to calculate KPIs.	Attached as a next sheet	1. No daily water quality test using portable water quality test kit. 2. Periodic water quality test using private lab. (They are using the laboratory to conduct water quality tests.)	1. Demonstrated the practical use of portable water quality test kit. 2. Explained the importance of record keeping. 3. Explained the use of SOPs in daily O&M.	No infection to staffs and board members. Normal water supply operation.	
2021/1/6	1	Morang	Bayarban	Mr. Humendra Deo Ms. Pabina Moktan				Mr. Hari Poudel - Chairperson Mr. Bijay Gaudaula - Vice Chairperson Mr. Badri Bhattarai - Secretary Mr. Dhurba Sapkota - Board Member Mr. Mahendra Ojha - Pump Operator Mr. Bhimlal Rajbanshi - Plumber Ms. Tara Limbu - Meter reader Ms. Sindhu Limbu - Office staff	1. Two deep wells are under construction. 2. Chlorination unit was not in operation because of minor maintenance. (Dosing pipe is broken. Not using since one month)	1. Daily and periodic record keeping is maintained. 2. Water quality results are not disclosed.	Attached as a next sheet		1. Distribution map was prepared. (the photos show the map) 2. Started to maintain records to calculate KPIs after basic training. 3. Explained the function of chlorination equipment. 4. Suggested to utilize PC to store and analyze the collected data.	No infection to staffs and board members. Billing counter closed during lockdown. Normal water supply operation.	
2021/1/7	1	Morang	Pathri-Sanisichare	Mr. Humendra Deo Ms. Pabina Moktan				Mr. Prem Prasad Dahal - Secretary Mr. Rajendra Timilsina - Office Manager Mr. Tulsiram Timilsina - Pump Operator Mr. Ram Prasad Khatiwada - Pump Operator Ms. Monika Ghimire - Accountant Ms. Krishna Kala Bhattarai - Store Assistant Mr. Dhan Bahadur Thapa - Office staff	1. Surface water source has been added. 2. Ground reservoir tank of 430 cum. has been constructed. 3. New set of WTP (aeration-pressure filter) was installed.	1. Daily record keeping is maintained. 2. Water quality data is not maintained.	Attached as a next sheet	1. Water tariff collection ratio is low. (Approximately 70%) 2. Suggested to implement some interventions to motivate people to pay the water bills.	1. Practical use of portable water quality test kit is demonstrated. 2. Explained the dosing amount of chlorine for effective use of chlorination unit. 3. Suggested to utilize PC to record and analyze data.	2 staffs and 3 board members were infected and recovered. Regular water supply to the consumers. No shutdown or supply operation slowdown.	

2021/1/8	1	Morang	Madhumalla	Mr. Humendra Deo Ms. Pabina Moktan			Mr. Mahendra Shah - Treasurer Ms. Radha Basnet - Office Manager Mr. Ekraj Dahal - Pump Operator Mr. Raju Budathoki - Manager, Uurlabari WUSC	Schematic Flow Diagram is same as before. No major changes in the water supply facilities.	Lacks record keeping knowledge and its importance.	Attached as a next sheet	1. Water from surface source is distributed free. (WUSC does not charge any tariff for surface water. Surface water is distributed free from the separate reservoir.) 2. Suggested to improve the quality of surface water (water quality test of surface water) so that WUSC can collect	1. Chlorine dosing has been regularly operated. 2. Suggested to use the SOPs and to maintain daily and periodic inspection records.	No infection to staffs and board members. Normal water supply operation.	
2021/1/9	1	Morang	Uurlabari	Mr. Humendra Deo Ms. Pabina Moktan			Mr. Raju Budathoki - Manager Mr. Chintamani Bhandari - Pump Operator Mr. Thakur Acharya - Pump Operator Mr. Dil Bahadur Rai - Lab Technician	Elevated Tank of 225 cum and 450 cum. are under construction.	1. Record keeping is maintained. 2. KPIs are calculated and shared with related stakeholders. (Consumers and Town Development Fund*) *TDF provides loan for co-finance projects.	Attached as a next sheet		1. Suggested to prepare a distribution pipeline diagram. (They need to update based on the extension of pipelines.)	2 staffs were infected and recovered. Normal water supply operation. No supply operation slowdown.	







Onsite Training at Lamjung district of Gandaki Province .

Date	Province	District	WUSC name	Trainer Did DWSSM issue the invitation letters to FWSSMP				WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Activities			photos
				FWSSMP	MoPID	WSSDO	NP/GP					Any Achievements	COVID-19 Affection (infected staff, supply operation slowdown, etc.		
2021/2/4	Gandaki	Lamjung	Besisahar					Mr. Krishna Kumar Pradhan - Chairman Mr. Lokendra Gurung - Vice Chairman Mr. Bhupati Wagle - Secretary Mr. Bharat Kumar Shrestha - Member Ms. Aash Kumari Gurung - Member Mr. Manilal B.K - Member Mr. Bishnu Bahadur Adhikari - Manager Mr. Trilochan Poudel - Technician	1. New intake (Vacho khola), treatment plant (Collection chamber, Sedimentation tank, Roughing filter and Slow sand filter) and 3 reservoirs (100 m ³ , 300m ³ , 500m ³) are constructed. 2. New intake (Kau khola) and reservoir 50 m ³ are constructed. 3. Require 2 chlorine dosing units and 3 flowmeters (25mm, 90mm, 200mm) Mr. Kabindra advised FWSSMP's engineers to include flowmeters and chlorination unit in a new construction.	1.No record keeping of operation and maintenance. 2. No water quality data.	Attached as a next sheet	1. Started online billing software (e-sewa)	1. Advised and provided consultation on the importance of record keeping. 2. Suggested to disclose water quality data to consumers. 3. Suggested special tariff (discounted) should be fixed for marginalized group (There are some poor households in rural area of Besisahar who cannot afford to pay water connection and water tariff). 4. Suggested frequent backwashing and cleaning of WTP (especially algae accumulation at the water surface of slow sand filter).	1 staff infected. Now recovered. Staffs worked in shift for the operation of water supply. No supply operation slowdown.	
2021/2/5	Gandaki	Lamjung	Bhotodard					Mr. Dumar Bahadur Karki - Chairperson Mr. Ramhari Neupane - Vice Chairperson Mr. Pritam Adhikari - Secretary Mr. Bhim Bahadur Karki - Treasurer Mr. Ishwori Raj Poudel - Board Member Ms. Laxmi Shrestha - Board Member Ms. Sambhulal Shrestha - Board Member Ms. Sobha Karki - Board Member Mr. Mohan Singh Gurung - Board Member Mr. Ajit Adhikari - Board Member Mr. Birendra Thapa - Board Member Mr. Rajan Adhikari - Accountant Mr. Dhir Bahadur Bhujel - Technician Mr. Kamal Thapa - Intake security Mr. Suk Bahadur Tamang - WTP security Mr. Krishna Kant Adhikari - Board Member	1. New reservoir 150 m ³ construction is ongoing. 2. No major changes in the schematic drawing. 3. Need to replace flowmeter 140 mm. Mr. Kabindra san suggested to replace by WUSC itself.	1. Operational Record is not maintained. 2. Schematic flow diagram is prepared. WUSC has a distribution network map but it need to be updated.	Attached as a next sheet	1. Advised and provided consultation on the importance of record keeping. 2. Suggested to disclose water quality data to consumers. 3. Special tariff (discounted) should be fixed for low income group. 4. Many WUSC's across Nepal adopt special connection charge for low income group. 4. Advised to update schematic flow diagram.	1 staff infected and recovered. Regular water supply to the consumers. No shutdown or supply operation slowdown.		
2021/2/6	Gandaki	Lamjung	Lasunekhola				Mr. Shyam Sundar Singh - Engineer	Mr. Prem G.C - Chairperson Mr. Murari Bhujel - Secretary Mr. Ram Hari Bhattarai - Board Member Mr. Mukti Raj Gurung - Board Member Mr. Prakash Chandra Adhikari - Board Member Ms. Yasodha Adhikari - Board Member Ms. Devi Cheetri - Board Member Ms. Kamala Shrestha - Board Member Mr. Chandra Bahadur Gurung - Office Manager Mr. Surya Kadel - WTP Guard Mr. Harish Chandra Adhikari - Plumber Mr. Narayan Khatiwada - Operator Mr. Ash Bahadur Tamang - Plumber Mr. Krishna Bahadur Tamang - Plumber	1.No any changes in a schematic flow diagram. 2. Mixer of the chlorine dosing unit is out of order.	1. Operation record is maintained. (customer complain record, water quality record-monthly, flow meter records, repair records) 2. WUSC has tried calculating NRW (approx. 25%)	Attached as a next sheet	1. Bought computer and going to install billing software.	1. Advised to maintain record in computer. 2. Advised to calculate KPIs. 3. Special tariff (discounted) should be fixed for marginalized group. 4. Frequent backwashing and cleaning of WTP (especially algae accumulation at the water surface of slow sand filter).	No infection to staffs and board members. Normal water supply operation.	
Observation Visit TWASMP team will prepare Management check sheet of other observation site visits.															
2021/2/7	Gandaki	Lamjung	Sundarbazaar					Mr. Nabin Pokhrel - Manager Ms. Sarita Gurung - Store keeper Mr. Lilanath Subedi - Technician Mr. Akkal Bahadur Kumal - Technician Mr. Sarva Singh Magar - Technician Mr. Ram Sharan Kumar - Technician Mr. Bidur Koirala - Meter Reader Mr. Mohan Gurung - Plumber	1. Raw water from Gyagdi kholcha is transmitted to Slow sand filter directly. 2. Due to blockage in dosing pipe Chlorine dosing unit is abandoned.	1. Records are not maintained. 2. Water Quality Test is not conducted.	-	1. Not sufficient water production capacity as compared to demand of new connections.	1. Suggested to resume chlorine dosing (WUSC was giver suppliers information) 2. Suggested to conduct water quality tests (at least FRC, turbidity) 3. Advised to follow SOPs for regular Operation and Maintenance.	No infection to staffs and board members. Normal water supply operation.	








Onsite Training at Nawalparasi East district of Gandaki Province.

Date	Province	District	WUSC name	DWSSM issued an invitation letters to FWSSMP/WSSDO/NPs/WUSCs.				WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Activities		COVID-19 Affection (infected staff, supply operation slowdown, etc.)	photos
				FWSSMP	MoPID	WSSDO	NP/GP					Any Achievements			
2021/2/16	Gandaki	Nawalparasi East	Agyauli					1. Sovit Sharma - Chairman 2. Saroj Bhandari - Manager 3. Shikharan Muloto - Plumber 4. Deuram Neupane - Meter Reader 5. Bishu Lamichhane - Pump Operator	1.1 Flowmeter of size 100mm needs to be replaced due to malfunction. Suggested WUSC to replace itself to grasp the accurate water volume data and calculate KPIs.	1. Records of water quality, production and consumption volume, operation and maintenance are maintained.	Attached as a next sheet	1. Started calculating Non Revenue Water (NRW). WUSC calculates NRW using the KPI's formula which we taught in Basic Training. 2. Tariff is revised such that consumers using less than 5 units (m ³) has to pay less. This revision was done to support marginalized group.	1. Advised to keep the records in computer because WUSC has a computer. 2. Suggested to calculate all Key Performance Indicator (KPIs).	Chairman was infected. Now recovered. Staffs worked in shift for the operation of water supply. No supply operation slowdown.	 
2021/2/17	Gandaki	Nawalparasi East	Gaidakot				Mr. Raju Aryal - Engineer (Gaidakot Nagarpalika)	1. Sovakar Rimal - Chairman 2. Taradevi Sharma - Vice Chairman 3. Dilli Raj Ghimire - Secretary 4. Nanda Prasad Ghimire - Member 5. Rabindra Raj Ghimire - Member 6. Ashok Tiwari - Accountant 7. Nandu Prasad Timilsina - Technician 8. Ananda Acharya - Water meter 9. Puskar Raj Dharmala - Pump Operator 10. Govinda Ghimire - Member 11. Naresh Pokhrel - Member 12. Khadananda Neupane - Member 13. Gita Tiwari - Member 14. Bipin Adhikari - Member	1. New 3 pumps and 1 Over head tank under construction. 2. 3 chlorine dosing units required. It is required for new facilities.	1. Water Quality record is maintained. 2. Schematic flow diagram was prepared.	Attached as a next sheet	1. Established water quality laboratory in office premise. WUSC prepared a separate room for laboratory. They use Potatest and Epoho test kit for water quality tests. Potates was provided by water quality section of DWSSM. 2. Discount tariff is given to marginalized group in installation charge. 3. WUSC broadcasts news to consumers through local fm radio service. Local FM is used to broadcast important messages for the community in Nepal. WUSC with adequate profit can afford to use local FM. Broadcasting cost is high for poor WUSCs.	1. Advised and provided consultation on the importance of record keeping. Pump operation is recorded. 2. Special tariff (discounted) should be fixed for marginalized group. This is an advice from FWSSMP's engineer. 3. Advised to update schematic flow diagram. Need to revise based on the new construction.	No infection to staff but some members of board were infected and recovered. Regular water supply to the consumers. No shutdown or supply operation slowdown.	 
2021/2/18	Gandaki	Nawalparasi East	Pragatinagar				Mr. Sagar Basyal (Engineer)	1. Kimmanara Bhusal - Chairman 2. Indramani Bhusal - Secretary 3. Purnkant Basal - Manager 4. Karuna Poudel Subedi - Billing 5. Raju Raj Neupane - Member 6. Sanswati Subedi - Member 7. Kalpana Shrestha - Member 8. Ishwar Pandey - Accountant 9. Krishna Bhusal - Member 10. Bishnu Ghimire - Member 11. Kabiram Ghimire - Member 12. Dandapani Neupane - Technician 13. Amber Chaudhari - Technician 14. Ganesh Chetri - Member 15. Debasana Basal - Member	1. New deep boring will be installed and water will be supplied directly to consumers. DWSSM/FWSSMP is a donor and it started to operate from December 2021. 2. 1 Ground reservoir and 1 Over head tank are under construction. 3. 1 chlorination unit and 1 flowmeter of size 100mm are required. Those are for new deep boring well.	1. Operation records have been maintained. (customer complain record, water quality records, monthly, flow meter records, repair records)	Attached as a next sheet	1. All 11 KPIs are calculated. 2. Established a well equipped laboratory in office premise with the support of Local Government. From in October 2021, 17 parameters can be tested.	1. Advised to analyze the calculated KPIs to prepare future business plan (I recommend the KPIs shall be describe in their annual report. I will relay the message to Pragatinagar WUSC.) 2. Advised lab technician to contact NWSSTC for further training and contact FWSSMP pokhara to obtain manuals.	No infection to staffs and board members. Normal water supply operation.	 
Observation Visit															
2021/2/19	Gandaki	Nawalparasi East	Rajapur					1. Ganga Bahadur Thapa - Chairman 2. Jagdish Neupane - Manager 3. Navraj Adhikari - Technician 4. Srijana Paswan - Meter Reader 5. Lali Bahadur Chhetri - Operator 6. Sam Bahadur Sam - Guard 7. Manu Kc - Plumber 8. Hemlal Dhakal - Plumber 9. Dinesh Acharya - Plumber 10. Muktiram Sharma - Office Assistant 11. Tej Prasad Aryal - Office Assistant	1. No need to changes flow diagram	1. Operation records are maintained.	Attached as a next sheet	1. Office building will be refurbished by WUSC itself, from in December, 2021.	1. Advised to calculate KPIs.	No infection to staffs and board members. Normal water supply operation.	









Onsite Training at Dang district of Province 5.



Date	Province	District	WUSC name	FWSSMP	MoPID	WSSDO	NP/GP	WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Activities			photos
												Others	Any Achievements	COVID-19 Afflection (infected staff, supply operation slowdown, etc)	
2021/3/3	5	Dang	Beljhundi	This time, nobody came with WASMIP team. reasons: 1) Lack of staff because FWSSMP is newly established in this area. 2) Onsite Training area is far from FWSSMP office . 3) NP/GP staffs have not received ToT , so DWSSM did not send invitation letter to NP/GP of this area. WASMIP team reported the On-site situation to chief of NWSSTC.				Madan Mani Pokharel - Manager Mankala Khadka - Billing Chat Bahadur Dang - Plumber Binod Kumar Acharya - Operator Bhaktiram Ghumariya - Operator Rabil K. Puri - Plumber Pataram Chaudhary - Guard Chamkalal Chaudhary - Guard Kumar Pun - Operator	No changes	1. O&M records are not maintained. (Consumer complaint record is only maintained.)	Attached as a next sheet	-	1. Advised to keep O&M records.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	 
2021/3/4	5	Dang	Narayanpur				Kul Prasad Rajaure - Chairperson Urmila Neupane - Manager Uma Basnet - Meter Reader Lalita DC - Office Assistant Srijana Rawat - Office Assistant Chitra Bahadur Khatri - Plumber	1. New deep tube well and over head tank of size 350 m ³ under construction. (It is a co-finance project.)	1. WUSC has kept records on water quality .	Attached as a next sheet	1. Started online bill payment system.	1. Advised to keep O&M records. WASMIP team recommended to conduct water quality tests and disclose the test result to consumers. So far, WUSC did not notify the consumers about water quality test results.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.		
2021/3/5	5	Dang	Jhakredhunga				Chandrakanta Kharel - Chairperson Dasarath Oli - Secretary Tara BK - Member Sushil Kafle - Manager Parbati Subedi - Member Tika Gurung - Operator Neben Chande - Plumber Biru Chaudhary - Plumber Mahesh Chaudhary - Plumber Ravi Chaudhary - Plumber	1. 1 flowmeter of size 140 mm needs to be replaced. 2. 1 chlorine dosing unit needed. 3. Diaphragm pump needed to be replaced. Replace means malfunction. Needed means nothing initially.	1. Records on water quality, production and consumption volume are maintained.	Attached as a next sheet	1. Started keeping O&M records.	1. Advised to calculate KPIs. 2. Advised to keep bulk meters above ground to avoid submergence. 3. Advised to install air valve to prevent shrinkage of pipelines. WUSC discloses water quality test result to consumers.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.		
2021/3/6	5	Dang	Chaughera				Rajulal Sharma - Chairperson Krishna Bahadur Dang - Manager Bhawana Neupane - Computer Operator Basanta Yogi - Plumber Kamal Chaudhari - Meter Reader Bal Bahadur Nepali - Pump Operator Mug Bahadur Rana - Pump Operator	1. New overhead tank (450m ³) under construction. Doner is Provincial Government. It is not a co-finance project.	1. O&M records are not maintained. (They have not attended Basic Training. NWSSTC has invited Chaughera WUSC in Basic Training V.)	Attached as a next sheet	-	1. Advised to keep O&M records.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.		
2021/3/6	5	Dang	Bharatpur				Smakar Gautam - Chairperson Ekendra Bahadur Rana - Secretary Minraj Lamsal - Vice- Secretary Binod Shrestha- Manager Shova Sharma Gautam - Office Assistant Ashok Shrestha - Meter Reader Brihaspati Bhattarai - Meter Reader Krishna Chaudhary - Plumber Basudev Thapa - Plumber Santosh Chaudhary 'A' - Pump Operator Santosh Chaudhary 'B' - Pump Operator Kumar Chaudhary - Pump Operator Sagar Chaudhary - Plumber Fulpat Chaudhary - Plumber Hira Kumal - Office Assistant	1. 3 well pumps, aeration tank, pressure filter and Over head tank (450 m ³) under construction. It is a co-finance project.	1. Records on water quality, production and consumption volume are maintained.	Attached as a next sheet	-	Advised to conduct FRC test daily and disclose water quality report to consumers.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.		

Onsite Training at Rupandehi and Nawalparasi district of Province 5.





Date	Province	District	WUSC name	FWSSMP	MoPID	WSSDO	NP/GP	WUSC member	Activities					COVID-19 Affection (infected staff, supply operation slowdown, etc.)	photos
									Schematic Flow Diagram	Record Keeping	Management Check	Others	Any Achievements		
2021/3/9	5	Rupandehi	Shankarnagar	Ms. Ajita Devkota Engineer (She has attended onsite ToT.)				1. Jhabindra Bhandari - Chairperson 2. Dil Bahadur Bhattarai - Vice Chairperson 3. Deepak Pandey - Manager 4. Krishna Upadhyay - Pump Operator 5. Giriraj Gyawali - Pump Operator 6. Rupesh Acharya - Pump Operator 7. Mitralal Neupane - Treasurer	1. 2 new deep tube wells with flowmeters, overhead tank (450 m ³) with chlorination unit under construction. 2. Other 2 deep tube wells with flowmeters, overhead tank (450m ³) with chlorination unit under construction. (It is a co-finance project.)	1. Records on water quality, production and consumption volume are maintained.	Attached as a next sheet	1. Digital panel boards are installed. (For operation of deep well pumps.)	1. Advised to calculate KPIs. 2. Advised to keep recording of flowmeter at the outlet of overhead tank too. 3. Advised to keep records of voltage and ampere in panel board. (WUSC does not have records of voltage and ampere.)	1. 1 Staff was affected by Covid-19 but recovered. (one person was affected.) 2. Staffs worked in shift for the operation of water supply. (Staffs were divided in groups.)	 
2021/3/10	5	Rupandehi	Anandaban	Ajita Devkota Engineer				1. Keshavraj Neupane - Chairperson 2. Kishor Chhetri - Vice Chairperson 3. Navaraj Neupane - Manager 4. Devi Pathak - Consultant Engineer 5. Ashok Thapa - Technician	1. 3 deep tube wells with flowmeters, overhead tank (450 m ³) with chlorination unit under construction. 2. 1 chlorination unit need to be replaced. (Because of dosing pump malfunction, one chlorination unit need to be repaired or replaced.)	1. Records on water quality, production and consumption volume are maintained.	Attached as a next sheet	1. Complaints from consumers about calcium residue and scaling of pipe lines due to high calcium content. 2. Hired engineer for effective O&M. (WUSC has already hired a consultant engineer in a contract basis. Consultant engineer mainly looks after the under construction co-finance project.)	1. Advised to calculate KPIs. 2. Advised to keep records of voltage and ampere in panel board. 3. Advised to conduct manual chlorination until chlorination unit is replaced. (one chlorination unit need to be repaired.)	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2021/3/12	5	Rupandehi	Sainamaina	Ajita Devkota Engineer				1. Kaviram Kunwar - Chairperson 2. Resham Khand- Secretary 3. Shanta Gyawali - Member 4. Suman Pariyar - Manager 5. Bishnu Khand - Technician 6. Chet Narayan Bhandari - Technician 7. Mukta Thapa - Pump Operator	1. 1 deep boring installed and 2 overhead tank (450m ³) under tendering process. 2. 3 flowmeters of size 100 mm needed and 1 chlorine dosing unit required. (Flow meters and chlorination unit were not installed during the construction of deep well pumps.)	1. Records on water quality, production and consumption volume are maintained.	Attached as a next sheet	1. Started online bill payment system.	1. Advised to calculate KPIs. 2. Advised to keep records of voltage and ampere in panel board. 3. Advised to keep production record by estimating flow rate of each pumps and operation hours.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2021/3/14	5	Rupandehi	Sauraha farsatikar	Ajita Devkota Engineer				1. On Bhadrur Faudar - Chairperson 2. Mina Chhetri - Manager 3. On Bahadur Khatri - Pump Operator 4. Rajkumari Tandani - Meter Reader 5. Suresh Dagoriya - Plumber 6. Hamnath Neupane - Plumber 7. Khagisara Khanal - Billing	1. One flowmeter of size 250 mm need to be replaced. (Flow meter does not work.) 2. One chlorination unit required.	1. Records on water quality, production and consumption volume are maintained. 2. Ampere, voltage records of pumps are also maintained.	Attached as a next sheet	1. Need chain pulley unit for O&M of deep tube well. 2. Hired engineer (Consultant engineer for supervision of water supply facilities. Consultant is not a full time and he works on a need basis.) for effective O&M.	1. Advised to calculate KPIs.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2021/3/15	5	Rupandehi	Devdaha	Ajita Devkota Engineer				1. Jhagarilal Sharma - Secretary 2. Anil Neupane - Manager 3. Yubraj Neupane - Plumber 4. Krishna Neupane - Meter Reader 5. Ram Bahadur Magar - Plumber 6. Guru Prasad Neupane - Plumber 7. Liladhar Basyal - Plumber 8. Tulsi Prasad Bhurtel - Plumber 9. Chabiram Chauhan - Pump Operator	1. 1 deep boring with flowmeter and overhead tank (225 m ³) with pressure filter, aeration and chlorination unit under construction. 2. 2 deep borings with flowmeters and overhead tank (450 m ³) with pressure filter, aeration and chlorination unit under construction. 3. 1 deep boring with flowmeter and overhead tank (450 m ³) with pressure filter, aeration and chlorination unit under construction. (No.1-3: It is a co-finance project.) 4. Flowmeters of size 160 mm and 110 mm needs to be replaced.	1. Records on water quality, production and consumption volume are maintained.	Attached as a next sheet	1. Started online bill payment system.	1. Advised to calculate KPIs. 2. Advised to keep records of voltage and ampere in panel board.	1. 1 board of member affected by covid-19 and died. 2. Staffs worked in shift for the operation of water supply.	
2021/3/16	5	Parasi-West	Ramgram	Ajita Devkota Engineer				1. Khageshwar Panthi - Chairperson 2. Chandra Prakash Gupta - V. Chairperson 3. Umashankar Upadhyay - Secretary 4. Prabandha Sapkota - Manager 5. Samikshya Yadav- Computer Operator 6. Samakwari Yadav- Accountant 7. Krishna Sahani - Pump Operator 8. Govind Yadav- Pump Operator 9. Badai Chaudhary - Plumber	1. 1 new deep tube well and overhead tank of size 450 m ³ with flowmeter in outlet and chlorination unit in operation. 2. 1 deep tube well under construction. 3. Flowmeters of size 80mm, 100mm, 100mm required. 4. 2 chlorine dosing unit required.	1. WUSC has kept records on water quality.	Attached as a next sheet	1. Started billing by computer. (WUSC procured billing system by own budget from the private company.) 2. WUSC requested solar pumping system as it lowers operation cost.	1. Advised to keep O&M records.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	

Onsite Training at Jhapa & Morang district of Province 1.





Date	Province	District	WUSC name	FWSSMP	MoPID	WSSDO	NP/GP	WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Others	Any Achievements	COVID-19 Affection (infected staff, supply operation slowdown, etc.)	Photos
2021/10/24	1	Jhapa	Dhulabari	Ms. Pabina Moktan (Engineer) Which FWSSMP? FWSSMP Biratnagar	Province 1	Jhapa	Mechinagar NP	1. Mr. Ajay Ghimire- Chairman 2. Mr. Dhankaji Khatri - V. Chairman 3. Mr. Rajesh Khadka - Member 4. Mr. Mr. Gayatri Dhungana - Manager 5. Mr. Arun Shah - Accountant 6. Mr. Krishna Acharya - Storekeeper 7. Mrs. Gita Khada - Office Assistant 8. Mrs. Tika Poudel - Billing 9. Mr. Suren Khatri - Plumber 10. Mr. Jaharman Nembang - Operator	1. Discharge point of Automatic Chlorination unit at existing elevated tank need to be replaced. 2. Flow meters in the deep well and distribution pipelines are damaged. 3. Strainer is malfunctioned. Need to be replaced or repaired immediately. However, local or Indian products are NOT available. 4. New project with overhead tank is under construction. New deep tube wells are also under construction.	1. Record keeping is maintained for operation and maintenance. 2. Water quality tests records are maintained. 3. KPIs are calculated every six month.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. Water tariff collection ratio is high. (Approximately 90%) 2. No daily water quality test using portable water quality test kit.	1. Advised and provided consultation of the importance of record keeping and calculating the KPIs. 2. Suggested to transfer technical knowledge among staffs on using SOPs for all O&M activities.	3 staffs infected and recovered. Regular water supply to the consumers. No shutdown or supply operation slowdown.	
2021/10/25	1	Jhapa	Juropani	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Gauradaha NP	1. Mr. Devraj Wasti - Chairperson 2. Mr. Bal Bdr Tamang - V. Chairperson 3. Mr. Bamdev Rajbanshi - Secretary 4. Mrs. Babita Kam - Member 5. Mrs. Nirmla Sivakoti - Member 6. Mr. Surendra Kharel - Member 7. Mr. Shyamraj Dahal - Member 8. Mr. Raharman Tamang - Operator 9. Mr. Deepak Wasti - Plumber	1. Flow meters are not working and needs to be replaced. FWSSMP engineer advised to replace it by themselves (WUSC). 2. No other significant change in the flow diagram.	1. Record keeping is not maintained. 2. Low skill to calculate KPIs. No knowledge to calculate KPIs. 3. Water quality data is not maintained.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. Lack of staffs. Only 2 staffs for 512 connections. 2. Lack of awareness on quality of water. (Both staffs and consumers.)	1. Suggested to follow SOPs for effective O&M of facilities. 2. Advised to maintain daily records of all O&M activities regularly. However, it turns out that WUSC has no skilled manpower to calculate KPIs.	No infection to staffs and board members. Normal water supply operation.	
2021/10/26	1	Jhapa	Gauradaha	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Gauradaha NP	1. Mr. Baburam Bhandari - Chairperson 2. Mr. Dandi Raj Ghimire - Secretary 3. Mr. Shree Prasad Tajpuria - Manager 4. Mr. Prem Shivakoti - Billing 5. Mrs. Sarswati Khatri - Accountant 6. Mr. Chandra Magar - Operator 7. Mr. Shani Magar - Plumber 8. Mr. Rti Bahadur Thapa - Plumber 9. Mr. Tek Bahadur Magar - Operator	1. Solar power plant was installed by DWSSM. 2. Periodic Operation & Maintenance is required. 3. New system with elevated tank and WTP has started to operate. New deep tube wells are also constructed.	1. Operation record is maintained. 2. Water quality tests record are maintained. 3. Consumer complains are also maintained.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. High water demand as compared to the water production capacity. 2. New source is required as demand is high. 3. Spare parts for repair and maintenance are not easily available in local market. FWSSMP will support to connect with suppliers.	1. Advised to maintain daily records of all O&M activities. 2. Advised to calculate KPIs regularly. WUSC understand how to calculate the KPIs but they are unaware of its importance. 3. Suggested to disclose water quality data to the consumers.	3 staffs infected and recovered. Regular water supply to the consumers. No shutdown or supply operation slowdown.	
2021/10/27	1	Jhapa	Shanishchare	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Shaniarjun NP	1. Mr. Chatramani Dhakal - Chairperson 2. Ms. Bipana Chhapagai - Manager 3. Mr. Arjun Karki - Operator 4. Mr. Rangalal Karki - Operator 5. Mr. Lalit Kunwar - Plumber 6. Mr. Lekh Chauhan - Plumber	1. Source failure. i.e. turbidity is high. Only one deep tube well is in operation. 2. Chlorine dosing unit is malfunctioned and needs to be repaired. 3. Flow meters need to be replaced. FWSSMP engineer advised to repair or replace chlorine dosing unit and flow meter by WUSC themselves.	1. Most of the operation records have been maintained. 2. Low skill to calculate KPIs. No knowledge to calculate KPIs. 3. Record on Pump Operation hours are maintained.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. Lack of awareness on quality of water. (Both staffs and consumers.) 2. Requested for water quality training.	1. Advised to calculate production record based on the pump operation hours. (Flowmeters are malfunctioned.) 2. Advised to follow SOPs. 3. Advised to calculate KPIs regularly. WUSC understood how to calculate the KPIs but they are unaware of its	1 staff infected and recovered. Regular water supply to the consumers.	
2021/10/28	1	Jhapa	Shivasatichi	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Shivasatichi NP	1. Mr. SinghaBdr Thamsulung - Chairperson 2. Mr. Prasad Dahal- Secretary 3. Mr. Durga Bhattarai - Treasurer 4. Mr. Rajendra Khadka - Manager 5. Ms. Sabitra Khadka - Billing 6. Mr. Milan Pokhrel - Meter reader 7. Mr. Shree Gautam - Plumber 8. Mr. Dilin Bhetwal - Operator	1. Flowmeters needs to be replaced. FWSSMP engineer advised to repair or replace it by WUSC themselves. 2. Chlorination unit is in operation. 3. Regular O&M are not done.	1. Pump Operation records have been maintained. 2. Low skill and knowledge to calculate KPIs.	Attached as a next sheet	1. No daily water quality test using portable water quality test kit.	1. Demonstration on use of portable water quality test kit is conducted. 2. Advised to calculate KPIs regularly. However, WUSC has no skilled manpower to calculate KPIs.	2 staffs infected and recovered. Regular water supply to the consumers.	
2021/10/29	1	Jhapa	Toppachi-I	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Kamal GP	1. Mr. Surya Prasad Limbu - Chairperson 2. Mr. Chandra Pokhrel - Manager 3. Mr. Hari Limbu - Operator 4. Mr. Shyam Shrestha- Plumber 5. Ms. Kopila Sharma - Office Assistant	1. Chlorination unit is in use. 2. Flow meters are installed. 3. Filtration Unit is malfunctioned. FWSSMP engineer advised to repair or replace it by WUSC themselves.	1. Operation and maintenance records are not maintained. 2. Low skill and knowledge to calculate KPIs. 3. Water quality record is not maintained.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. Daily water quality test using portable water quality test kit is not conducted. 2. Periodic water quality test are conducted using private lab in every 6 months.	1. Demonstration on use of portable water quality test kit is conducted. 2. Importance of record keeping is explained. 3. Method of using SOPs in daily O&M is explained. 4. Advised to calculate KPIs regularly. However, WUSC has no skilled manpower to calculate KPIs.	Staffs and Board members were not infected. Regular water supply to the consumers.	
2021/10/31	1	Jhapa	Toppachi-II	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Kamal GP	1. Mr. Hari Kumar Panjuli - Chairman 2. Mr. Dilip Bhandari - Manager 3. Mrs. Rita Bhandari - Accountant 4. Mr. Ram Bdr Tamang - Operator	1. Due to high concentration of iron and relatively less backwashing, filtration unit frequently gets choked.	1. Record keeping is not maintained. 2. Water quality data are not recorded. 3. Low skill and knowledge to calculate KPIs.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. Daily water quality test using portable water quality test kit is not conducted. 2. Water Tariff collection is just sufficient for the O&M.	1. Demonstration on use of portable water quality test kit is conducted. 2. Importance of record keeping is explained. 3. Method of using SOPs in daily O&M is explained. 4. If possible, daily backwashing of filtration unit is suggested. 5. Advised to calculate KPIs regularly. However, WUSC has no skilled manpower to calculate KPIs.	Staffs and Board members were not infected. Regular water supply to the consumers.	
2021/11/1	1	Jhapa	Toppachi-III	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Kamal GP	1. Mr. Mahendra Adhikari - Chairman 2. Mr. Mitralal Pokhrel - Manager 3. Mr. Tulasi Prasad Nepal - Operator 4. Mr. Rudra Kharel - Plumber	1. Insufficient pressure in distribution line interrupts flow of water. 2. Chlorination unit is in use.	1. Daily record is not maintained. 2. Water quality data is not maintained. 3. Low skill and knowledge to calculate KPIs.	Attached as a next sheet Provided simplified SOPs (A4 size).	1. Water tariff collection ratio is medium. (Approximately 85 %) 2. Daily water quality test using portable water quality test kit is not conducted.	1. Demonstration on use of portable water quality test kit is conducted. 2. Demonstration on calculating chlorine dosing rate is conducted. 3. Advised to calculate KPIs regularly. However, WUSC has no skilled manpower to calculate KPIs.	Staffs and Board members were not infected. Regular water supply to the consumers.	

2021/11/2	1	Jhapa	Chandragadhi-I	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Bhadrapur NP	<p>1. Mr. Baburam Karki - Secretary 2. Mr. Krishna Mainali - Member 3. Mr. Bishal Adhikari - Manager 4. Mr. Tirtharaj Pokharel - Accountant 5. Mr. Roshan Dahal - Billing 6. Mr. Shyam Rajbanshi - Operator 7. Mr. Chandra Rajbanshi - Office assistant 8. Mr. Radha Dhakal - Office assistant 9. Pralhad Rajbanshi - Operator</p>	<p>1. New facility with elevated tank and WTP is in operation. WUSC also has a new deep tube well. 2. Chlorine dosing unit is malfunctioned and needs to be repaired. 3. Rehabilitation is needed for old distribution pipeline. FWSSMP engineer advised to repair the chlorine dosing unit and pipes by WUSC</p>	<p>1. Record keeping is maintained. 2. KPIs are calculated. 3. Water quality data are recorded.</p>	Attached as a next sheet Provided simplified SOPs (A4 size).	<p>1. There is a provision of minimum water tariff for poor and disabled people. 2. Suggested to test the quality of water in the well equipped laboratory to verify results obtained from the portable water quality test kit.</p>	<p>1. Suggested to use KPIs for future planning. 2. Suggested to use the SOPs and to maintain daily and periodic inspection records.</p>	Staffs and Board members were not infected. Regular water supply to the consumers.	
2021/11/3	1	Jhapa	Chandragadhi-II	Ms. Pabina Moktan (Engineer)	Province 1	Jhapa	Bhadrapur NP	<p>1. Mr. Chudamadi Maimali - Chairman 2. Mr. Dhuurbaraj Karki- Secretary 3. Mr. Nar Bahadur Magar - Manager 4. Mr. Anurudra Timssina - Operator 5. Mr. Bikur Tiwari - Plumber 6. Mr. Tulsiram Adhikari - Plumber 7. Mr. Priyadas Nepali - Meter Reader</p>	<p>1. There is no provision of backup generator. 2. Chlorine dosing unit is in operation.</p>	<p>1. Record keeping is not maintained. 2. Low skill and knowledge to calculate KPIs. 3. Water quality data are not recorded.</p>	Attached as a next sheet Provided simplified SOPs (A4 size).	<p>1. Quick response for new household connection. 2. Periodic water quality test using private lab. They are using the laboratory to conduct water quality tests. WUSC sends water samples to lab twice a year.</p>	<p>1. Suggested to prepare a distribution pipeline diagram based on the extension of pipelines. 2. Suggested to calculate KPIs. Advised to calculate KPIs regularly. WUSC understood how to calculate the KPIs but they are unaware of its importance. 3. Suggested to maintain water</p>	Staffs and Board members were not infected. Regular water supply to the consumers.	




Onsite Training at Gandaki Province.

Date	Province	District	WUSC name	FWSSMP/DWSSM	MoPID	WSSDO	NP/GP	WUSC member	Activities					COVID-19 Affection (infected staff, supply operation slow down, etc.)	photos
									Schematic Flow Diagram	Record Keeping	Management Check	Others	Any Achievements		
2021/11/28	Lumbini	Nawalparasi	Rajahar	Mr. Sagar Basyal Engineer - FWSSMP Pokhara				<ol style="list-style-type: none"> 1. Mr. Ganga Bahadur Thapa - Chairperson 2. Ms. Sangita Sapkota - Secretary 3. Mr. Jagdish Neupane - Manager 4. Mr. Nawaraj Adhikari - Operator 5. Ms. Manu Ke - Accountant 6. Ms. Srijana Paswan - Meter Reader 7. Ms. Rekha Subedi - Office Assistant 8. Mr. Dinesh Acharya - Plumber 9. Mr. Muktiaram Sharma - Plumber 10. Mr. Hemlal Dhakal - Plumber 11. Mr. Som Saru - Operator 12. Mr. Tej Aryal - Operator 	<ol style="list-style-type: none"> 1. One flow meter of size 100mm needs to be replaced. FWSSMP advised to replace it by WUSC. 2. Nozzle of chlorine dosing needs to be replaced. FWSSMP explained the importance of chlorine concentration and suggested to replace the broken nozzle and use it as soon as possible. 3. A new deep boring with over head tank is under construction. 	<ol style="list-style-type: none"> 1. Water quality record is maintained. 2. Since billing is done by computer, consumption volume can be easily calculated. 3. Consumer complain record is also maintained. 4. WUSC maintains operation record to calculate KPIs. 	Attached as a next sheet	<ol style="list-style-type: none"> 1. Due to landslide, minor damage (leakage from walls) to slow sand filter was observed, but WTP is still working. 2. WUSC has purchased sand washing machine (Indian product) with WUSC budget. 	<ol style="list-style-type: none"> 1. Advised to repair the damage caused by landslide on slow sand filter. WUSC will repair the leakage by themselves. FWSSMP engineer reports the situation to the chief of Lamjung FWSSMP. 2. Advised to replace nozzle of chlorine dosing unit. 3. Simplified SOP (A4 size) was provided and instructed to use it. 	<ol style="list-style-type: none"> 1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply. 	 
2021/11/30	Gandaki	Lamjung	Sundarbazar	Mr. Balram Jha Engineer- FWSSMP Lamjung				<ol style="list-style-type: none"> 1. Mr. Tat Bahadur Gurung - Chairperson 2. Mr. Netra Bahadur Gurung - Secretary 3. Ms. Santa Kumari Gurung - Treasurer 4. Mr. Bhairab Raj Mishra - Member 5. Mr. Lilanath Subedi- Manager 6. Ms. Nabin Pokharel - Accountant 7. Ms. Sarita Gurung - Meter Reader 8. Ms. Ramsharan Kumal- Office Assistant 9. Mr. Bidur Koirala - Operator 10. Mr. Akkal Kumal - Operator 11. Mr. Sarbasingh Magar- Plumber 	<ol style="list-style-type: none"> 1. WTP is in risk of landslide and has not been used. 2. The capacity of WTP structures are outdated, and WTP has less filtering capacity to additional water demand. WUSC does not use WTP and has not done backwashed or cleaned the filter media since its operation. FWSSMP suggested to apply for co finance project or request a new WTP to other stakeholders. Existing WTP area has high risk of landslide. 	<ol style="list-style-type: none"> 1. Consumer complains record is kept. 2. WUSC has started to maintain operation records after attending Basic training. 	Attached as a next sheet	<ol style="list-style-type: none"> 1. Raw water is directly supplied to consumers via reservoir tank with partial chlorination. 2. WUSC needs new WTP as current WTP is in risk of destruction by landslide. 3. WUSC also requires new source to fulfill demand of growing population. 	<ol style="list-style-type: none"> 1. Advised to coordinate with local government, WSSDO and FWSSMP for support to mitigate the landslide problem. FWSSMP engineer will report the situation to DWSSM and mentioned that DWSSM is collecting data of flood damage to provide support to WUSCs. 2. Advised to change position of chlorination unit to reservoir for effective chlorination. 3. Simplified SOP (A4 size) was provided and instructed to use it. 	<ol style="list-style-type: none"> 1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply. 	 

Onsite Training at Ramechaap district of Bagmati Province .

Date	Province	District	WUSC name	FWSSMP /DWSSM	MoPID	WSSDO	NP/GP	WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Activities			photos
												Others	Any Achievements	COVID-19 Affection (infected staff, supply operation slowdown, etc.	
2021/12/10	3	Ramechaap	Manthali	1.Mr. Kabindra Bikram Karki -Chief of NWSSTC, DWSSM 2.Mr. Bishnu Gyawali -Accountant NWSSTC 3.Mr. Sudhir Kumar Sha 4.Mr. Ranjit Thapa 5.Mr. Santosh Thakur -Engineer, FWSSMP Ramechaap				1. Mr. Purna Bahadur Subedi - Chairman 2. Mr. Yam Bahadur Subedi - Member 3. Mr. Jagdish Subedi - Manager 4. Mr. Duk Bahadur Khatri - Operator 5. Mr. Indra Chapagain - Operator	1. One sump well with lifting pump and 1 ground reservoir of capacity 450 m ³ are constructed.	1. Operation and maintenance records were absent. 2. Pump and panel board operation records were absent. 3. No regular water quality test and record keeping.	Attached as a next sheet	1. Pumps are running in lower voltage than specified, frequent pump damage is observed. 2. Since chlorination units are not installed, water quality may not be safe. 3. Control panel boards are not equipped with proper ground earthing.	1. Mr. Kabindra advised to check and record voltage and ampere in panel board to mitigate pump breakage. 2. Advised to install chlorination units. 3. Advised to provide earthing to panelboards. 4. Advised to keep operation and maintenance records. 5. Advised to replace pressure gauge with suitable ranged gauge for a	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2021/12/11	3	Ramechaap	Ramechaap	1.Mr. Kabindra Bikram Karki -Chief of NWSSTC, DWSSM 2.Mr. Bishnu Gyawali -Accountant NWSSTC 3.Mr. Santosh Thakur -Engineer - FWSSMP Ramechaap				1. Mr. Gautam Kumar Shrestha - Chairman 2. Mr. Niraj Thapa Magar - Manager 3. Mr. Hari Bahadur Basnet - Technician 4. Mr. Thatendra Khadgi - Operator 5. Mr. Gobinda Mahatara - Lineman 6. Mr. Chitra Bahadur Karki - Plumber 7. Mr. Tirtha Bahadur Magar - Lineman	1. No major change	1. Operation and maintenance records were absent. 2. Pump and panel board operation records were absent. 3. No regular water quality test and record keeping.	Attached as a next sheet	1. WUSC requests training on mechanical electrical components. 2. No skilled manpower for electrical maintenance. 3. Pressure gauges installed in pumps are lower range than required ren. Hence, they are damaged range. 4. Electrical Transformer is installed near Ground level which can cause accidents. Electrical transformer is installed at low position from the ground. If it is touched by people passing the road, it can cause severe electrical shock and even death.	1. Advised to check and record voltage and ampere in panel board while using pumps. 2. Advised to change location of transformer to avoid accidents which electrical shocks can happen to people. 3. Advised to provide earthing to panelboards. 4. Advised to replace pressure gauge with suitable ranged gauges. 5. Advised to keep operation and maintenance records. 6. Advised to keep contact with NWSSTC regularly for trainings.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2021/12/12	3	Ramechaap	Pakarbas I	1.Mr. Kabindra Bikram Karki -Chief of NWSSTC, DWSSM 2.Mr. Bishnu Gyawali -Accountant NWSSTC 3.Mr. Sudhir Kumar Shah 4.Mr. Ranjit Thakur -Engineer - FWSSMP Ramechaap				1. Mr. Bhakta Bahadur Shrestha - Chairman 2. Ms. Laxmi Mainali - Secretary 3. Mr. Bishnu Shrestha - Treasurer 4. Mr. Uba Manandhar - Member 5. Mr. Dor Kumar Poudel - Member 6. Mr. Om Shrestha - Member 7.Mr. Sitaram Majhi - Operator	1. 4 stage lift system (4 ground water reservoirs and 4 lifting pumps) from sump well located at the bank of tama koshi river with 4 reservoirs of size 300, 250, 250 and 200 m ³ respectively is under operation. 2. 1 solar pumping system with reservoir of size 50m ³ is also constructed.	1. Operation and maintenance records were absent. 2. Pump and panel board operation records were absent.	Attached as a next sheet	1. WUSC requires chlorine dosing unit to safeguard water quality. 2. Control panel boards are not equipped with earthing. 3. Pressure gauge were not found in pumps. 4. Surface of solar panels were observed dusty and required cleaning.	1. Advised to check and record voltage and ampere in panel board while using pumps. 2. Advised to clean solar panels to increase efficiency of pumping. 3. Advised to provide earthing to panelboards. 4. Advised to keep operation and maintenance records. 5. Training on pump operation will be conducted and NWSSTC will invite the WUSC to attend it.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2021/12/13	3	Ramechaap	Pakarbas II	1.Mr. Kabindra Bikram Karki -Chief of NWSSTC, DWSSM 2.Mr. Bishnu Gyawali -Accountant NWSSTC 3.Mr. Sudhir Kumar Shah 4.Mr. Ranjit Thakur -Engineer - FWSSMP Ramechaap				1. Mr. Netra Bahadur Ke - Chairman 2. Mr. Bishal Shrestha - Manager 3. Mr. Hari Shrestha - Operator	1. 5 stage lift system from sump well located at the bank of tama koshi river with 5 reservoirs of size 300, 200, 200, 200 and 50 m ³ respectively is under operation. 2. 1 solar pumping system with reservoir of size 50m ³ is also constructed.	1. Operation and maintenance records were absent. 2. Pump and panel board operation records were absent.	Attached as a next sheet	1. WUSC needs to record flow meter to identify production volume. 2. WUSC requires chlorine dosing unit to safeguard water quality. 2. Control panel boards are not equipped with earthing. 3. Pressure gauge installed in facility are of lower range than required. Hence, pressure gauges are damaged.	1. Advised to check and record voltage and ampere in panel board while using pumps. 2. Advised to clean solar panels to increase efficiency of pumping. 3. Advised to provide earthing to panelboards. 4. Advised to keep operation and maintenance records. 5. NWSSTC will invite in a pump operation training to enhance the O&M capacity of WUSC's staffs.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	

Onsite Training at Raatchaap district of Province 3.

Date	Province	District	WUSC name	FWSSMP /DWSSM	MoPID	WSSDO	NP/GP	WUSC member	Schematic Flow Diagram	Record Keeping	Management Check	Others	Any Achievements	COVID-19 Affection (infected staff, supply operation slowdown, etc.	photos
Case study of Melamchi WUSC															
2022/1/20	Bagmati	Sindhupalchowk	Melamchi	-				1. Mr. Jagannath Chalise: Chairman 2. Mr. Netra Prasad Khatiwada: Vice Chairman 3. Mr. Kamal Shrestha: Secretary 4. Rekha Lamichane Dulal: Treasurer	1. Sump wells were destroyed due to recent flood in Melamchi and Indrawati river (June 2021). 2. WUSC has established two new spring source intake from Kanle Mul and Ghatte mul and has installed transmission line of diameter 90mm and length of approx. 5.5 km. 3. Distribution line of around 6 km needs to be laid. For this provision, local government has separated a sum of 15 lakh Rupees as support which is not enough.	1. WUSC is focussing on securing budget from local government and FWSSMP to lay distribution pipeline.	Attached as a next sheet	1. Due to landslide, soil has covered top and back of reservoir. No cracks or damage to reservoir was observed.	1. Adviced to utilize budget from local government and contact FWSSMP and WSSDO for further support for distribution pipeline laying. 2. Public contribution can also be done to gather essential budget.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
Onsite Training at Raatchaap district of Province 3.															
2022/1/21	Bagmati	Sindhupalchowk	Chautara	-				1. Mr. Samsar Shrestha: Vice Chairman 2. Shyam Krishna Shrestha: Secretary 3. Mr. Anuj Shrestha: Manager 4. Ananda Tamang: Plumber 5. Manoj Ghale: Plumber	1. Previously installed flowmeters at inlet of reservoir has been removed and two new flowmeters of size 150mm and 75 mm at inlet of receiving pit has been installed. 2. Mixing motor of Chlorine dosing unit is damaged. 3. New reservoir of size 250 m ³ is constructed.	1. Operation and maintenance records were absent. 2. Water quality records were absent.	Attached as a next sheet	1. Water treatment plant of WUSC is not in operation due to lack of rehabilitation and maintenance work.	1. Adviced to repair chlorine dosing unit. 2. Adviced to clean and repair water treatment units.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	
2022/1/22	Bagmati	Sindhupalchowk	Barabise	-				1. Mr. Nahendra Bahadur Shrestha: Chairman 2. Mr. Rajesh Shakya: Vice Chairman 3. Mr. Buddha Laxmi Shakya - Secretary 4. Mr. Kumar Magar - Operator	1. Sedimentation tank and slow sand filter has been constructed. 2. Mixing motor of Chlorine dosing unit is damaged.	1. Operation and maintenance records were absent. 2. Water quality records were absent.	Attached as a next sheet	1. WUSC requires water quality management training. 2. WUSCs facilities are in the risk of landslide.	1. Adviced to contact local government for support to construct retaining wall for protection against landslide.	1. Staffs were not affected by Covid-19. 2. Staffs worked in shift for the operation of water supply.	

Appendix 2.34

WUSC Rader Charts on Management Check

WASMIP-II: WUCS Water Supply Management Checklist

2. Summary of Evaluation Result for each Description

Total No. of WUCSs: **62**

Category	No.	Item	Descriptions	No. of "Yes" answers	No. of "No" answers	Percentage of "Yes" answers
Governance	1	Annual General Meeting	* WUCS holds an Annual General Meeting.	57	5	92%
			* The schedule of Annual General Meeting is notified to all users.	58	4	94%
			* Management Board member, attendance Rate of Annual General Meeting is high.	53	9	85%
			* WUCS invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	52	10	84%
			* WUCS reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	54	8	87%
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	53	9	85%
			* The election is conducted regularly in a transparent way.	56	6	90%
	3	Management Board	* The election is conducted with participation of all members of users committee.	56	6	90%
			* Management Board holds regular meeting.	60	2	97%
* The minutes of Management Board meeting are recorded.			61	1	98%	
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	60	2	97%	
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	48	14	77%	
		* Each sub-committee holds meeting regularly.	47	15	76%	
5	Internal Audit	* Each sub-committee makes decisions effectively.	47	15	76%	
		* Internal Audit Committee is established.	38	24	61%	
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	46	16	74%	
6	Social Considerations	* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	46	16	74%	
		* WUCS has adapted a policy on Gender Equality and Social Inclusiveness.	57	5	92%	
		* WUCS has adapted a policy on consideration for poor households.	19	43	31%	
7	Goal Management	* WUCS has adapted a policy on consideration for disabled people.	7	55	11%	
		* WUCS has explicitly declared statements for its goal. (e.g., mission statement, vision)	47	15	76%	
		* All staff know such mission statement or vision.	45	17	73%	
8	Mid-Term Plan	* WUCS has a mid-term management plan to detail the concept of mission statement or vision.	38	24	61%	
		* The mid-term management plan includes rehabilitation and/or replacement of facilities.	38	24	61%	
			0	62	0%	
9	Annual Report	* WUCS compiles and submits annual report timely.	58	4	94%	
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	60	2	97%	
Human Resources	10	Code of Conduct	* WUCS has stipulated Code of Conduct for staff.	56	6	90%
			* All staff recognize and comply with Code of Conduct.	59	3	95%
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions.	56	6	90%
			* The workload of manager and each staff are appropriate.	60	2	97%
			* The workload of manager and each staff are evenly distributed.	60	2	97%
	12	Staff Communications	* Staff reports their duties and problems regularly.	60	2	97%
			* Manager visits, monitors and advises staff regularly.	60	2	97%
			* Communication among staff to share problems is frequent.	60	2	97%
	13	Staff Appraisals	* WUCS conducts staff appraisals to objectively evaluate their performance of staff.	51	11	82%
			* Staff can receive incentives/acknowledgement for his/her good performance.	52	10	84%
14	Motivation	* Staff have high motivation to work.	60	2	97%	
		* Staff retention is high enough.	60	2	97%	
15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified.	59	3	95%	
		* Manager and Staff have sufficient knowledge and skills for their duties.	51	11	82%	
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	57	5	92%	
16	Training	* Staff receive training to increase knowledge and skill for their duties.	52	10	84%	
		* Training materials are archived for knowledge sharing among staff.	48	14	77%	
		* WUCS conducts induction training for new staff.	37	25	60%	
		* WUCS dispatch staffs to training in NWSSTC when they are invited.	60	2	97%	
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water.	33	29	53%
			* Existing water sources can provide safe water.	54	8	87%
			* WUCS has a plan to increase new water resource (surface/groundwater).	56	6	90%
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand.	32	30	52%
			* WUCS has expansion and/or new Water Treatment Plant constructions.	24	38	39%
			* Service Hours is long enough to respond to water demand.	41	21	66%
			* Service Hours is same throughout rainy season and dry season.	47	15	76%
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality.	31	31	50%
			* Water Treatment Plant is backwashed and/or maintained in a timely manner.	31	31	50%
			* WUCS understands dosing amount of chlorine solution for using chlorination unit.	55	7	89%
20	Measurement Equipment	* Permissible turbid water (lower turbidity) is used in a water treatment plant.	47	15	76%	
		* Water production facilities are equipped with meter and gauge for water volume and pressure.	47	15	76%	
		* WUCS has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	55	7	89%	
21	Maintenance Equipment	* WUCS has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	57	5	92%	
		* WUCS has toolkit for maintenance and repair of facilities.	52	10	84%	
		* WUCS has cleaning tools for facilities.	53	9	85%	
22	Distribution Network	* WUCS understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	31	31	50%	
		* WUCS has safety tools and equipment.	53	9	85%	
		* WUCS maintains (develops and/or updates) a map of distribution network.	42	20	68%	
23	Disaster management	* Household connections are high enough.	44	18	71%	
		* Metered Ratio for houses and commercial buildings is high enough.	56	6	90%	
		* WUCS has valves or air valves or washout valves or fire hydrant in a distribution network.	35	27	56%	
		* WUCS has disaster management plan.	18	44	29%	
		* Facilities are resistant/protected to natural disaster.	53	9	85%	
		* WUCS has an insurance for water supply facilities.	2	60	3%	

WASMIP-II: WUSC Water Supply Management Checklist

24	Power Supply	* Power supply is stable.	54	8	
		* WUSC has backup generator in case of power failure.	32	30	
25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	54	8	
		* Breakdown of facilities is not frequent.	54	8	
		WUSC has cleaned the Water Treatment Plant.	36	26	
26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	57	5	
		* WUSC has laboratory for water quality test.	17	45	
		* WUSC has workshop and inventory stores for repair and maintenance.	41	21	
		* Facilities have sufficient security.	62	0	
27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	46	16	
28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	56	6	
		* Production Ratio (supplied water per person) is at an appropriate level.	57	5	
		* WUSC has periodically scraped and washed the sand in slow sand filter (if any).	10	52	
29	Manuals	* WUSC has Schematic Flow Diagram (water supply system drawing).	58	4	
		* WUSC has a SOP (Standard Operating Procedure) for all facilities.	62	0	
		* WUSC has manuals for equipment and use them.	48	14	
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	52	10	
30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	45	17	
		* WUSC understands proper sampling points in water supply systems.	51	11	
		* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	19	43	
		* WUSC sends samples to a laboratory for monthly or yearly water quality test.	41	21	
		* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	55	7	
31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.	49	13	
32	Periodical Operations	* Case of water leakage is at an acceptable level.	56	6	
		* Water leakage is repaired within short time after a case is reported.	60	2	
		* WUSC has major fittings in stock for emergency water leakage maintenance.	60	2	
33	Troubleshooting	* The annual plan of periodical maintenance is formulated.	33	29	
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	43	19	
		* WUSC records Periodical Operations in a record book.	41	21	
34	Inventory Management	* Immediate action is taken for the problems.	60	2	
		* There is NO out of order in the water supply facilities.	55	7	
		* NRW (Non-Revenue Water) is low enough.	57	5	
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	23	39	
35	Office	* WUSC records all the troubleshooting in a record book.	48	14	
36	Operation Record	* Spare parts are stocked orderly in a designated space or shelf.	60	2	
		* Spare parts are replenished timely in case of out of stock.	60	2	
		* Quantity of spare parts are counted and recorded regularly.	57	5	
37	ICT	* Water treatment facilities and water source are cleaned regularly.	54	8	
		* WUSC office is cleaned and tidied regularly.	60	2	
		* WUSC has a computer to record and analyze data.	43	19	
38	Document Management				
39	Water Tariff	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	47	15	
		* Manager checks the operation and inspection records regularly.	56	6	
		* Result of water quality test is recorded and disclosed to the public daily.	41	21	
40	Cost Management	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	34	28	
		* Staff have sufficient knowledge and skills to operate computer systems.	43	19	
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	47	15	
41	Tariff Collection	* Important documents are filed and stored orderly.	61	1	
		* Documents are regularly checked by Manager for inspection.	60	2	
		* Documents are regularly checked by Internal Audit Committee for audit.	50	12	
42	Accounting				
43	Procurement	* Current level of water tariff can cover operating cost.	52	10	
		* Current level of water tariff is at an affordable level.	58	4	
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	59	3	
44	Financial Analysis	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	59	3	
45	Customers Management	* Schedule of meter reading and billing is fixed.	58	4	
		* WUSC is making an effort that uncollected bills of water tariff are minimal.	59	3	
46	Information Disclosure	* All financial transactions are recorded timely.	60	2	
		* Cash on hand is checked and stored in a lockable safe daily.	60	2	
		* Balance of deposits in all bank accounts is checked at least monthly.	60	2	
47	Public Awareness	* Procurement is always authorized by relevant sub-committee.	43	19	
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	59	3	
48	Online Services	* WUSC produces trial balance (amount of money) regularly at least quarterly.	48	14	
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	59	3	
49	Government	* WUSC responds to claim and requests from customers timely.	60	2	
		* All claims from customers are recorded.	54	8	
		* Customer satisfaction is high for water service.	59	3	
50	WUSC Network	* The result of water supply operations including water quality test is disclosed daily.	30	32	
		* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	56	6	
51	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	34	28	
		* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	44	18	
52	Government	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	43	19	
53	WUSC Network	* WUSC understands national level laws, regulations and policy on water sector.	53	9	
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	58	4	
		* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	61	1	
54	WUSC Network	* WUSC interacts with other WUSCs regularly.	55	7	
		* WUSC organizes yearly observation tour to visit other WUSCs.	33	29	

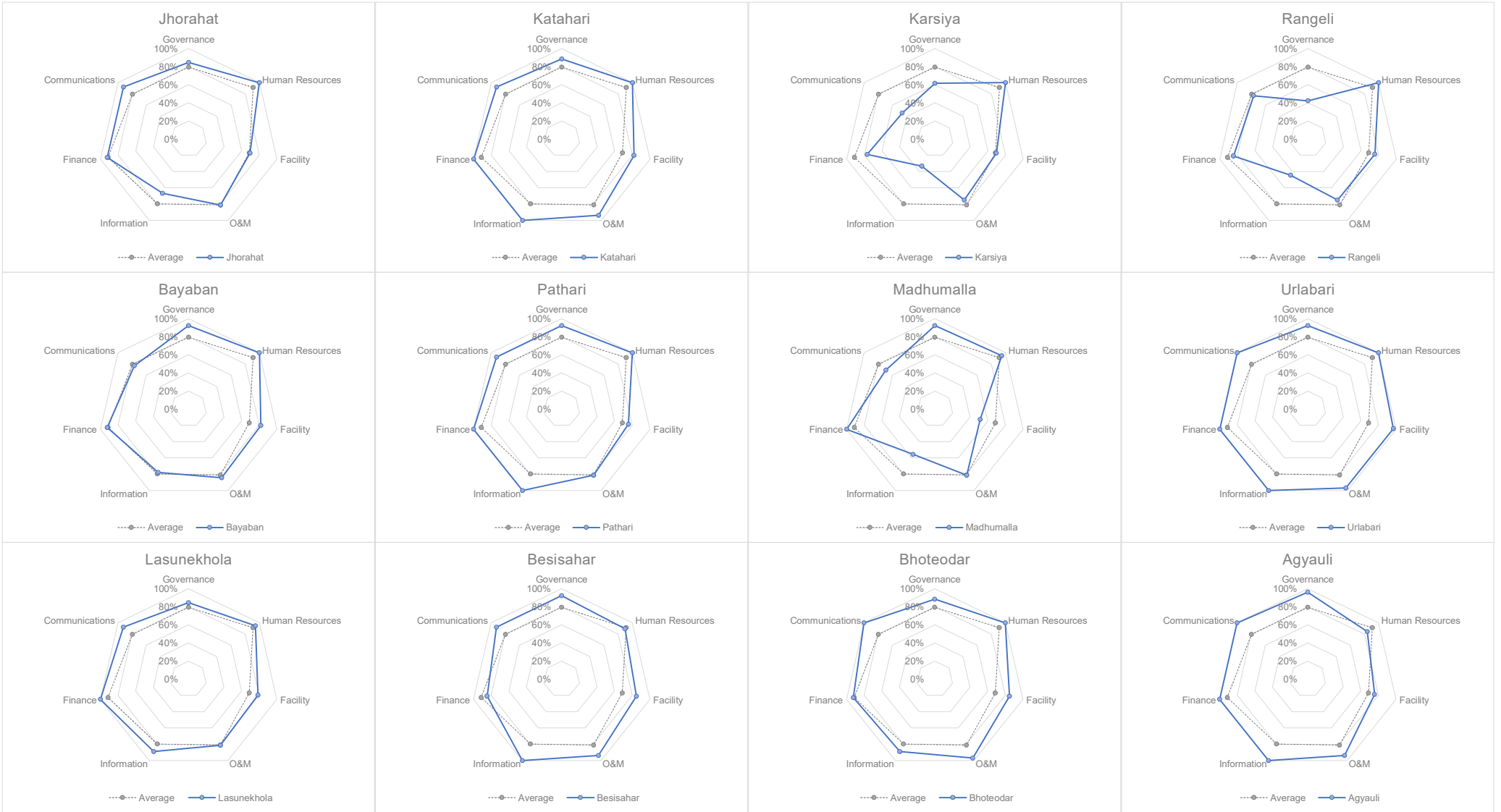
Blue Character indicates the percentage of "No" answers to total No. of WUSCs is 60% to 80%.
Red Character indicates the percentage of "No" answers to total No. of WUSCs is over 80%.

WASMP-II: WUSC Water Supply Management Checklist

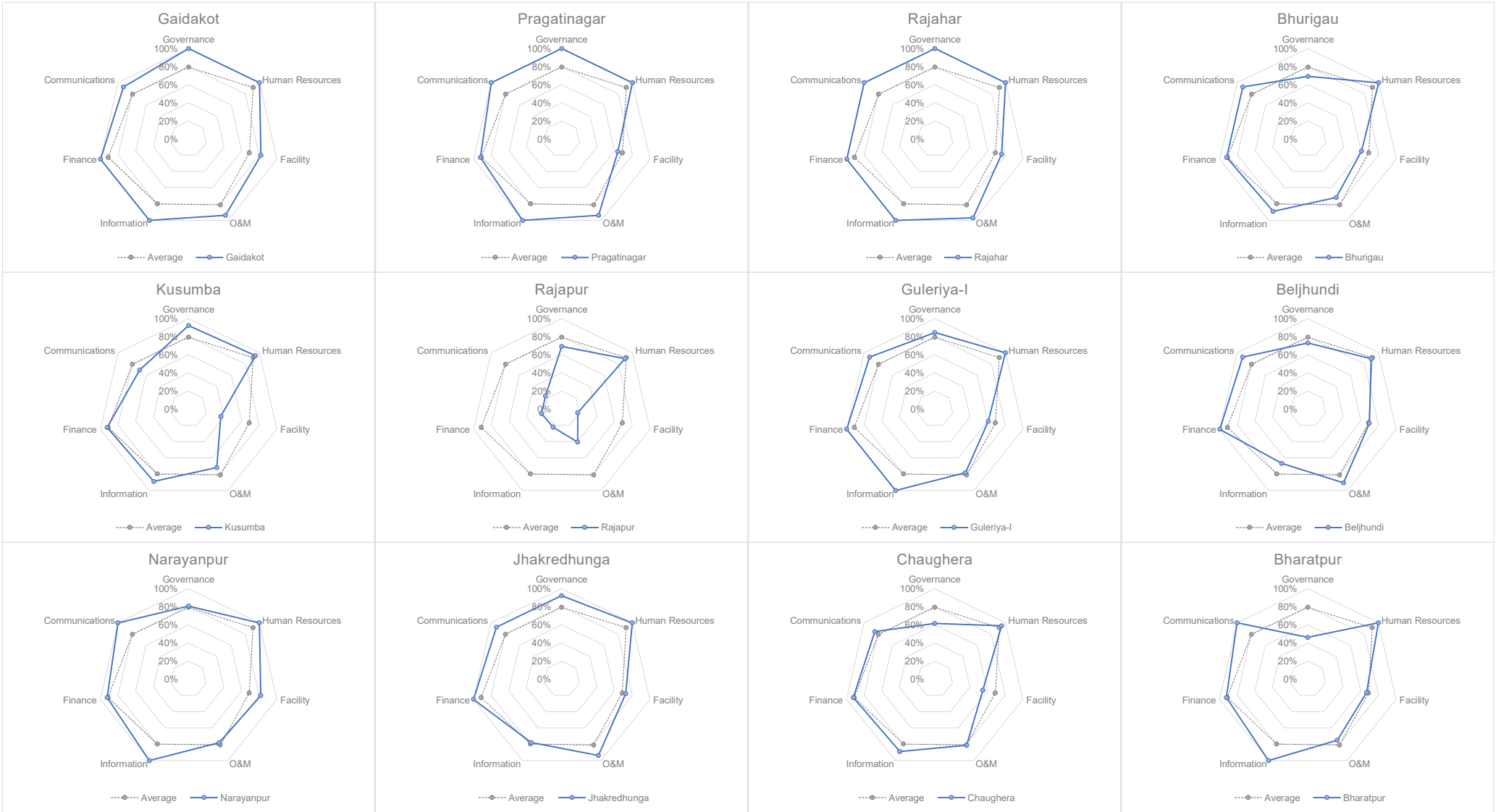
5. Rader Chart showing evaluation result for each Category



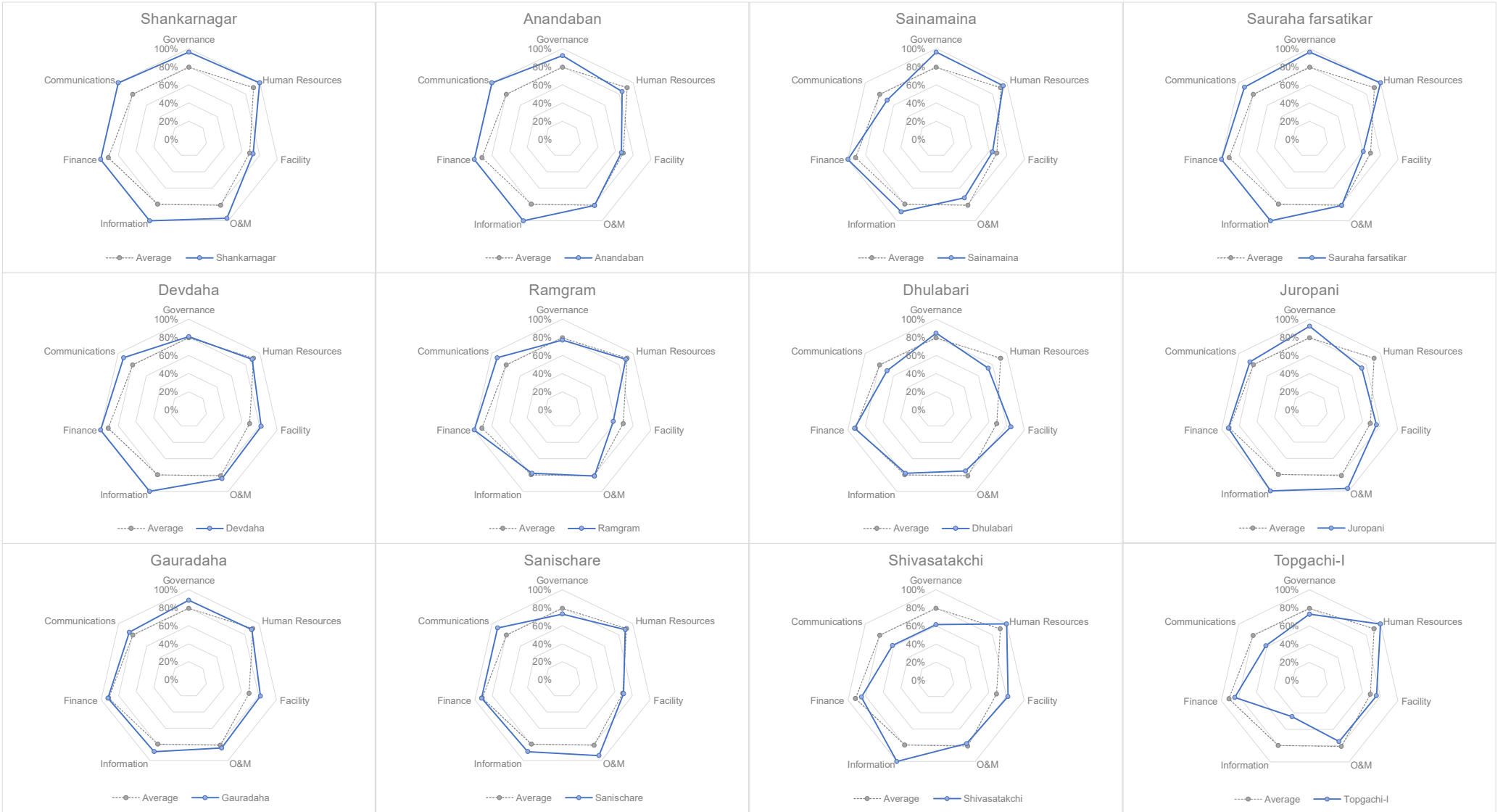
WASMP-II: WUSC Water Supply Management Checklist



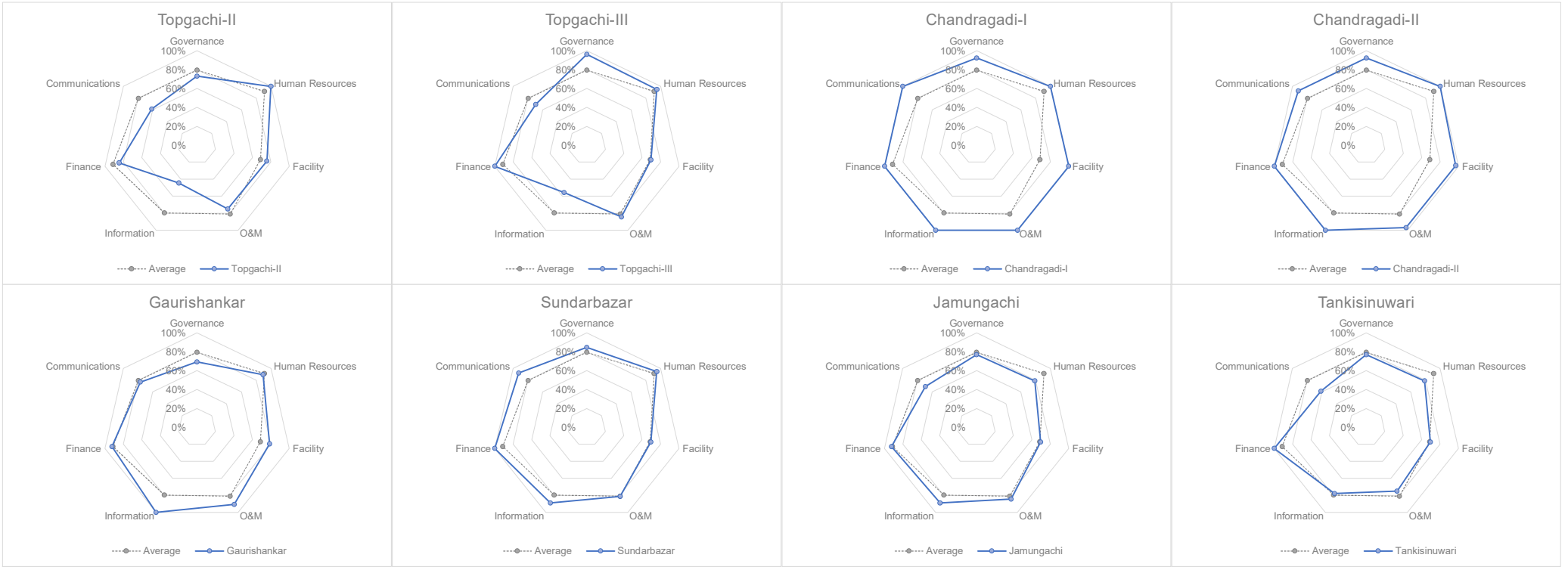
WASMIP-II: WUSC Water Supply Management Checklist



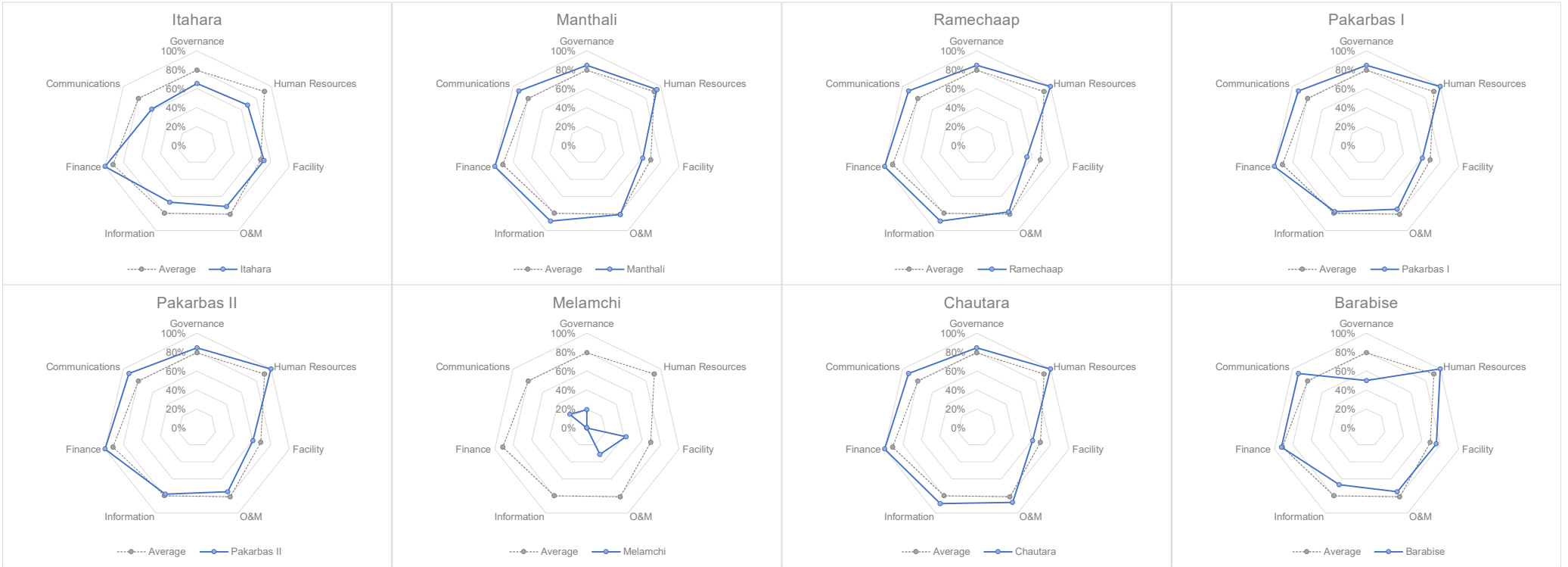
WASMIP-II: WUSC Water Supply Management Checklist



WASMIP-II: WUSC Water Supply Management Checklist



WASMIP-II: WUSC Water Supply Management Checklist



Appendix 2.35

Management Check Results

No.	WASC	District	Province	Date
1	Barathwa	Sarlahi	No.2	2020/3/6
2	Dhalkebar	Dhanusha	No.2	2020/3/3
3	Dumbarwana	Bara	No.2	2020/3/12
4	Hariyon	Sarlahi	No.2	2020/3/5
5	Ishworpur	Sarlahi	No.2	2020/3/4
6	Karmaiya	Sarlahi	No.2	2020/3/9
7	Nijgadh	Bara	No.2	2020/3/11
8	Simara	Bara	No.2	2020/3/13
9	Pichhra	Morang	No.1	2020/12/31
10	Mangadh	Morang	No.1	2021/1/1
11	Jhorahat	Morang	No.1	2021/1/2
12	Katahari	Morang	No.1	2021/1/3
13	Karsiya	Morang	No.1	2021/1/4
14	Rangeli	Morang	No.1	2021/1/5
15	Bayaban	Morang	No.1	2021/1/6
16	Pathari	Morang	No.1	2021/1/7
17	Madhumalla	Morang	No.1	2021/1/8
18	Urlabari	Morang	No.1	2021/1/9
19	Lasunekhola	Lamjung	Gandaki	2021/2/6
20	Besisahar	Lamjung	Gandaki	2021/2/4
21	Bhoteodar	Lamjung	Gandaki	2021/2/5
22	Agyauli	Nawalparasi East	Gandaki	2021/2/16
23	Gaidakot	Nawalparasi East	Gandaki	2021/2/17
24	Pragatinagar	Nawalparasi East	Gandaki	2021/2/18
25	Rajahar	Nawalparasi East	Gandaki	2021/2/19
26	Bhurigau	Bardiya	Lumbini	2021/2/23
27	Kusumba	Bardiya	Lumbini	2021/3/1
28	Rajapur	Bardiya	Lumbini	2021/3/2
29	Guleriya-I	Bardiya	Lumbini	2021/3/2
30	Beljhundi	Dang	Lumbini	2021/3/3
31	Narayanpur	Dang	Lumbini	2021/3/4
32	Jhakredhunga	Dang	Lumbini	2021/3/5
33	Chaughera	Dang	Lumbini	2021/3/6
34	Bharatpur	Dang	Lumbini	2021/3/6
35	Shankarnagar	Rupandehi	Lumbini	2021/3/9
36	Anandaban	Rupandehi	Lumbini	2021/3/10
37	Sainamaina	Rupandehi	Lumbini	2021/3/12
38	Sauraha farsatkar	Rupandehi	Lumbini	2021/3/14
39	Devdaha	Rupandehi	Lumbini	2021/3/15
40	Ramgram	Parasi-West	Lumbini	2021/3/16
41	Dhulabari	Jhapa	No.1	2021/10/24
42	Juropani	Jhapa	No.1	2021/10/25
43	Gauradaha	Jhapa	No.1	2021/10/26
44	Sanischare	Jhapa	No.1	2021/10/27
45	Shivasatakchi	Jhapa	No.1	2021/10/28
46	Topgachi-I	Jhapa	No.1	2021/10/29
47	Topgachi-II	Jhapa	No.1	2021/10/31
48	Topgachi-III	Jhapa	No.1	2021/11/1
49	Chandragadi-I	Jhapa	No.1	2021/11/2
50	Chandragadi-II	Jhapa	No.1	2021/11/3
51	Gaurishankar	Jhapa	No.1	2021/11/5
52	Sundarbazar	Lamjung	Gandaki	2021/11/30
53	Jamungachi	Morang	No.1	2021/11/8
54	Tankisinuwari	Morang	No.1	2021/11/9
55	Itahara	Morang	No.1	2021/11/12
56	Manthali	Ramechaap	No.3	2021/12/10
57	Ramechaap	Ramechaap	No.3	2021/12/11
58	Pakarbas I	Ramechaap	No.3	2021/12/12
59	Pakarbas II	Ramechaap	No.3	2021/12/13
60	Melamchi	Sindhupalchowk	Bagmati	2022/1/20
61	Chautara	Sindhupalchowk	Bagmati	2022/1/21
62	Barabise	Sindhupalchowk	Bagmati	2022/1/22

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Barathhwa WUSC

Survey Date: 6th March,2020

Inspector Name: Mr. Kishan Kumar Singh

Respondent Name: Mr. Dukhi Mahato (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.		✓	WUSC is not in operation.	
			* The schedule of Annual General Meeting is notified to all users.		✓	WUSC is not in operation.	
			* Management Board member, attendance Rate of Annual General Meeting is high.		✓	WUSC is not in operation.	
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.		✓	WUSC is not in operation.	
				* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.		✓	WUSC is not in operation.
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.		✓ ✓ ✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.	
6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.	
7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.			✓ ✓	No mission statement was found.	
8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.			✓ ✓	WUSC is not in operation. WUSC is not in operation.	
9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.			✓ ✓	WUSC is not in operation. WUSC is not in operation.	
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.			✓ ✓	WUSC is not in operation. WUSC is not in operation.
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.			✓ ✓	WUSC is not in operation. WUSC is not in operation.
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.			✓ ✓	WUSC is not in operation. WUSC is not in operation.
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.			✓ ✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water.			✓ ✓	WUSC is not in operation. WUSC is not in operation.
	18	Facility for Water Volume	* WUSC has a plan to increase new water resource (surface/groundwater).			✓	WUSC is not in operation.
			* Water Treatment Plant has sufficient capacity to respond to water demand.			✓	WUSC is not in operation.
			* WUSC has expansion and/or new Water Treatment Plant constructions.			✓	WUSC is not in operation.
	19	Facility for Water Quality	* Service Hours is long enough to respond to water demand.			✓	WUSC is not in operation.
			* Service Hours is same throughout rainy season and dry season.			✓	WUSC is not in operation.
	20	Measurement Equipment	* Water Treatment Plant has necessary facilities to improve water quality.			✓	WUSC is not in operation.
			* Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
	21	Maintenance Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure.		✓		
			* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)		✓ ✓		
22	Distribution Network	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.			✓ ✓ ✓ ✓	No toolkit was found. No toolkit was found. No staff in WUSC	
		* WUSC maintains (develops and/or updates) a map of distribution network.		✓			
		* Household connections are high enough.			✓	Distribution pipelines were destroyed during road construction.	
		* Metered Ratio for houses and commercial buildings is high enough.			✓	Distribution pipelines were destroyed during road construction.	
23	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.			✓	Distribution pipelines were destroyed during road construction.	
		* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.			✓ ✓ ✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.	
24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.		✓	✓	WUSC is not in operation.	

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.		✓	Facilities are old and require repair.
			* Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.		✓	Facilities are old and require repair. WUSC has no treatment plant.
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.		✓	WUSC is not in operation. Thus, has no office.
			* WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.		✓	WUSC is not in operation. WUSC is not in operation.
O&M Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	No staff in WUSC.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.		✓	WUSC is not in operation.
			* Production Ratio (supplied water per person) is at an appropriate level.		✓	WUSC is not in operation.
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any).		✓	WUSC is not in operation.
			* WUSC has Schematic Flow Diagram (water supply system drawing).		✓	WUSC is not in operation.
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.		✓	WUSC is not in operation. WUSC is not in operation.
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	WUSC is not in operation.
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards).		✓	WUSC is not in operation. WUSC is not in operation.
31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.		✓	WUSC is not in operation.	
		* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.		✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.	
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.		✓	WUSC is not in operation.	
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.		✓	WUSC is not in operation. WUSC is not in operation.	
33	Troubleshooting	* Immediate action is taken for the problems.		✓	WUSC is not in operation.	
		* There is NO out of order in the water supply facilities.		✓	WUSC is not in operation.	
		* NRW (Non-Revenue Water) is low enough.		✓	WUSC is not in operation.	
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.		✓	WUSC is not in operation. WUSC is not in operation.	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.		✓	WUSC is not in operation.	
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.		✓	WUSC is not in operation. WUSC is not in operation.	
35	Office	* Water treatment facilities and water source are cleaned regularly.		✓	WUSC is not in operation.	
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.		✓	WUSC is not in operation. WUSC is not in operation.	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.		✓	WUSC is not in operation.
			* Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.		✓	WUSC is not in operation. WUSC is not in operation.
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	WUSC is not in operation. WUSC is not in operation. WUSC is not in operation.
38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		WUSC is not in operation. WUSC is not in operation.	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost.		✓	WUSC is not in operation.
			* Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.		✓	WUSC is not in operation. WUSC is not in operation.
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.		✓	WUSC is not in operation.
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.		✓	WUSC is not in operation.
			* WUSC is making an effort that uncollected bills of water tariff are minimal.		✓	WUSC is not in operation.
42	Accounting	* All financial transactions are recorded timely.		✓	WUSC is not in operation.	
		* Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.		✓	WUSC is not in operation. WUSC is not in operation.	
43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.		✓	WUSC is not in operation. WUSC is not in operation.	
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.		✓	WUSC is not in operation.	
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.		✓	WUSC is not in operation.	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.		✓	WUSC is not in operation.
			* All claims from customers are recorded. * Customer satisfaction is high for water service.		✓	WUSC is not in operation. WUSC is not in operation.
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	WUSC is not in operation.
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).		✓	WUSC is not in operation.
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	WUSC is not in operation.
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓	WUSC is not in operation.
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	WUSC is not in operation.	
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.		✓	WUSC has better connections with WSSDO.	
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.		✓	WUSC is not in operation. WUSC is not in operation.	

Surveyor Name with Organization and Position
Mr. Kishan Kumar Singh , FWSSMP Jhanakpur, Engineer

WUSC Responsible Person Name: Mr. Dukhi Mahato (Position: Chairman)

Signature

Signature

Inspector Name: Mr. Birendra Kumar Mahato Respondent Name: Mr. Bhojraj karki (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.		✓	Board of member was elected 6 months ago.
			* The schedule of Annual General Meeting is notified to all users.		✓	New board of members.
			* Management Board member, attendance Rate of Annual General Meeting is high.		✓	New board of members.
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.		✓	New board of members.
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.		✓	New board of members.
	2	Election	* The members of Management Board are selected by election.		✓	Lack of necessary rules and regulations.
			* The election is conducted regularly in a transparent way.		✓	Lack of necessary rules and regulations.
			* The election is conducted with participation of all members of users committee.		✓	Lack of necessary rules and regulations.
	3	Management Board	* Management Board holds regular meeting.	✓		
* The minutes of Management Board meeting are recorded.			✓			
Human Resources	4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓		
			* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)		✓	Board doesnot feel the need of sub-committee.
	5	Internal Audit	* Each sub-committee holds meeting regularly.		✓	No sub-committee
			* Each sub-committee makes decisions effectively.		✓	No sub-committee
			* Internal Audit Committee is established.		✓	Board doesnot have such information.
	6	Social Considerations	* Internal Audit Committee submits findings and recommendations to Management Board regularly.		✓	No Internal Audit Committee
			* An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	No Internal Audit Committee
			* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.		✓	Women are not intrested.
			* WUSC has adapted a policy on consideration for poor households.		✓	Minimum tariff is low.
7	Goal Management	* WUSC has adapted a policy on consideration for disabled people.		✓	Disabled people can pay the tariff.	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)		✓	Lack of information.	
8	Mid-Term Plan	* All staff know such mission statement or vision.		✓	No mission statement.	
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓	No plan	
9	Annual Report	* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No plan	
		* WUSC compiles and submits annual report timely.	✓		Will send after preparation.	
10	Code of Conduct	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.		✓		
		* WUSC has stipulated Code of Conduct for staff.		✓	Not prepared due to lack of knowledge.	
Facility	11	Job Descriptions	* All staff recognize and comply with Code of Conduct.		✓	No code of conduct.
			* The duties of manager and each staff are explicitly described in job descriptions.		✓	No job description.
	12	Staff Appraisals	* The workload of manager and each staff are appropriate.	✓		
			* The workload of manager and each staff are evenly distributed.	✓		
	13	Motivation	* Staff reports their duties and problems regularly.	✓		
			* Manager visits, monitors and advises staff regularly.	✓		
	14	Knowledge and Skills	* Communication among staff to share problems is frequent.	✓		
			* WUSC conducts staff appraisals to objectively evaluate their performance of staff.		✓	Lack of necessary data
15	Training	* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
		* Staff have high motivation to work.	✓			
16	Water Source	* Staff retention is high enough.	✓			
		* The knowledge and skills required for manager and staff have been identified.	✓			
17	Facility for Water Volume	* Manager and Staff have sufficient knowledge and skills for their duties.	✓		Lack of training.	
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
18	Facility for Water Quality	* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.	✓			
19	Measurement Equipment	* WUSC conducts induction training for new staff.	✓		No new staff.	
		* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
20	Maintenance Equipment	* Existing water sources can provide sufficient volume of water.	✓			
		* Existing water sources can provide safe water.	✓			
21	Distribution Network	* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
		* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
22	Disaster management	* WUSC has expansion and/or new Water Treatment Plant constructions.		✓	Insufficient budget.	
		* Service Hours is long enough to respond to water demand.		✓	Insufficient budget.	
23	Power Supply	* Service Hours is same throughout rainy season and dry season.	✓			
		* Water Treatment Plant has necessary facilities to improve water quality.		✓	Insufficient budget and skilled manpower.	
24	Power Supply	* Water Treatment Plant is backwashed and/or maintained in a timely manner.		✓	Insufficient budget and skilled manpower.	
		* WUSC understands dosing amount of chlorine solution for using chlorination unit.		✓	Insufficient budget and skilled manpower.	
25	Power Supply	* Permissible turbid water (lower turbidity) is used in a water treatment plant.		✓	Insufficient budget and skilled manpower.	
		* Water production facilities are equipped with meter and gauge for water volume and pressure.		✓	Lack of fittings and training.	
26	Power Supply	* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓			
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
27	Power Supply	* WUSC has toolkit for maintenance and repair of facilities.	✓			
		* WUSC has cleaning tools for facilities.	✓			
28	Power Supply	* WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
29	Power Supply	* WUSC maintains (develops and/or updates) a map of distribution network.		✓	Lack of knowledge.	
		* Household connections are high enough.		✓	Lack of necessary data.	
30	Power Supply	* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Lack of knowledge.	
31	Power Supply	* WUSC has disaster management plan.		✓	No long term plan	
		* Facilities are resistant/protected to natural disaster.		✓	No information	
32	Power Supply	* WUSC has an insurance for water supply facilities.		✓	No insurance	
		* Power supply is stable.		✓		
33	Power Supply	* WUSC has backup generator in case of power failure.	✓			
		* The age of facilities and equipment is within their lifetime.	✓			

	25	Lifetime of Facility	* Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No treatment plant.
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Need of spacious office. Lack of budget Lack of budget
O&M Operation and Maintenan ce	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Lack of knowledge.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No filter plant
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of knowledge and training.
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	No plan Lack of knowledge
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Lack of knowledge. Lack of knowledge.
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓	Lack of knowledge.
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	No water treatment plant Lack of budget.
	Informatio n	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	No computer No computer No computer
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	No Internal Audit Committee
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	Difficult to work under schedule.
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	No sub-committee
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	
Communic ations	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	Lack of information.
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	Lack of knowledge Lack of knowledge.
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	Lack of knowledge. Lack of knowledge.
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓	Lack of knowledge.
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	Board of members are new and posses no such knowledge. No knowledge.
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	Lack of training.

Birendra Kumar Mahato
FWSSMP, Janakpur

WUSC Responsible Person Name:

Bhola Raj Karki
Vice Chairman

Signature

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.		✓	By overan consent of consumers and political parties
			* The election is conducted regularly in a transparent way.		✓	By overan consent of consumers and political parties
			* The election is conducted with participation of all members of users committee.		✓	By overan consent of consumers and political parties
3	Management Board	* Management Board holds regular meeting.	✓			
		* The minutes of Management Board meeting are recorded.	✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
5	Internal Audit	* Each sub-committee holds meeting regularly.		✓	Sub committees are not active.	
		* Each sub-committee makes decisions effectively.		✓	Sub committees are not active.	
6	Social Considerations	* Internal Audit Committee is established.	✓			
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓			
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓			
7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.	✓			
		* WUSC has adapted a policy on consideration for disabled people.	✓			
8	Mid-Term Plan	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)		✓	Lack of knowledge.	
		* All staff know such mission statement or vision.		✓	No mission plan	
9	Annual Report	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓	No mission plan	
		* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No plan	
Human Resources	10	Code of Conduct	* WUSC compiles and submits annual report timely.	✓		
			* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
	11	Job Descriptions	* WUSC has stipulated Code of Conduct for staff.	✓		Mentioned in appoinement letter.
			* All staff recognize and comply with Code of Conduct.	✓		
	12	Staff Communications	* The duties of manager and each staff are explicitly described in job descriptions.		✓	No job description. Responsibility is given verbally.
			* The workload of manager and each staff are appropriate.	✓		
	13	Staff Appraisals	* The workload of manager and each staff are evenly distributed.	✓		
			* Staff reports their duties and problems regularly.	✓		
	14	Motivation	* Manager visits, monitors and advises staff regularly.	✓		
* Communication among staff to share problems is frequent.			✓			
15	Knowledge and Skills	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
16	Training	* Staff have high motivation to work.	✓			
		* Staff retention is high enough.	✓			
17	Water Source	* The knowledge and skills required for manager and staff have been identified.	✓			
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
18	Facility for Water Volume	* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
		* Staff receive training to increase knowledge and skill for their duties.	✓			
19	Facility for Water Quality	* Training materials are archived for knowledge sharing among staff.	✓			
		* WUSC conducts induction training for new staff.	✓			
20	Measurement Equipment	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
		* Existing water sources can provide sufficient volume of water.	✓			
21	Maintenance Equipment	* Existing water sources can provide safe water.	✓			
		* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
22	Distribution Network	* Water Treatment Plant has sufficient capacity to respond to water demand.		N.A	No treatment plant	
		* WUSC has expansion and/or new Water Treatment Plant constructions.		N.A	No treatment plant	
23	Disaster management	* Service Hours is long enough to respond to water demand.	✓			
		* Service Hours is same throughout rainy season and dry season.	✓			
24	Power Supply	* Water Treatment Plan has necessary facilities to improve water quality.		N.A	No treatment plant	
		* Water Treatment Plant is backwashed and/or maintained in a timely manner.		N.A	No treatment plant	
25	Lifetime of Facility	* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓			
		* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓			
26	Office	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓		All meters are not installd.	
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓			
27	Security and Safety	* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
		* WUSC has toolkit for maintenance and repair of facilities.	✓			
28	Utilization of Facilities	* WUSC has cleaning tools for facilities.	✓			
		* WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓		Need of training	
29	Manuals	* WUSC has safety tools and equipment.	✓			
		* WUSC maintains (develops and/or updates) a map of distribution network.	✓			
30	Facility	* Household connections are high enough.		✓	Lack of data	
		* Metered Ratio for houses and commercial buildings is high enough.		✓	Lack of knowledge	
31	Facility	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	No plan (lack of knowledge)	
		* WUSC has disaster management plan.	✓			
32	Facility	* Facilities are resistant/protected to natural disaster.	✓			
		* WUSC has an insurance for water supply facilities.	✓			
33	Facility	* Power supply is stable.	✓			
		* WUSC has backup generator in case of power failure.	✓			
34	Facility	* The age of facilities and equipment is within their lifetime.	✓			
		* Breakdown of facilities is not frequent.	✓			
35	Facility	WUSC has cleaned the Water Treatment Plant.		✓	No treatment plant	
		* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓			
36	Facility	* WUSC has laboratory for water quality test.		✓	Lack of budget	
		* WUSC has workshop and inventory stores for repair and maintenance.		✓	Lack of budget	
37	Facility	* Facilities have sufficient security.	✓			
		* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	Lack of knowledge	
38	Facility	* Actual water production volume is close to water supply capacity.	✓			
		* Production Ratio (supplied water per person) is at an appropriate level.	✓			
39	Facility	* WUSC has periodically scraped and washed the sand in slow sand filter (if any).		NA	No such filter	
		* WUSC has Schematic Flow Diagram (water supply system drawing).	✓			
40	Facility	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓			
		* WUSC has manuals for equipment and use them.	✓			
41	Facility	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
			✓			

O&M Operation and Maintenance	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓		
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.		✓	Yearly
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
	* WUSC discloses report of water quality test results to the consumers.		✓	Lack of knowledge		
	31	Water Leakage	* Case of water leakage is at an acceptable level.	✓		
* Water leakage is repaired within short time after a case is reported.			✓			
* WUSC has major fittings in stock for emergency water leakage maintenance.			✓			
* The annual plan of periodical maintenance is formulated.				✓	No such plan	
* WUSC conducts operation and preventative maintenance as per instruction of SOP.			✓			
* WUSC records Periodical Operations in a record book.				✓	Lack of knowledge	
32	Periodical Operations	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.		✓	No knowledge	
33	Troubleshooting	* WUSC records all the troubleshooting in a record book.	✓		Lack of knowledge	
		* Spare parts are stocked orderly in a designated space or shelf.	✓			
34	Inventory Management	* Spare parts are replenished timely in case of out of stock.	✓			
		* Quantity of spare parts are counted and recorded regularly.		✓	No spare parts	
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly.	✓			
		* WUSC has a computer to record and analyze data.	✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.		✓	Lack of knowledge
			* Manager checks the operation and inspection records regularly.	✓		
	37	ICT	* Result of water quality test is recorded and disclosed to the public daily.		✓	Lack of knowledge
* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)			✓		No software	
38	Document Management	* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
39	Water Tariff	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection.	✓			
		* Documents are regularly checked by Internal Audit Committee for audit.	✓			
		* Current level of water tariff can cover operating cost.	✓			
		* Current level of water tariff is at an affordable level.	✓			
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
		* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
40	Cost Management	* Schedule of meter reading and billing is fixed.	✓			
		* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
41	Tariff Collection	* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.	✓			
42	Accounting	* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.	✓			
43	Procurement	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
		* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
44	Financial Analysis	* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.		✓	Lack of knowledge
	46	Information Disclosure	* Customer satisfaction is high for water service.	✓		
			* The result of water supply operations including water quality test is disclosed daily.		✓	Water quality is not conducted daily
	47	Public Awareness	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
			* WUSC has developed or obtained necessary items for awareness program.		✓	Lack of knowledge
48	Online Services	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓	Lack of knowledge	
		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	Lack of knowledge	
49	Government	* WUSC understands national level laws, regulations and policy on water sector.		✓	Lack of knowledge	
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).		✓	Lack of knowledge	
50	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
		* WUSC interacts with other WUSCs regularly.	✓			
			* WUSC organizes yearly observation tour to visit other WUSCs.	✓		

Surveyor Name with Organization and Position
Chandan Kumar Adhikari
FWSSMP, Janakpur

WUSC Responsible Person Name:
Ram Prasad Lamichhane
Chairman

Signature

Signature

Inspector Name: Mr. Kisan Kumar Singh Respondent Name: Mr. Yagya Prasad Dhungel (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	Lack of knowledge No internal audit No internal audit
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Discount for schools and temple No request so far No request so far
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.		✓	Lack of knowledge No mission statement
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No mission statement No plan
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓	✓	Require training
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	Lack of knowledge
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	Need new sources
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No water treatment plant No water treatment plant Need new sources
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No water treatment plant No water treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	All meters are not installed.
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Lack of knowledge Lack of necessary data
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Lack of knowledge Lack of knowledge No insurance
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Lack of budget
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No water treatment plant
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Lack of budget Lack of budget
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Lack of knowledge
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any).	✓	✓	No such filter

O&M Operation and Maintenance	29	Manuals	* WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	Lack of knowledge		
			* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓	✓	Manuals are not safely stored.		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓				
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓				
			* WUSC understands proper sampling points in water supply systems.	✓				
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Lack of knowledge and training		
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of knowledge		
	31	Water Leakage	* Case of water leakage is at an acceptable level.	✓				
			* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓	✓	Inability to prepare such plan		
* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.			✓	✓	Lack of knowledge			
33	Troubleshooting	* Immediate action is taken for the problems.	✓					
		* There is NO out of order in the water supply facilities.	✓					
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.		✓	No sufficient data Lack of knowledge Lack of knowledge			
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓					
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓	Lack of knowledge			
35	Office	* Water treatment facilities and water source are cleaned regularly.		✓	No treatment plant			
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	Lack of budget			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	Lack of knowledge No record keeping No record keeping		
			37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓	✓	No computer
					* Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	No computer No computer
38	Document Management	* Important documents are filed and stored orderly.	✓					
		* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	No internal audit			
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	Need to revise tariff.		
			40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection			* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
			42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
	43	Procurement			* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	
			44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	
Communications	45	Customers Management			* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	Lack of knowledge
			46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	Water quality testing is not done Lack of knowledge
	47	Public Awareness			* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	Lack of knowledge Lack of knowledge
			48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓	Lack of knowledge
	49	Government			* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	Lack of knowledge
			50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	Lack of budget and busy schedule

Surveyor Name with Organization and Position

Mr. Kisan Kumar Singh
FWSSMP Janakpur, Engineer

Signature

WUSC Responsible Person Name:

Mr. Yagya Prasad Dhungel
Chairman

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓		
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 		✓	Planning to add in future
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		No mission statement Adding facilities by co-finance project
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓		
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓	✓	Require training
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	Lack of knowledge
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	Only 8 hours distribution
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	No water treatment plant No water treatment plant Only 8 hours distribution
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	No water treatment plant No water treatment plant
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	All meters are not installed. Not attended orientation training Not attended orientation training
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Need training
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	Lack of knowledge and skilled manpower Lack of necessary data
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	Lack of knowledge No insurance
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓		
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No water treatment plant
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	Lack of budget Lack of budget
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓	✓	Lack of knowledge
			<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. 	✓		

O&M Operation and Maintenance	28	Utilization of Facilities	* Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	Manuals are not safely stored.
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Needs training Lack of knowledge and training Lack of knowledge No water quality test record Lack of knowledge
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	Many leakage
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Inability to prepare such plan Lack of knowledge
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	No sufficient data Lack of knowledge
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓	
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	No treatment plant
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	Need to revise tariff.
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	
Communications	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	
	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	Water quality testing is not done
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	Lack of knowledge Lack of knowledge
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		Lack of knowledge
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	Lack of knowledge
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	Lack of budget and busy schedule

Surveyor Name with Organization and Position
Mr. Birendra Kumar Mahato
FWSSMP Janakpur, Engineer

WUSC Responsible Person Name:
Mr. Aaita Bahadur Bamjan
Acting Chairman

Signature

Signature

WUSC Name: Karmaiya WUSC

Survey Date: 9th March,2020

Inspector Name: Mr. Sagar Poudel

Respondent Name: Mr. Ripu Marden Ale (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No such request so far No such request so far
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓	✓	
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	Lack of knowledge to prepare such plan No such plan
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓	✓	Instruction is given verbally
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓	✓	No Job description
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.		✓	No such policies No such policies
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓	✓	
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓	✓	
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	No new staffs
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water.	✓		
	18	Facility for Water Volume	* WUSC has a plan to increase new water resource (surface/groundwater). * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	Sources are sufficient for now No water treatment plant No water treatment plant Need to increase service hour
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No water treatment plant No water treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Not attended orientation training
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands hoe to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Need to increase connections Lack of knowledge
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Lack of knowledge to prepare such plan No insurance
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		No water treatment plant
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Lack of budget Lack of budget
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Lack of knowledge

O&M Operation and Maintenance	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter	
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	Manuals are not available	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	Lack of water quality test kit Lack of knowledge No water quality test record Lack of knowledge	
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓	✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓	Inability to prepare such plan Lack of knowledge	
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	Lack of knowledge	
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓	✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	✓		
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	✓	No record keeping
		37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	✓ ✓ ✓	No computer No computer No computer
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓	✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	✓	Water quality testing is not done	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓ ✓	Lack of knowledge Lack of knowledge	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓	✓	Lack of knowledge	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓		

Surveyor Name with Organization and Position
Mr. Sagar Paudel, Engineer
Bagmati Municipality

WUSC Responsible Person Name:
Mr. Ripu Marden Ale
Chairman

Signature

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓		
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		No such request so far
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 		✓	Lack of knowledge to prepare such plan
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓		
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 		✓	No job description
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 		✓	
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓		No new staffs
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓		
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 		✓	No water treatment plant
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 		✓	No water treatment plant
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		Some bulk meters are not installed
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓		Need training
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		Lack of knowledge about importance of such valves.
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓		Lack of knowledge to prepare such plan
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓		No insurance
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓		No water treatment plant
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security. 	✓		

O&M Operation and Maintenance	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any).	✓		No such filter
	29	Manuals	* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
			* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
	30	Water Quality	* WUSC has manuals for equipment and use them.	✓		Manuals are not available
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
			* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)			✓			
31	Water Leakage	* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓			
		* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓			
		* WUSC discloses report of water quality test results to the consumers.	✓			
32	Periodical Operations	* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported.	✓			
33	Troubleshooting	* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
		* The annual plan of periodical maintenance is formulated.	✓		Less importance is given to prepare such plan.	
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		Need training	
34	Inventory Management	* WUSC records Periodical Operations in a record book.	✓		Lack of knowledge	
		* Immediate action is taken for the problems.	✓			
35	Office	* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓		Lack of knowledge	
36	Operation Record	* WUSC records all the troubleshooting in a record book.	✓			
		* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
37	ICT	* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly.	✓			
38	Document Management	* WUSC has a computer to record and analyze data.	✓			
		* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
39	Water Tariff	* Manager checks the operation and inspection records regularly.	✓			
		* Result of water quality test is recorded and disclosed to the public daily.	✓		Need to disclose informations.	
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
40	Cost Management	* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
		* Important documents are filed and stored orderly.	✓			
41	Tariff Collection	* Documents are regularly checked by Manager for inspection.	✓			
		* Documents are regularly checked by Internal Audit Committee for audit.	✓			
		* Current level of water tariff can cover operating cost.	✓			
42	Accounting	* Current level of water tariff is at an affordable level.	✓			
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
		* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
43	Procurement	* Schedule of meter reading and billing is fixed.	✓			
		* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
44	Financial Analysis	* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.	✓			
45	Customers Management	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
		* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	46	Information Disclosure	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
	47	Public Awareness	* Customer satisfaction is high for water service.	✓		
			* The result of water supply operations including water quality test is disclosed daily.	✓		Need to disclose informations.
	48	Online Services	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
			* WUSC has developed or obtained necessary items for awareness program.	✓		
49	Government	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
50	WUSC Network	* WUSC understands national level laws, regulations and policy on water sector.	✓		Lack of knowledge	
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓		WUSC communicates with WSSDO.	
			* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
			* WUSC interacts with other WUSCs regularly.	✓		
			* WUSC organizes yearly observation tour to visit other WUSCs.	✓		

Surveyor Name with Organization and Position
Mr. Chandan Kumar Adhikari, Engineer
FWSSMP Janakpur

WUSC Responsible Person Name:
Mr. Kedar Prasad Gautam
Manager

Signature

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓	✓	Annual meeting is conducted in a second notice
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓	✓	
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓	✓	
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓	✓	
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓	✓	Auditing is done by registered Auditor No internal audit No internal audit
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	No such request
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓	✓	
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓	✓	
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓		
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓	✓	
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓	✓	
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓	✓	
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓	✓	No such practice so far.
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓	✓	
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓	✓	
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	N/A N/A	No water treatment plant No water treatment plant
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Trainings required
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	Lack of knowledge on importance of valves
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓	✓	
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security. 	✓	✓	Godown with store rooms

O&M Operation and Maintenance	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
	29	Manuals	* WUSC has periodically scraped and washed the sand in slow sand filter (if any).		N/A	No such filter
			* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
	30	Water Quality	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them.	✓		
	31	Water Leakage	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
			* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
	32	Periodical Operations	* WUSC understands proper sampling points in water supply systems.	✓		
* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)			✓			
33	Troubleshooting	* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓			
		* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓			
34	Inventory Management	* WUSC discloses report of water quality test results to the consumers.	✓			
		* Case of water leakage is at an acceptable level.	✓			
35	Office	* Water leakage is repaired within short time after a case is reported.	✓			
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
36	Operation Record	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
37	ICT	* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
38	Document Management	* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
39	Water Tariff	* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓	✓	Requires training	
		* WUSC records all the troubleshooting in a record book.	✓			
40	Cost Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
41	Tariff Collection	* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
42	Accounting	* WUSC office is cleaned and tidied regularly.	✓			
		* WUSC has a computer to record and analyze data.	✓			
43	Procurement	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
		* Manager checks the operation and inspection records regularly.	✓			
44	Financial Analysis	* Result of water quality test is recorded and disclosed to the public daily.	✓			
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
45	Customers Management	* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
46	Information Disclosure	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection.	✓			
47	Public Awareness	* Documents are regularly checked by Internal Audit Committee for audit.		✓	No internal audit	
		* Current level of water tariff can cover operating cost.	✓			
48	Online Services	* Current level of water tariff is at an affordable level.	✓			
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
49	Government	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
		* Schedule of meter reading and billing is fixed.	✓			
50	WUSC Network	* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
51	WUSC Network	* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
52	WUSC Network	* Procurement is always authorized by relevant sub-committee.	✓	✓	Done by Board of Members	
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
53	WUSC Network	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			

Surveyor Name with Organization and Position
Mr. Chandan Kumar Adhikari, Engineer
FWSSMP Janakpur

WUSC Responsible Person Name:
Mr. Kasim Hussain
Chairman

Signature

Signature

WASMIP-II: WUSC Water Supply Management Checklist

WUSC Name: Pichhra WUSC

Survey Date: 31st Dec, 2020

Inspector Name: Ms. Pabina Moktan / Mr. Humendra Prasad Dev

Respondent Name: Mr. Dhurbaraj Koirala (Assistant Secretary)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
* The minutes of Management Board meeting are recorded.			✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
5	Internal Audit	* Each sub-committee holds meeting regularly.	✓			
		* Each sub-committee makes decisions effectively.	✓			
6	Social Considerations	* Internal Audit Committee is established.		✓	Lack of	
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.		✓	No committee is established	
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	No committee is established	
7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.	✓			
8	Mid-Term Plan	* WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
9	Annual Report	* All staff know such mission statement or vision.	✓			
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓	Lack of knowledge to prepare such plan	
10	Code of Conduct	* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No such plan	
		* WUSC compiles and submits annual report timely.	✓			
Human Resources	11	Job Descriptions	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
			* WUSC has stipulated Code of Conduct for staff.	✓		
	12	Staff Communications	* All staff recognize and comply with Code of Conduct.	✓		
			* The duties of manager and each staff are explicitly described in job descriptions.	✓		
			* The workload of manager and each staff are appropriate.	✓		
	13	Staff Appraisals	* The workload of manager and each staff are evenly distributed.	✓		
			* Staff reports their duties and problems regularly.	✓		
14	Motivation	* Manager visits, monitors and advises staff regularly.	✓			
		* Communication among staff to share problems is frequent.	✓			
15	Knowledge and Skills	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
Facility	16	Training	* Staff have high motivation to work.	✓		
			* Staff retention is high enough.	✓		
	17	Water Source	* The knowledge and skills required for manager and staff have been identified.	✓		
			* Manager and Staff have sufficient knowledge and skills for their duties.	✓		
	18	Facility for Water Volume	* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
			* Staff receive training to increase knowledge and skill for their duties.	✓		
19	Facility for Water Quality	* Training materials are archived for knowledge sharing among staff.	✓			
		* WUSC conducts induction training for new staff.	✓			
20	Measurement Equipment	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
		* Existing water sources can provide sufficient volume of water.	✓			
21	Maintenance Equipment	* Existing water sources can provide safe water.	✓			
		* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
22	Distribution Network	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
		* WUSC has expansion and/or new Water Treatment Plant constructions.		✓	No new project so far	
23	Disaster management	* Service Hours is long enough to respond to water demand.	✓			
		* Service Hours is same throughout rainy season and dry season.	✓			

WASMIP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant.	✓	✓	Poor preventive maintenance
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓	✓	Insufficient budget
	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of knowledge Lack of knowledge
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	Poor Technicality
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Lack of knowledge
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Poor preventive maintenance
Information	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓		
	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	Lack of Knowledge
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	Lack of knowledge and committee has not been formed so far.
	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	Sub-committee has not formed so far.(not needed so far)
Finance	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	Lack of knowledge
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	Poor communication Lack of knowledge to prepare

Surveyor Name with Organization and Position
 Ms.Pabina Moktan/ Mr. Humendra Prasad Dev
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Dhurbaraj Koirala
 Assistant Secretary
 Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓		
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)		✓	upto some extent
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	upto some extent
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	not working
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.		✓	
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	In the process of making policy
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		

	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓			
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		✓	
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓		✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓			
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓			
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓			
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓			
	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓			
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓			
	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓			
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓			
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		✓	sometimes organises
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		✓	Not mandatory

Surveyor Name with Organization and Position

Mr. Humendra Prasad Deo
Engineer

FWSSMP, Biratnagar

Signature

WUSC Responsible Person Name:

Mr. Ram Bahadur Ghimire
Chairperson

Signature

WUSC Name: Jhorahat WUSC

Survey Date: Jan 2nd, 2021

Inspector Name: Mr. Humendra Prasad Deo

Respondent Name: Mr. Madan Kumar Pudashai (Position: President)

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓			
			* The schedule of Annual General Meeting is notified to all users.	✓			
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓			
		2	Election	* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
				* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
		3	Management Board	* The members of Management Board are selected by election.	✓		
				* The election is conducted regularly in a transparent way.	✓		
				* The election is conducted with participation of all members of users committee.	✓		
4		Sub Committees	* Management Board holds regular meeting.	✓			
			* The minutes of Management Board meeting are recorded.	✓			
			* Management Board gives necessary instructions to Manager timely.	✓			
5	Internal Audit	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓				
		* Each sub-committee holds meeting regularly.	✓				
		* Each sub-committee makes decisions effectively.	✓				
6	Social Considerations	* Internal Audit Committee is established.		✓			
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.		✓			
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓			
7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓				
		* WUSC has adapted a policy on consideration for poor households.	✓				
		* WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences		
8	Mid-Term Plan	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓				
		* All staff know such mission statement or vision.	✓				
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓				
9	Annual Report	* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓				
		* WUSC compiles and submits annual report timely.	✓				
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓				
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓			
			* All staff recognize and comply with Code of Conduct.	✓			
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions.	✓			
			* The workload of manager and each staff are appropriate.	✓			
			* The workload of manager and each staff are evenly distributed.	✓			
	12	Staff Communications	* Staff reports their duties and problems regularly.	✓			
			* Manager visits, monitors and advises staff regularly.	✓			
13	Staff Appraisals	* Communication among staff to share problems is frequent.	✓				
		* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓				
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓				
14	Motivation	* Staff have high motivation to work.	✓				
		* Staff retention is high enough.	✓				
15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified.	✓				
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓				
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓				
16	Training	* Staff receive training to increase knowledge and skill for their duties.	✓				
		* Training materials are archived for knowledge sharing among staff.	✓				
		* WUSC conducts induction training for new staff.	✓				
		* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓				
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water.	✓			
			* Existing water sources can provide safe water.	✓			
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
			* WUSC has expansion and/or new Water Treatment Plant constructions.		✓	No new project so far, insufficient budget	
			* Service Hours is long enough to respond to water demand.	✓			
			* Service Hours is same throughout rainy season and dry season.	✓			
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality.		✓	Insufficient budget	
			* Water Treatment Plant is backwashed and/or maintained in a timely manner.		✓	No such facilities	
			* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓			
20	Measurement Equipment	* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓				
		* Water production facilities are equipped with meter and gauge for water volume and pressure.		✓	Lack of awareness, knowledge		
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓				
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓				
21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities.	✓				
		* WUSC has cleaning tools for facilities.	✓				
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓				
		* WUSC has safety tools and equipment.	✓				
22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network.		✓	Lack of awareness, knowledge		
		* Household connections are high enough.	✓				
		* Metered Ratio for houses and commercial buildings is high enough.	✓				
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Poor O&M		
23	Disaster management	* WUSC has disaster management plan.		✓	Lack of knowledge to prepare such plan		
		* Facilities are resistant/protected to natural disaster.	✓				
		* WUSC has an insurance for water supply facilities.		✓	Insufficient budget, lack of awareness		
24	Power Supply	* Power supply is stable.	✓				
		* WUSC has backup generator in case of power failure.	✓				
25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓				
		* Breakdown of facilities is not frequent.		✓	Poor O&M		
		WUSC has cleaned the Water Treatment Plant.	✓				
26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓				
		* WUSC has laboratory for water quality test.		✓	Insufficient budget		
		* WUSC has workshop and inventory stores for repair and maintenance.	✓				

O&M Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓	✓	Lack of Knowledge
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓	Poor technical knowledge, lack of awareness
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	Poor Knowledge, need training
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	✓	Insufficient budget, no computerized system
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)		✓ ✓ ✓	Insufficient budget, poor technical knowledge No computerized system No computerized system
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	✓	Management Board does
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓	Opportunity lacking

Surveyor Name with Organization and Position
Mr. Humendra Prasad Deo
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Mr. Madan Kumar Pudasai
President
Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Kathari, WUSC

Survey Date: Jan 3rd, 2021

Inspector Name: Ms. Pabina Moktan / Mr. Humendra

Respondent Name: Mr. Bidhyananda Chaudhary (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓			
			* The schedule of Annual General Meeting is notified to all users.	✓			
			* Management Board member, attendance Rate of Annual General Meeting is high.		✓	Poor Interest	
		2	Election	* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
				* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
		3	Management Board	* The members of Management Board are selected by election.	✓		
				* The election is conducted regularly in a transparent way.	✓		
				* The election is conducted with participation of all members of users committee.	✓		
4		Sub Committees	* Management Board holds regular meeting.	✓			
			* The minutes of Management Board meeting are recorded.	✓			
			* Management Board gives necessary instructions to Manager timely.	✓			
5	Internal Audit	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓				
		* Each sub-committee holds meeting regularly.	✓				
		* Each sub-committee makes decisions effectively.	✓				
6	Social Considerations	* Internal Audit Committee is established.	✓				
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓				
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓				
7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓				
		* WUSC has adapted a policy on consideration for poor households.		✓	No such request so far,		
		* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of awareness		
8	Mid-Term Plan	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓				
		* All staff know such mission statement or vision.	✓				
Human Resources	10	Code of Conduct	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓			
			* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓			
	11	Job Descriptions	* WUSC compiles and submits annual report timely.	✓			
			* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
	12	Staff Communications	* WUSC has stipulated Code of Conduct for staff.	✓			
			* All staff recognize and comply with Code of Conduct.	✓			
	13	Staff Appraisals	* The duties of manager and each staff are explicitly described in job descriptions.	✓			
			* The workload of manager and each staff are appropriate.	✓			
* The workload of manager and each staff are evenly distributed.			✓				
14	Motivation	* Staff reports their duties and problems regularly.	✓				
		* Manager visits, monitors and advises staff regularly.	✓				
		* Communication among staff to share problems is frequent.	✓				
15	Knowledge and Skills	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓				
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓				
16	Training	* Staff have high motivation to work.	✓				
		* Staff retention is high enough.	✓				
Facility	17	Water Source	* The knowledge and skills required for manager and staff have been identified.	✓			
			* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
			* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
	18	Facility for Water Volume	* Staff receive training to increase knowledge and skill for their duties.	✓			
			* Training materials are archived for knowledge sharing among staff.	✓			
			* WUSC conducts induction training for new staff.	✓			
	19	Facility for Water Quality	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
			* Existing water sources can provide sufficient volume of water.		✓	Storage capacity is low, High house connection	
			* Existing water sources can provide safe water.	✓			
20	Measurement Equipment	* WUSC has a plan to increase new water resource (surface/groundwater).	✓				
		* Water Treatment Plant has sufficient capacity to respond to water demand.	✓				
		* WUSC has expansion and/or new Water Treatment Plant constructions.	✓				
21	Maintenance Equipment	* Service Hours is long enough to respond to water demand.		✓	Storage capacity is low, High house connection		
		* Service Hours is same throughout rainy season and dry season.		✓	consumption varies		
		* Water Treatment Plant has necessary facilities to improve water quality.	✓				
22	Distribution Network	* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓				
		* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓				
		* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓				
23	Disaster management	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓				
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓				
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓				
24	Power Supply	* WUSC has toolkit for maintenance and repair of facilities.	✓				
		* WUSC has cleaning tools for facilities.	✓				
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓				
25	Disaster management	* WUSC has safety tools and equipment.	✓				
		* WUSC maintains (develops and/or updates) a map of distribution network.	✓				
		* Household connections are high enough.	✓				
26	Disaster management	* Metered Ratio for houses and commercial buildings is high enough.	✓				
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓				
27	Disaster management	* WUSC has disaster management plan.		✓	Policy making, low budget		
		* Facilities are resistant/protected to natural disaster.	✓				
		* WUSC has an insurance for water supply facilities.		✓	In the process of making policy		
28	Power Supply	* Power supply is stable.	✓				
		* WUSC has backup generator in case of power failure.		✓	Insufficient budget		

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Operation and Maintenance	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓			
			* Breakdown of facilities is not frequent.	✓			
			* WUSC has cleaned the Water Treatment Plant.	✓			
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓			
			* WUSC has laboratory for water quality test.	✓			
			* WUSC has workshop and inventory stores for repair and maintenance.	✓			
	O&M	27	Security and Safety	* Facilities have sufficient security.	✓		
				* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
		28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.		✓	Storage capacity is low, High house connection
				* Production Ratio (supplied water per person) is at an appropriate level.	✓		
* WUSC has periodically scraped and washed the sand in slow sand filter (if any).					✓	No such filter	
O&M		29	Manuals	* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
				* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
				* WUSC has manuals for equipment and use them.	✓		
		30	Water Quality	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
				* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
	* WUSC understands proper sampling points in water supply systems.			✓			
	* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)			✓			
	* WUSC sends samples to a laboratory for monthly or yearly water quality test.			✓			
	* The result of water quality test is good (to meet the National Drinking Water Quality Standards).			✓			
	* WUSC discloses report of water quality test results to the consumers.			✓			
31	Water Leakage	* Case of water leakage is at an acceptable level.	✓				
		* Water leakage is repaired within short time after a case is reported.	✓				
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓				
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓				
		* WUSC records Periodical Operations in a record book.	✓				
33	Troubleshooting	* Immediate action is taken for the problems.	✓				
		* There is NO out of order in the water supply facilities.	✓				
		* NRW (Non-Revenue Water) is low enough.	✓				
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓				
34	Inventory Management	* WUSC records all the troubleshooting in a record book.	✓				
		* Spare parts are stocked orderly in a designated space or shelf.	✓				
		* Spare parts are replenished timely in case of out of stock.	✓				
35	Office	* Quantity of spare parts are counted and recorded regularly.	✓				
		* Water treatment facilities and water source are cleaned regularly.	✓				
		* WUSC office is cleaned and tidied regularly.	✓				
Information	36	Operation Record	* WUSC has a computer to record and analyze data.	✓			
			* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
			* Manager checks the operation and inspection records regularly.	✓			
37	ICT	* Result of water quality test is recorded and disclosed to the public daily.	✓				
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓				
		* Staff have sufficient knowledge and skills to operate computer systems.	✓				
38	Document Management	* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓				
		* Important documents are filed and stored orderly.	✓				
		* Documents are regularly checked by Manager for inspection.	✓				
Finance	39	Water Tariff	* Documents are regularly checked by Internal Audit Committee for audit.	✓			
			* Current level of water tariff can cover operating cost.	✓			
			* Current level of water tariff is at an affordable level.	✓			
	40	Cost Management	* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
			* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
42	Accounting	* All financial transactions are recorded timely.	✓				
		* Cash on hand is checked and stored in a lockable safe daily.	✓				
		* Balance of deposits in all bank accounts is checked at least monthly.	✓				
43	Procurement	* Procurement is always authorized by relevant sub-committee.	✓				
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓				
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓				
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓			
			* All claims from customers are recorded.	✓			
			* Customer satisfaction is high for water service.	✓			
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓			
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓			
* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)			✓				
* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)			✓				
48	Online Services	* WUSC understands national level laws, regulations and policy on water sector.	✓				
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓				
49	Government	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓				
		* WUSC interacts with other WUSCs regularly.	✓				
		* WUSC organizes yearly observation tour to visit other WUSCs.	✓				
50	WUSC Network			✓	Insufficient budget		

Surveyor Name with Organization and Position
 Ms.Pabina Moktan
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Mr. Bidhyananda Chaudhary
 President

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Karsiya WUSC

Survey Date: Jan 4th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Chetraj Shrestha (Position: President)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
* The minutes of Management Board meeting are recorded.			✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)		✓	not needed so far	
5	Internal Audit	* Each sub-committee holds meeting regularly.		✓	committee is not formed	
		* Each sub-committee makes decisions effectively.		✓	committee is not formed	
		* Internal Audit Committee is established.		✓	Lack of knowledge, awareness	
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.		✓	committee is not formed	
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	committee is not formed	
6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	No such request so far, lack of experiences	
7	Goal Management	* WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
8	Mid-Term Plan	* All staff know such mission statement or vision.	✓			
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓	Lack of knowledge to prepare such plan	
9	Annual Report	* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No such plan	
		* WUSC compiles and submits annual report timely.	✓			
Human Resources	10	Code of Conduct	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
			* WUSC has stipulated Code of Conduct for staff.	✓		
	11	Job Descriptions	* All staff recognize and comply with Code of Conduct.	✓		
			* The duties of manager and each staff are explicitly described in job descriptions.	✓		
	12	Staff Communications	* The workload of manager and each staff are appropriate.	✓		
			* The workload of manager and each staff are evenly distributed.	✓		
			* Staff reports their duties and problems regularly.	✓		
	13	Staff Appraisals	* Manager visits, monitors and advises staff regularly.	✓		
* Communication among staff to share problems is frequent.			✓			
14	Motivation	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
15	Knowledge and Skills	* Staff have high motivation to work.	✓			
		* Staff retention is high enough.	✓			
		* The knowledge and skills required for manager and staff have been identified.	✓			
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
16	Training	* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
		* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.	✓			
		* WUSC conducts induction training for new staff.	✓			
Facility	17	Water Source	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
			* Existing water sources can provide sufficient volume of water.	✓		
	18	Facility for Water Volume	* Existing water sources can provide safe water.		✓	No filtration tank i.e. Iron content is high
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓		
			* Water Treatment Plant has sufficient capacity to respond to water demand.	✓		
	19	Facility for Water Quality	* Service Hours is long enough to respond to water demand.	✓		
			* Service Hours is same throughout rainy season and dry season.	✓		
	20	Measurement Equipment	* Water Treatment Plant has necessary facilities to improve water quality.		✓	Insufficient budget
			* Water Treatment Plant is backwashed and/or maintained in a timely manner.		✓	No such facilities
	21	Maintenance Equipment	* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓		
			* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
			* Water production facilities are equipped with meter and gauge for water volume and pressure.		✓	Improper O&M
			* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓		
			* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	22	Distribution Network	* WUSC has toolkit for maintenance and repair of facilities.	✓		
			* WUSC has cleaning tools for facilities.	✓		
	23	Disaster management	* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓		
* WUSC has safety tools and equipment.			✓			
24	Power Supply	* WUSC maintains (develops and/or updates) a map of distribution network.		✓	Lack of awareness, knowledge	
		* Household connections are high enough.	✓			
25	Lifetime of Facility	* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
		* WUSC has disaster management plan.		✓	Lack of knowledge to prepare such plan	
26	Facility for Water Quality	* Facilities are resistant/protected to natural disaster.	✓			
		* WUSC has an insurance for water supply facilities.		✓	Insufficient budget, lack of awareness	
27	Facility for Water Quality	* Power supply is stable.	✓			
		* WUSC has backup generator in case of power failure.		✓	Insufficient budget	
28	Facility for Water Quality	* The age of facilities and equipment is within their lifetime.	✓			
		* Breakdown of facilities is not frequent.	✓			
29	Facility for Water Quality	* WUSC has cleaned the Water Treatment Plant.	✓			
			✓			

WASMIP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓		
			* WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.		✓	Insufficient budget
O&M Operatio n and Maintena nce	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).		✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Lack of knowledge, poor technical knowledge, lack of awareness
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.		✓	Lack of knowledge
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.		✓	Iron content is high Lack of awareness, knowledge
31	Water Leakage	* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓			
33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.		✓	Poor knowledge, need knowledge	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓		Insufficient budget, no computerized system	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly.	✓		poor O&M, lack of knowledge
			* Result of water quality test is recorded and disclosed to the public daily.		✓	Lack of Knowledge, test is not done daily
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	Insufficient budget, poor technical knowledge
* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.			✓		No computerized system No computerized system	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level.	✓		
			* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		Improper meter reading
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
			* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily.	✓		
			* Balance of deposits in all bank accounts is checked at least monthly.	✓		
43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		Sub-committee is not been formed so far	
		* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		Lack of awareness, knowledge	
Communica tions	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		Lack of awareness, knowledge
			* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		No Test is done, lack of knowledge
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		Lack of awareness, knowledge
			* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	Lack of awareness, knowledge
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	No computerized system
* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.			✓			
49	Government	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		not interested	
			✓		Lack of knowledge to prepare such plan	

Surveyor Name with Organization and Position
Ms. Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Chetraj Shrestha
President

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Rangeli WUSC

Survey Date: Jan 5th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Pradip Kumar Shah (Position: President)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project		✓	Insufficient budget , Planning to conduct meeting
					✓	Not conducted so far
					✓	Not conducted so far
					✓	Not conducted so far
					✓	Not conducted so far
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
				✓		
				✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
			✓			
			✓			
4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.		✓	Lack of	
				✓	Lack of	
				✓	Lack of	
				✓	Lack of	
5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	Committee is not formed	
				✓	Committee is not formed	
6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓		No such request so far, lack of experiences	
				✓	No such request so far, lack of experiences	
7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓			
			✓			
8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	Lack of knowledge to prepare such plan	
				✓	No such plan	
9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
			✓			
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
				✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
				✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
				✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
			✓			
14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓			
			✓			
15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
			✓			
16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
			✓			
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water.	✓		
				✓		
	18	Facility for Water Volume	* WUSC has a plan to increase new water resource (surface/groundwater). * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No new project so far, insufficient budget
				✓		
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.		✓	Insufficient budget
				✓		No such facilities
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		Improper O&M
				✓		
21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓			
			✓			
22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
			✓			
23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.		✓	Lack of knowledge to prepare such plan	
			✓		Insufficient budget, lack of awareness	
24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		Insufficient budget	
			✓			

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason		
Operation and Maintenance	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓				
			* Breakdown of facilities is not frequent.	✓				
			* WUSC has cleaned the Water Treatment Plant.	✓				
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓				
			* WUSC has laboratory for water quality test.		✓	Insufficient budget		
			* WUSC has workshop and inventory stores for repair and maintenance.	✓				
	27	Security and Safety	* Facilities have sufficient security.	✓				
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	Lack of knowledge and importance of such items.		
			* Actual water production volume is close to water supply capacity.	✓				
			* Production Ratio (supplied water per person) is at an appropriate level.	✓				
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any).		✓	No such filter		
			* WUSC has Schematic Flow Diagram (water supply system drawing).	✓				
			* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓				
			* WUSC has manuals for equipment and use them.	✓				
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓				
			30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).		✓	Insufficient budget, poor technical knowledge
					* WUSC understands proper sampling points in water supply systems.		✓	Lack of knowledge
	* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)				✓	No Test kit is available, poor technical knowledge, lack of awareness		
	* WUSC sends samples to a laboratory for monthly or yearly water quality test.				✓	Lack of knowledge		
	* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓						
	31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.		✓	Lack of knowledge		
			* Case of water leakage is at an acceptable level.	✓				
	32	Periodical Operations	* Water leakage is repaired within short time after a case is reported.	✓				
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
			* The annual plan of periodical maintenance is formulated.	✓				
	33	Troubleshooting	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓				
* WUSC records Periodical Operations in a record book.			✓					
* Immediate action is taken for the problems.			✓					
34	Inventory Management	* There is NO out of order in the water supply facilities.	✓					
		* NRW (Non-Revenue Water) is low enough.	✓					
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.		✓	Poor knowledge, need assistance			
35	Office	* WUSC records all the troubleshooting in a record book.	✓					
		* Spare parts are stocked orderly in a designated space or shelf.	✓					
		* Spare parts are replenished timely in case of out of stock.	✓					
36	Operation Record	* Quantity of spare parts are counted and recorded regularly.	✓					
		* Water treatment facilities and water source are cleaned regularly.	✓					
37	ICT	* WUSC office is cleaned and tidied regularly.	✓					
		* WUSC has a computer to record and analyze data.		✓	Insufficient budget, no computerized system			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓				
			* Manager checks the operation and inspection records regularly.	✓				
	37	ICT	* Result of water quality test is recorded and disclosed to the public daily.		✓	Lack of Knowledge, test is not done daily		
			* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)		✓	Insufficient budget, poor technical knowledge		
38	Document Management	* Staff have sufficient knowledge and skills to operate computer systems.		✓	No computerized system			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	No computerized system			
Finance	39	Water Tariff	* Important documents are filed and stored orderly.	✓				
			* Documents are regularly checked by Manager for inspection.	✓				
	40	Cost Management	* Documents are regularly checked by Internal Audit Committee for audit.		✓	Lack of knowledge and committee has not been formed so far.		
			* Current level of water tariff can cover operating cost.	✓				
	41	Tariff Collection	* Current level of water tariff is at an affordable level.	✓				
			* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓				
	42	Accounting	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓				
			* Schedule of meter reading and billing is fixed.	✓				
43	Procurement	* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓					
		* All financial transactions are recorded timely.	✓					
44	Financial Analysis	* Cash on hand is checked and stored in a lockable safe daily.	✓					
		* Balance of deposits in all bank accounts is checked at least monthly.	✓					
Communications	45	Customers Management	* Procurement is always authorized by relevant sub-committee.		✓	Sub-committee has not formed so far. (not needed so far)		
			* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓				
	46	Information Disclosure	* WUSC produces trial balance (amount of money) regularly at least quarterly.		✓	Lack of awareness, knowledge		
			* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
	47	Public Awareness	* WUSC responds to claim and requests from customers timely.	✓				
			* All claims from customers are recorded.	✓				
48	Online Services	* Customer satisfaction is high for water service.	✓					
		* The result of water supply operations including water quality test is disclosed daily.		✓	No Test is done, lack of knowledge			
49	Government	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓					
		* WUSC has developed or obtained necessary items for awareness program.	✓					
50	WUSC Network	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓					
		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	No computerized system			
50	WUSC Network	* WUSC understands national level laws, regulations and policy on water sector.	✓					
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓					
50	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓					
		* WUSC interacts with other WUSCs regularly.	✓					
50	WUSC Network	* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Lack of knowledge to prepare such plan			

Surveyor Name with Organization and Position
Ms.Pabina Muktan

WUSC Responsible Person Name:
Pradip Kumar Shah

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Bayaban WUSC

Survey Date: Jan 6th, 2021

Inspector Name: Ms. Pabina Moktan / Mr. Humendra Prasad Dev

Respondent Name: Mr. Hari Poudel (Position: President)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓ ✓ ✓ ✓ ✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓ ✓ ✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓ ✓ ✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓ ✓ ✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓ ✓ ✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓ ✓ ✓	✓ ✓	No such request so far, lack of experiences No such request so far, lack of experiences
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓ ✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓ ✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓ ✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓ ✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓ ✓ ✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓ ✓ ✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓ ✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓ ✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓ ✓ ✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓ ✓ ✓ ✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓ ✓ ✓	✓	Chloration unit is not working
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓ ✓ ✓ ✓	✓	Consumption varies
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓ ✓ ✓ ✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓ ✓ ✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓ ✓ ✓ ✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓ ✓ ✓ ✓		
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓ ✓ ✓	✓ ✓	Lack of awareness Insufficient budget
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓ ✓	✓	Insufficient budget

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant.	✓		
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Insufficient budget
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of awareness
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	poor surveillance
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Poor O&M
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓		
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	Insufficient budget, lack of knowledge	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	Insufficient system No computerized system
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	Lack of awareness
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	Test is not done
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	Insufficient budget, Lack of knowledge
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	No such plan making so far

Surveyor Name with Organization and Position
 Ms.Pabina Moktan / Mr. Humendra Prasad Dev
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Hari Poudel
 President
 Signature

WUSC Name: Pathari WUSC

Survey Date: Jan 7, 2021

Inspector Name: Ms. Pabina Moktan / Mr. Humendra Prasad Dev

Respondent Name: Mr. Prem Prasad Dahal (Position: Secretary)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	As per the situation and request, discount is given. Planning to make such policy
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).		✓	High consumptions, no new sources Iron content is High, presence of E-coli, Chlorination unit is not in operation . Irresponsible behaviour
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	High house connections, Storage capacity is low No new Project High house connections, Storage capacity is low
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	Poor Technical Knowledge
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓		
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Insufficient Budget
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		

	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant.	✓ ✓ ✓			
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓ ✓ ✓ ✓	✓	Insufficient Budget, Lack of awareness	
O&M Operation and Maintenan ce	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓ ✓			
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter	
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓ ✓ ✓ ✓			
	30	Water Quality	* WUSC understands proper sampling points in water supply systems.		✓		Poor Technical Knowledge Lack of technical knowledge, irresponsible behaviour
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓		
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.		✓		
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).		✓		Chlorination unit is not in operation .Iron content is High, presence of E-coli. Lack of awareness
	31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.		✓	✓	
			* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓			
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓			
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities.	✓		✓	Poor O&M, poor surveillance
			* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓			
* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.			✓ ✓ ✓				
34	Inventory Management	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓				
35	Office	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓				
Information	36	Operation Record	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓			
	37	ICT	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓			
Finance	38	Document Management	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓			
	39	Water Tariff	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
	40	Cost Management	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓			
	41	Tariff Collection	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓			
	42	Accounting	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓			
	43	Procurement	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓			
	44	Financial Analysis	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓			
Communi cations	45	Customers Management	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	✓	Test is not done ,irresponsible behaviour	
	46	Information Disclosure	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓			
	47	Public Awareness	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
	48	Online Services	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓			
	49	Government	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓			
	50	WUSC Network					

Surveyor Name with Organization and Position
Ms.Pabina Moktan/ Mr. Humendra Prasad Dev
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Mr. Prem Prasad Dahal
Secretary

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Madhumalla WUSC

Survey Date: Jan 8th, 2021

Inspector Name: Ms. Pabina Moktan / Mr. Humendra Prasad Dev

Respondent Name: Mr. Mahendra Shah (Position: Treasurer)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓ ✓ ✓ ✓ ✓	✓	Annual meeting is held every 3 years
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓ ✓ ✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓ ✓ ✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓ ✓ ✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓ ✓ ✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓ ✓ ✓	✓	No such request so far
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓ ✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓ ✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓ ✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓ ✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓ ✓ ✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓ ✓ ✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓ ✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓ ✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓ ✓ ✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓ ✓ ✓ ✓	✓	Lack of awareness, insufficient budget
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓ ✓ ✓	✓	No new sources Chlorination unit is not installed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓ ✓ ✓ ✓	✓	No new sources No new project Storage capacity is low insufficient production
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓ ✓ ✓ ✓	✓	No filtration tank Insufficient budget, lack of awareness
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓ ✓ ✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓ ✓ ✓ ✓	✓	Insufficient budget
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓ ✓ ✓ ✓	✓	Lack of awareness, Poor O&M
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓ ✓ ✓	✓	Insufficient budget, lack of awareness Poor O&M, insufficient budget
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓ ✓	✓	Insufficient budget

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓		
			* Breakdown of facilities is not frequent.	✓		
	26	Office	WUSC has cleaned the Water Treatment Plant.	✓		
			* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓		
			* WUSC has laboratory for water quality test.		✓	Lack of awareness, insufficient budget
			* WUSC has workshop and inventory stores for repair and maintenance.	✓		
	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.		✓	Insufficient source
O&M	29	Manuals	* WUSC has periodically scraped and washed the sand in slow sand filter (if any).	✓		No such filter
			* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
	30	Water Quality	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them.	✓		
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
			* WUSC understands how to use water quality test kits (e.g. ENPHO kit).		✓	Poor technical knowledge
	31	Water Leakage	* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓		
	32	Periodical Operations	* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓		
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
33	Troubleshooting	* WUSC discloses report of water quality test results to the consumers.	✓			
		* Case of water leakage is at an acceptable level.	✓			
34	Inventory Management	* Water leakage is repaired within short time after a case is reported.	✓			
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
35	Office	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
36	Operation Record	* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
37	ICT	* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
38	Document Management	* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.		✓	Poor Technical knowledge	
		* WUSC records all the troubleshooting in a record book.	✓			
39	Water Tariff	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
40	Cost Management	* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
41	Tariff Collection	* WUSC office is cleaned and tidied regularly.	✓			
		* WUSC has a computer to record and analyze data.		✓	Insufficient budget	
42	Accounting	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
		* Manager checks the operation and inspection records regularly.	✓			
43	Financial Analysis	* Result of water quality test is recorded and disclosed to the public daily.		✓	no test is done daily	
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)		✓	Insufficient budget	
44	Information Disclosure	* Staff have sufficient knowledge and skills to operate computer systems.		✓	No computerization	
		* Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	No computerization	
45	Customers Management	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection.	✓			
46	Public Awareness	* Documents are regularly checked by Internal Audit Committee for audit.	✓			
		* Current level of water tariff can cover operating cost.	✓			
47	Online Services	* Current level of water tariff is at an affordable level.	✓			
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
48	Government	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
		* Schedule of meter reading and billing is fixed.	✓			
49	WUSC Network	* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
50	Information Disclosure	* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
51	Public Awareness	* Procurement is always authorized by relevant sub-committee.	✓			
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
52	Government	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
53	WUSC Network	* WUSC responds to claim and requests from customers timely.	✓			
		* All claims from customers are recorded.	✓			
54	Information Disclosure	* Customer satisfaction is high for water service.	✓			
		* The result of water supply operations including water quality test is disclosed daily.		✓	No test is done daily	
55	Public Awareness	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
		* WUSC has developed or obtained necessary items for awareness program.	✓			
56	Online Services	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	No computerization	
57	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
58	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
		* WUSC interacts with other WUSCs regularly.		✓	Lack of co-ordination	
59	WUSC Network	* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Insufficient budget, lack of awareness	

Surveyor Name with Organization and Position
 Ms.Pabina Moktan / Mr. Humendra Prasad Dev
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Mr. Mahendra Shah
 Treasurer
 Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Urlabari WUSC

Survey Date: Jan 9th, 2021

Inspector Name: Ms. Pabina Moktan / Mr. Humendra

Respondent Name: Mr. Raju Budhathoki (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓ ✓ ✓ ✓ ✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓ ✓ ✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓ ✓ ✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓ ✓ ✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓ ✓ ✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓ ✓ ✓	✓	No such request so far, discount was given during pandemic(Rs.18,17,246/-) Not mandatory
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓ ✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓ ✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓ ✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓ ✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓ ✓ ✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓ ✓ ✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓ ✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓ ✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓ ✓ ✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓ ✓ ✓ ✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓ ✓ ✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓ ✓ ✓ ✓		
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓ ✓ ✓ ✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓ ✓ ✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓ ✓ ✓ ✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓ ✓ ✓ ✓		
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓ ✓ ✓	✓	In the process of making policy

WASMIP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Operati n and Maintena nce	24	Power Supply	* Power supply is stable.	✓			
			* WUSC has backup generator in case of power failure.	✓			
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓			
			* Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓			
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓			
			* WUSC has laboratory for water quality test.	✓			
			* WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓			
	O&M	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
					✓		
		28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
* Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any).				✓	✓	No such filter	
* WUSC has Schematic Flow Diagram (water supply system drawing).				✓			
29		Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓			
			* WUSC has manuals for equipment and use them.	✓			
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
30		Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓			
			* WUSC understands proper sampling points in water supply systems.	✓			
	* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards).		✓				
31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.	✓				
		* Case of water leakage is at an acceptable level.	✓				
		* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓				
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓				
		* WUSC records Periodical Operations in a record book.	✓				
33	Troubleshooting	* Immediate action is taken for the problems.	✓				
		* There is NO out of order in the water supply facilities.	✓				
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓				
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓				
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓				
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓				
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓				
Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
			* Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓			
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
			✓				
Finance	38	Document Management	* Important documents are filed and stored orderly.	✓			
			* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓			
	39	Water Tariff	* Current level of water tariff can cover operating cost.	✓			
			* Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
				✓			
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
* WUSC is making an effort that uncollected bills of water tariff are minimal.			✓				
			✓				
42	Accounting	* All financial transactions are recorded timely.	✓				
		* Cash on hand is checked and stored in a lockable safe daily.	✓				
		* Balance of deposits in all bank accounts is checked at least monthly.	✓				
43	Procurement	* Procurement is always authorized by relevant sub-committee.	✓				
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓				
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓				
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
Communi cations	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓			
			* All claims from customers are recorded. * Customer satisfaction is high for water service.	✓			
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓			
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓			
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓				
			✓				
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓				
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓				
50	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓				
		* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		Insufficient Budget		

Surveyor Name with Organization and Position
 Ms.Pabina Mktan/ Mr. Humendra Prasad Dev
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Mr.Raju Budhathoki
 Manager
 Signature

WUSC Name: Lasunekhola WUSC

Survey Date: 5th Feb,2021

Inspector Name: Mr. Sandesh Pant

Respondent Name: Muktiraj Gurung (Position: Member)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	Because of Covid 50% discount
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		Not prepared
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	No new staff appointed till today
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	Problem at the source
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	Scarcity of water More problems in dry season
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		Every 6 months 2 months not in operation due to covid
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		yes but the date is expired
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓		
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	Planning to
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	Not Necessary
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant. 	✓		
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	Lack of infrastructure
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	will do in 6 months
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Used to do every month now date is expired
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓		
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Processing
			* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓		
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓		in 6 months	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	operating from 11 Feb 2021
			* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
			* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	42	Accounting	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
	43	Procurement		✓		
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
			✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
			* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	Scarcity of water
	47	Public Awareness		✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.			✓		If necessary	
50	WUSC Network		✓		If necessary	

Surveyor Name with Organization and Position

Mr. Sandesh Pant, Engineer
FWSSMP Lamjung

Signature

WUSC Responsible Person Name:

Mr. Muktiraj guring
Memeber

Signature

WUSC Name: Besisahar WUSC

Survey Date: 4thFeb,2021

Inspector Name: Mr. Ashish Sharma

Respondent Name: Trilochan Paudel (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓	✓	Not in written form only verbally
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓		
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	No meter gauge
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓		
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	On the process of
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	Not Necessary
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. 	✓		
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓		
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓		
	29		<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓		
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓	✓	Done at WUSC
			* WUSC discloses report of water quality test results to the consumers.	✓	✓	On the process
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓		
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	Not monthly
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	on the process of increasing tariff on the process of increasing tariff
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	In the process
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		

Surveyor Name with Organization and Position
Mr. Ashish Sharma, Engineer
FWSSMP Lamjung

WUSC Responsible Person Name:
Mr. Krishna Kumar Pradhan
Chairman

Signature

Signature

WUSC Name: Bhotewodar WUSC

Survey Date: 5th Feb,2021

Inspector Name: Mr. Sandesh Pant

Respondent Name: Bhim Bahadur Karki (Position: Treasurer)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.		✓	Medium
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office	✓		
			FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
		* The election is conducted with participation of all members of users committee.	✓			
3	Management Board	* Management Board holds regular meeting.	✓			
		* The minutes of Management Board meeting are recorded.	✓			
		* Management Board gives necessary instructions to Manager timely.	✓			
4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
		* Each sub-committee holds meeting regularly.	✓			
		* Each sub-committee makes decisions effectively.	✓			
5	Internal Audit	* Internal Audit Committee is established.	✓			
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓			
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓			
6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓	✓	Not fully	
		* WUSC has adapted a policy on consideration for poor households.	✓			
		* WUSC has adapted a policy on consideration for disabled people.	✓			
7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
		* All staff know such mission statement or vision.	✓			
8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓			
		* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓			
9	Annual Report	* WUSC compiles and submits annual report timely.	✓			
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓		
			* All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions.	✓		
			* The workload of manager and each staff are appropriate.	✓		
			* The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly.	✓		
			* Manager visits, monitors and advises staff regularly.	✓		
		* Communication among staff to share problems is frequent.	✓			
13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
14	Motivation	* Staff have high motivation to work.	✓			
		* Staff retention is high enough.	✓			
15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified.	✓			
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
16	Training	* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.	✓			
		* WUSC conducts induction training for new staff.	✓			
		* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water.	✓		
			* Existing water sources can provide safe water.	✓		
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓		
			* WUSC has expansion and/or new Water Treatment Plant constructions.	✓		
			* Service Hours is long enough to respond to water demand.	✓		
			* Service Hours is same throughout rainy season and dry season.			
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality.		✓	Need new facility
			* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓		
			* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓		
		* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓			
20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓			
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓	✓		
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities.	✓			
		* WUSC has cleaning tools for facilities.	✓			
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network.	✓			
		* Household connections are high enough.	✓			
		* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Not operated with full capacity	
23	Disaster management	* WUSC has disaster management plan.	✓			
		* Facilities are resistant/protected to natural disaster.	✓			
		* WUSC has an insurance for water supply facilities.		✓	No preparation	
24	Power Supply	* Power supply is stable.	✓			
		* WUSC has backup generator in case of power failure.	✓			
25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓			
		* Breakdown of facilities is not frequent.	✓			
		WUSC has cleaned the Water Treatment Plant.	✓			
26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓			
		* WUSC has laboratory for water quality test.	✓			
		* WUSC has workshop and inventory stores for repair and maintenance.	✓			
	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
		* Production Ratio (supplied water per person) is at an appropriate level.	✓			
		* WUSC has periodically scraped and washed the sand in slow sand filter (if any).	✓			
		* WUSC has Schematic Flow Diagram (water supply system drawing).	✓			
29	Maintenance	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓			

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓	✓	Once a week
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓		
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
			* WUSC discloses report of water quality test results to the consumers.	✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓		
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		Not enough	
32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓			
33	Troubleshooting	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓			
		* WUSC records all the troubleshooting in a record book.	✓			
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
		* Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		flow meter is not working
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	Not everyone has it
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓		
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
				✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓		
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓		
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓			

Surveyor Name with Organization and Position
Mr. Sandesh Pant, Engineer
FWSSMP Lamjung

WUSC Responsible Person Name:
Mr. Bhim Bahadur Karki
Treasurer

Signature

Signature

WUSC Name: Agyauli WUSC

Survey Date: 16th Feb,2021

Inspector Name: Mr. Sagar Basyal

Respondent Name: Mr. Sovit Sharma (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓		
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 		✓	
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 		✓	
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		Staffs need more training.
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓		
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	Need more sources
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 		✓	Scarcity of water Require new WTP after adding new sources.
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Need special training on electrocal and mechanical components Safety tools available only for chlorination
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No such plans so far Planning to
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓		
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓		
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	Need special tools for repairing valves and fittings
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. 	✓			

O&M Operation and Maintenance	29	Manuals	* WUSC has periodically scraped and washed the sand in slow sand filter (if any).	✓		
			* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
	30	Water Quality	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them.	✓		
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
			* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓		
	31	Water Leakage	* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓		
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
32	Periodical Operations	* WUSC discloses report of water quality test results to the consumers.	✓			
		* Case of water leakage is at an acceptable level.	✓			
33	Troubleshooting	* Water leakage is repaired within short time after a case is reported.	✓			
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
34	Inventory Management	* The annual plan of periodical maintenance is formulated.		✓	Maintenance is done as per requirement.	
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
35	Office	* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
36	Operation Record	* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
37	ICT	* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓	✓	WUSC doesnot posses such setup	
		* WUSC records all the troubleshooting in a record book.	✓			
38	Document Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
39	Water Tariff	* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
40	Cost Management	* WUSC office is cleaned and tidied regularly.	✓			
		* WUSC has a computer to record and analyze data.	✓			
41	Tariff Collection	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
		* Manager checks the operation and inspection records regularly.	✓			
42	Accounting	* Result of water quality test is recorded and disclosed to the public daily.	✓			
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
43	Procurement	* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
44	Financial Analysis	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection.	✓			
45	Customers Management	* Documents are regularly checked by Internal Audit Committee for audit.	✓			
		* Current level of water tariff can cover operating cost.	✓			
46	Information Disclosure	* Current level of water tariff is at an affordable level.	✓			
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
47	Public Awareness	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
		* Schedule of meter reading and billing is fixed.	✓			
48	Online Services	* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
49	Government	* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
50	WUSC Network	* Procurement is always authorized by relevant sub-committee.	✓			
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
51	Information	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
52	Communication	* WUSC responds to claim and requests from customers timely.	✓			
		* All claims from customers are recorded.	✓			
53	Public Awareness	* Customer satisfaction is high for water service.	✓			
		* The result of water supply operations including water quality test is disclosed daily.	✓			
54	Government	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
		* WUSC has developed or obtained necessary items for awareness program.	✓			
55	WUSC Network	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		WUSC has a radio program.	
		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
56	WUSC Network	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
57	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
		* WUSC interacts with other WUSCs regularly.	✓		If necessary	
58	WUSC Network	* WUSC organizes yearly observation tour to visit other WUSCs.	✓			
			✓			

Surveyor Name with Organization and Position

Mr. Sagar Basyal, Engineer
FWSSMP Pokhara

Signature

WUSC Responsible Person Name:

Mr. Sovit Prasad Sharma
Chairman, Agyauli WUSC

Signature

WUSC Name: Gaidakot WUSC

Survey Date: 17thFeb,2021

Inspector Name: Mr. Sagar Basyal / Raju Aryal

Respondent Name: Shovakar Rimal (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓		
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓		
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓		
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓		
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 		✓	
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓		
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant. 	✓		
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓		
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	No slow sand filter
	29		<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓						
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Need training				
			31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
					32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓		
			33	Troubleshooting			* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓		
					34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓		
							35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓
			Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.			✓	
37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.				✓				
		38				Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39		Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓					
		40		Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓				
	41		Tariff Collection		* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓				
		42		Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly. * Procurement is always authorized by relevant sub-committee.	✓				
	43		Procurement		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓				
		44		Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
Communications	45		Customers Management		* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓				
		46		Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓				
	47		Public Awareness		* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓				
		48		Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓				
	49		Government		* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	sometimes with FWSSMP		
		50		WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓				

Surveyor Name with Organization and Position

Mr. Sagar Basyal, Engineer FWSSMP Pokhara
Mr. Raju Aryal, Engineer Gaidakot Municipality

WUSC Responsible Person Name:

Mr. Shovakar Rimal
Chairman, Gaidakot WUSC

Signature

Signature

WUSC Name: Pragatinagar WUSC
 Inspector Name: Mr. Sagar Basyal

Respondent Name: Mr. Khimananda Bhusal (Position: Chairman)
 Survey Date: 18th Feb,2021

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓		
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓		
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 		✓	Need more sources
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 		✓	No treatment plant
					✓	No treatment plant
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 		✓	Need special tools for repairs and fitting
					✓	Uses local tools
					✓	Need special training
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 		✓	
24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓			
25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓			
26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 		✓	Need bigger room for staffs	
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓		
	29		<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓	✓	Once a week
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓		
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
			* WUSC discloses report of water quality test results to the consumers.	✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓	✓	Need to lower it
32	Periodical Operations	* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
		* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓			
33	Troubleshooting	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓			
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	Need to revise water tariff
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓		
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓		
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓		
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓			

Surveyor Name with Organization and Position
Mr. Sagar Basyal, Engineer
FWSSMP Pokhara

WUSC Responsible Person Name:
Mr. Khimananda Bhusal
Chairman, Pragatinagar WUSC

Signature

Signature

WUSC Name: Rajahar WUSC

Survey Date: 19th Feb,2021

Inspector Name: Mr. Vivek Shrestha, WASMIP

Respondent Name: Mr. Ganga Bahadur Thapa (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
	2	Election	<ul style="list-style-type: none"> MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓		
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓		
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓		
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	Need to add sources
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	During dry season production decreases
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 		✓	Need special tools for repairs and fitting
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	No fire hydrant and air valves.
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 		✓	No preparation
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓		
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓		
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓		
O&M	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓		
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP. 	✓		
	30	Water Quality	<ul style="list-style-type: none"> * WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). 	✓		

Operation and Maintenance		* WUSC discloses report of water quality test results to the consumers.	✓			
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	Need to lower it
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓		
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓		
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
Communications	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		

Surveyor Name with Organization and Position

Mr. Vivek Shrestha
Engineer, WASMIP

Signature

WUSC Responsible Person Name:

Mr. Ganga Bahadur Thapa
Chairman, Rajahar WUSC

Signature

WUSC Name: Bhurigau WUSC
 Inspector Name: Mr. Bed Raj Regmi, Engineer, DWSSM

Survey Date: _____
 Respondent Name: Mr. Chandra Mani Poudel (Position: Secretary)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.		✓	Unanimous decision
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		WSP subcommittee
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No such requests received from consumers
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.		✓	
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	New source needed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.	✓		Need to update
	23	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Only washout present No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		Less priority
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No facility
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	
Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		Only mask
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slowsand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	Will do in future
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	As required Yearly
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. * The annual plan of periodical maintenance is formulated.	✓	✓	No knowledge

	32	Periodical Operations	* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓	No knowledge No knowledge
	33	Troubleshooting	* Immediate action is taken for the problems.	✓	
			* There is NO out of order in the water supply facilities.	✓	
			* NRW (Non-Revenue Water) is low enough.	✓	
			* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓	No knowledge
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓		
		* WUSC office is cleaned and tidied regularly.	✓		
		* WUSC has a computer to record and analyze data.	✓	No computer	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	No computer
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓	
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	No sub-committee
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓	As required	
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	As required
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓	
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	
	49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓	
* WUSC communicates with Federal Government (DWSSM/NWSSTC).			✓		
* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.			✓		
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		

Surveyor Name with Organization and Position
Mr. Bed Raj Regmi
Engineer, DWSSM

WUSC Responsible Person Name:
Mr. Chandra Mani Poudel
Secretary, Bhurigau WUSC

Signature

Signature

WUSC Name: Kusumba WUSC
 Inspector Name: Mr. Bed Raj Regmi, Engineer, DWSSM

Survey Date:
 Respondent Name: Mr. Nar Bahadur Khadka (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No standards to determine poor No such requests received from consumers
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	More training required
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	New source needed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No treatment plant Less production volume Less production in dry season
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	Treatment plant under construction. Need training
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Flowmeters shall be installed.
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.	✓	✓	
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Only washout present No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	No information Affected by Loadshedding
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	Pipe frequently damaged due to road construction No facility
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Bigger office building under construction.
O&M Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Only mask
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slowsand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	No information Lack of knowledge
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	As per requirement As per requirement
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	Will do in future

	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	Need to formulate Will do in future Will do in future
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough.	✓ ✓ ✓	
			* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓	No technical knowledge
			* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓	
34	Inventory Management				
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	Meters damaged
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	
			* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓	
38	Document Management				
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	Done by WUSC
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓	Yearly	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	No information
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓	Lack of information
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		

Surveyor Name with Organization and Position
Mr. Bed Raj Regmi
Engineer, DWSSM

WUSC Responsible Person Name:
Mr. Nar Bahadur Khaka
Chairman, Kusumba WUSC

Signature

Signature

WUSC Name: Rajapur WUSC
 Inspector Name: Mr. Bed Raj Regmi, Engineer, DWSSM

Survey Date: _____
 Respondent Name: Mr. Netra Prasad Soti (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.		✓	
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No standards to determine poor No such requests received from consumers
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.		✓	
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	New source needed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No treatment plant Less production volume Less production in dry season
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Flowmeters shall be installed.
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.		✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.		✓	No meters in household connections Only washout present
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No experience Old structures No information
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Solar present
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.		✓	Pipe bursts regularly No facility
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Only mask
Operation and Maintenance	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slowsand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.		✓	No information Lack of knowledge
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of knowledge Lack of knowledge Lack of knowledge No water quality data No water quality data
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	

	32	Periodical Operations	* The annual plan of periodical maintenance is formulated.		✓	No knowledge
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.		✓	No knowledge
			* WUSC records Periodical Operations in a record book.		✓	No knowledge
	33	Troubleshooting	* Immediate action is taken for the problems.	✓		
			* There is NO out of order in the water supply facilities.		✓	
			* NRW (Non-Revenue Water) is low enough.		✓	
			* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.		✓	Meter not installed
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓		
			* Spare parts are replenished timely in case of out of stock.		✓	
			* Quantity of spare parts are counted and recorded regularly.		✓	
	35	Office	* Water treatment facilities and water source are cleaned regularly.		✓	No treatment plant
			* WUSC office is cleaned and tidied regularly.		✓	
			* WUSC has a computer to record and analyze data.		✓	No computer
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.		✓	Meter not installed
			* Manager checks the operation and inspection records regularly.		✓	
			* Result of water quality test is recorded and disclosed to the public daily.		✓	
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)		✓	No computer
			* Staff have sufficient knowledge and skills to operate computer systems.		✓	
			* Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	
	38	Document Management	* Important documents are filed and stored orderly.	✓		
			* Documents are regularly checked by Manager for inspection.		✓	
			* Documents are regularly checked by Internal Audit Committee for audit.		✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost.		✓	Consumers pay flat rate
			* Current level of water tariff is at an affordable level.		✓	
			* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.		✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.		✓	
41	Tariff Collection	* Schedule of meter reading and billing is fixed.		✓	No meters	
		* WUSC is making an effort that uncollected bills of water tariff are minimal.		✓		
42	Accounting	* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.		✓		
		* Balance of deposits in all bank accounts is checked at least monthly.		✓		
43	Procurement	* Procurement is always authorized by relevant sub-committee.		✓	Done by WUSC	
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.		✓		
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.		✓	Yearly	
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.		✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.		✓	Lack of knowledge
			* Customer satisfaction is high for water service.		✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	No tests conducted
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).		✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	No information
* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)				✓		
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	Lack of knowledge	
49	Government	* WUSC understands national level laws, regulations and policy on water sector.		✓	Lack of information	
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).		✓		
50	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.		✓		
		* WUSC interacts with other WUSCs regularly.		✓		
			* WUSC organizes yearly observation tour to visit other WUSCs.		✓	

Surveyor Name with Organization and Position

Mr. Bed Raj Regmi
Engineer, DWSSM

Signature

WUSC Responsible Person Name:

Mr. Netra Prasad Soti
Chairman, Rajapur WUSC

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.		✓	No such requests received from consumers
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).		✓	New source needed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.		✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.	✓		Need to update
	23	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.		✓	Only washout present No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		No information
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No facility
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	
Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		Only mask
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slowsand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	Will do in future
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	As required Yearly
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. * The annual plan of periodical maintenance is formulated.	✓	✓	No knowledge

	32	Periodical Operations	* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	No knowledge
	33	Troubleshooting	* Immediate action is taken for the problems.	✓		
			* There is NO out of order in the water supply facilities.	✓		
			* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	No knowledge
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓		
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓		
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.	✓	✓	
	38	Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly. * Procurement is always authorized by relevant sub-committee.	✓	✓	
	43	Procurement	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	As required
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	As required
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	

Surveyor Name with Organization and Position
Mr. Bed Raj Regmi
Engineer, DWSSM

WUSC Responsible Person Name:
Mr. Min Raj Sharma
Chairman, Guleriya-1 WUSC

Signature

Signature

WUSC Name: Beljhundi WUSC
 Inspector Name:

Survey Date:
 Respondent Name: Mr. Madan Mani Pokhrel (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓	✓	Did not find necessary
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓	✓	
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓	✓	
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓	✓	
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓	✓	
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	No such requests received from consumers
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓	✓	No information
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓	✓	
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓	✓	
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓	✓	
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓	✓	
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓	✓	
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓	✓	
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓	✓	
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓	✓	Less technical knowledge
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	No trainer
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	New source needed
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	Less production volume Less in dry season
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Need training
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	Need to install
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No experience Flood Financial barrier
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓	✓	
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	Not necessary
Operation and Maintenance	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓	✓	Only mask
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP. 	✓	✓	
	30	Water Quality	<ul style="list-style-type: none"> * WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers. 	✓	✓	
	31	Water Leakage	<ul style="list-style-type: none"> * Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. 	✓	✓	

	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Need to formulate
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	No technical knowledge
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓	
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	Plan to setup
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	Monthly reading
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	Plan to setup Need training data recorded manually
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓	Planning to do
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

Mr. Madan Mani Pokhrel
Manager, Beljhundi WUSC

Signature

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project		✓	Agencies not seem interested
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 		✓	No such requests received from consumers
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓		
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 		✓	
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓		
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓		
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓		
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Training required
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		No fire hydrant
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No experience
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	Lack of information
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant. 	✓		
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 		✓	
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		Only mask
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	no slow sand
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓	✓	As necessary
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓	✓	
			* WUSC discloses report of water quality test results to the consumers.	✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓	✓	
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Will do after training
			✓			
33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough.	✓	✓		
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Lack of knowledge	
			✓			
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock.	✓	✓		
		* Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓		
			✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	
				✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.	✓	✓	
38	Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓		
			✓			
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
				✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
				✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓		
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	Yearly	
			✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	
				✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	
				✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	
				✓		
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓		
			✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓		
			✓			

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

Signature

Signature

WUSC Name: Jhakredhunga WUSC
 Inspector Name:

Survey Date:
 Respondent Name: Mr. Dasrath Bali (Position: Secretary)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Installed public taps Such request is not received.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	In dry season production is less
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Pressure gauge is not installed. No deep tube well
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	No deep tube well
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓		
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No such plans
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	No generator
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓		
O&M	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slow sand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓		

Operation and Maintenance	31	Water Leakage	* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
			* WUSC discloses report of water quality test results to the consumers.	✓		
			* Case of water leakage is at an acceptable level.	✓		
			* Water leakage is repaired within short time after a case is reported.	✓		
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
			* WUSC records Periodical Operations in a record book.	✓		
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
33	Troubleshooting	* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
34	Inventory Management	* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓	✓	No knowledge	
		* WUSC records all the troubleshooting in a record book.	✓			
		* Spare parts are stocked orderly in a designated space or shelf.	✓			
35	Office	* Spare parts are replenished timely in case of out of stock.	✓			
		* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
Information	36	Operation Record	* WUSC office is cleaned and tidied regularly.	✓		
			* WUSC has a computer to record and analyze data.	✓	✓	Need to purchase computer
			* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓		
	37	ICT	* Manager checks the operation and inspection records regularly.	✓		
			* Result of water quality test is recorded and disclosed to the public daily.	✓		
			* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓	✓	Planning to setup computer
38	Document Management	* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓		
		* Important documents are filed and stored orderly.	✓			
Finance	39	Water Tariff	* Documents are regularly checked by Manager for inspection.	✓		
			* Documents are regularly checked by Internal Audit Committee for audit.	✓		
			* Current level of water tariff can cover operating cost.	✓		
	40	Cost Management	* Current level of water tariff is at an affordable level.	✓		
			* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
			* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
		* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.	✓			
42	Accounting	* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.	✓			
43	Procurement	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
		* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
Communications	44	Financial Analysis	* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
			* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
	45	Customers Management	* Customer satisfaction is high for water service.	✓		
			* The result of water supply operations including water quality test is disclosed daily.	✓		
	46	Information Disclosure	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
* WUSC has developed or obtained necessary items for awareness program.			✓			
* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)			✓			
47	Public Awareness	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓		
		* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
		* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
48	Online Services	* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.	✓			
49	Government					
50	WUSC Network					

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

Mr. Dasrath bali
Secretary, Jhakredhunga WUSC

Signature

Signature

WUSC Name: Chaughera WUSC
 Inspector Name: _____

Survey Date: _____
 Respondent Name: Mr. Krishna Bahadur Dami (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓	✓	Reported if necessary
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓	✓	Unanimous
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓	✓	
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓	✓	Advisor committee only
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓	✓	
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Discount in installation charge No such requests received from consumers
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓	✓	No information
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓	✓	
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓	✓	
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓	✓	
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓	✓	
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓	✓	
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓	✓	
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓	✓	
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓	✓	
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	More training required
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	New source needed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No treatment plant Less production volume
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.	✓	✓	
	23	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Need to install No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Solar system installed
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No facility
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	
Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Only mask
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	As per requirement As per requirement
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. * The annual plan of periodical maintenance is formulated.	✓	✓	Will do in future Need to formulate

	32	Periodical Operations	* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Will do in future
	33	Troubleshooting	* Immediate action is taken for the problems.	✓		
			* There is NO out of order in the water supply facilities.	✓		
			* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	No technical knowledge
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	Monthly reading
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		Done by WUSC
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	Yearly
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	If necessary shared
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

Mr. Krishna Bahadur Dami
Manager, Chaughera WUSC

Signature

Signature

WUSC Name: Bharatpur WUSC
 Inspector Name: _____

Survey Date: _____
 Respondent Name: Mr. Shankar Gautam (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓	✓	Agencies not seem intrested
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓	✓	unanimous selection If election is done, transparency is maintained.
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓	✓	
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓	✓	Did not find necessary
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓	✓	
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	No such requests received from consumers
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓	✓	
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓	✓	
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓	✓	
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓	✓	
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓	✓	
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓	✓	
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓	✓	
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓	✓	
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓	✓	
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	No treatment plant
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	No treatment plant
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	No pressure gauge
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Training required
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	No fire hydrant
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No experience Lack of information
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓	✓	
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	
Operation and Maintenance	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓	✓	Only mask
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	no slow sand
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP. 	✓	✓	
	30	Water Quality	<ul style="list-style-type: none"> * WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers. 	✓	✓	As necessary
	31	Water Leakage	<ul style="list-style-type: none"> * Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. 	✓	✓	

	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓ ✓	Will do after training
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough.	✓ ✓ ✓		
			* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓	✓	Lack of Knowledge
			* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
34	Inventory Management					
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	✓	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓		
			* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
38	Document Management					
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓	✓	Yearly	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓			

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

Mr. Shankar Gautam
Chairman, Bhartatpur WUSC

Signature

Signature

WUSC Name: Shankarnagar WUSC
 Inspector Name: Ms. Ajita Devkota

Survey Date:
 Respondent Name: Mr. Deepak Pandey (Position: Engineer)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		Unanimous decision (this time)
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Such request is not received.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		More training necessary
	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		Growth potential @ 10% Co-finance project ongoing
Facility	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.		✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Need training
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓		
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No treatment plant
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓		
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slow sand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		WUSC has own laboratory

Operation and Maintenance	31	Water Leakage	* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
			* WUSC discloses report of water quality test results to the consumers.	✓		
			* Case of water leakage is at an acceptable level.	✓		
	32	Periodical Operations	* Water leakage is repaired within short time after a case is reported.	✓		
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
			* The annual plan of periodical maintenance is formulated.	✓		
33	Troubleshooting	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
		* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
34	Inventory Management	* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓	✓	Need training	
35	Office	* WUSC records all the troubleshooting in a record book.	✓			
		* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
36	Operation Record	* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly.	✓			
37	ICT	* WUSC has a computer to record and analyze data.	✓			
		* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
		* Manager checks the operation and inspection records regularly.	✓			
38	Document Management	* Result of water quality test is recorded and disclosed to the public daily.	✓			
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
		* Staff have sufficient knowledge and skills to operate computer systems.	✓			
Finance	39	Water Tariff	* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
			* Important documents are filed and stored orderly.	✓		
			* Documents are regularly checked by Manager for inspection.	✓		
	40	Cost Management	* Documents are regularly checked by Internal Audit Committee for audit.	✓		
			* Current level of water tariff can cover operating cost.	✓		
			* Current level of water tariff is at an affordable level.	✓		
41	Tariff Collection	* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
		* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
		* Schedule of meter reading and billing is fixed.	✓			
42	Accounting	* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.	✓			
43	Procurement	* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.	✓			
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
			* Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓		
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓			
		* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSSTC).	✓			
		* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.	✓			

Surveyor Name with Organization and Position

Ms. Ajita Devkota
Engineer, FWSSMP
butwal

Signature

WUSC Responsible Person Name:

Mr. Deepak Pandey
Engineer, Shankarnagar WUSC

Signature

WUSC Name: Anandaban WUSC
 Inspector Name: Ms. Ajita Devkota

Survey Date:
 Respondent Name: Mr. Kesav Raj Neupane (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No standards to verify poor Such request is not received.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
Facility	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	Not all staffs received training
	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		More sources required. Co-finance project ongoing
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	Require treatment unit for calcination.
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	No pressure gauge Need training
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Insufficient
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓		Need to change and repair valves
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No treatment plant
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	No workshop
Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slow sand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Every 6 month In facebook account of WUSC
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	
32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			

		* WUSC records Periodical Operations in a record book.	✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	Chlorination not working Need training
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓	
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	

Surveyor Name with Organization and Position
Ms. Ajita Devkota
Engineer, FWSSMP
butwal

WUSC Responsible Person Name:
Mr. Kesav Raj Neupane
Chairman, Anandaban WUSC

Signature

Signature

WUSC Name: Sainamaina WUSC
 Inspector Name: Ms. Ajita Devkota

Survey Date:
 Respondent Name: Mr. Kabiraj Kuwar (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Such request is not received.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	Not all staffs received training
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		More sources required.
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		No pressure gauge
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Needs training Insufficient
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.	✓		
	23	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Need to change and repair valves No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No treatment plant
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	No workshop
O&M	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slow sand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓	✓	Need training Lack of skilled manpower Every 6 month

Operation and Maintenance	31	Water Leakage	* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
			* WUSC discloses report of water quality test results to the consumers.	✓		In annual report
			* Case of water leakage is at an acceptable level.	✓		
	32	Periodical Operations	* Water leakage is repaired within short time after a case is reported.	✓		
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
			* The annual plan of periodical maintenance is formulated.		✓	
33	Troubleshooting	* WUSC conducts operation and preventative maintenance as per instruction of SOP.		✓		
		* WUSC records Periodical Operations in a record book.		✓		
		* Immediate action is taken for the problems.	✓			
34	Inventory Management	* There is NO out of order in the water supply facilities.	✓		Chlorination not working	
		* NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓	✓	Need training	
35	Office	* WUSC records all the troubleshooting in a record book.	✓			
		* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
36	Operation Record	* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly.	✓			
37	ICT	* WUSC has a computer to record and analyze data.	✓			
		* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.		✓	Flowmeters damaged.	
		* Manager checks the operation and inspection records regularly.	✓			
38	Document Management	* Result of water quality test is recorded and disclosed to the public daily.	✓			
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
		* Staff have sufficient knowledge and skills to operate computer systems.	✓			
Finance	39	Water Tariff	* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
			* Important documents are filed and stored orderly.	✓		
			* Documents are regularly checked by Manager for inspection.	✓		
	40	Cost Management	* Documents are regularly checked by Internal Audit Committee for audit.	✓		
			* Current level of water tariff can cover operating cost.	✓		
			* Current level of water tariff is at an affordable level.	✓		
41	Tariff Collection	* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
		* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
		* Schedule of meter reading and billing is fixed.	✓			
42	Accounting	* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.	✓			
43	Procurement	* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.	✓			
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
			* Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	Once a year
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓		
		* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓		
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSSTC).	✓			
		* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.		✓		

Surveyor Name with Organization and Position

Ms. Ajita Devkota
Engineer, FWSSMP
butwal

Signature

WUSC Responsible Person Name:

Mr. Kabiraj Kuwar
Chairman, Sainamaina WUSC

Signature

WUSC Name: Sauraha farsatkar WUSC
 Inspector Name: Ms. Ajita Devkota

Survey Date:
 Respondent Name: Mr. Om Raj Faudar (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	30% discount Such request is not received.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		Verbally
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
Facility	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		No pressure gauge
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Needs training Insufficient
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough.	✓		
	23	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No fire hydrant, air valves No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No treatment plant
O&M	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	No workshop
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slow sand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓	✓	Need training Lack of skilled manpower Monthly	

Operation and Maintenance	31	Water Leakage	* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
			* WUSC discloses report of water quality test results to the consumers.	✓		In annual report
			* Case of water leakage is at an acceptable level.	✓		
			* Water leakage is repaired within short time after a case is reported.	✓		
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
			* WUSC records Periodical Operations in a record book.	✓		
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
33	Troubleshooting	* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
34	Inventory Management	* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓	✓	Need training	
		* WUSC records all the troubleshooting in a record book.	✓			
		* Spare parts are stocked orderly in a designated space or shelf.	✓			
35	Office	* Spare parts are replenished timely in case of out of stock.	✓			
		* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
36	Operation Record	* WUSC office is cleaned and tidied regularly.	✓			
		* WUSC has a computer to record and analyze data.	✓			
		* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
37	ICT	* Manager checks the operation and inspection records regularly.	✓			
		* Result of water quality test is recorded and disclosed to the public daily.	✓			
		* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
38	Document Management	* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
		* Important documents are filed and stored orderly.	✓			
Finance	39	Water Tariff	* Documents are regularly checked by Manager for inspection.	✓		
			* Documents are regularly checked by Internal Audit Committee for audit.	✓		
			* Current level of water tariff can cover operating cost.	✓		
	40	Cost Management	* Current level of water tariff is at an affordable level.	✓		
			* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
			* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
		* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
		* All financial transactions are recorded timely.	✓			
42	Accounting	* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.	✓			
43	Procurement	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
		* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	44	Financial Analysis	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
			* Customer satisfaction is high for water service.	✓		
	45	Customers Management	* The result of water supply operations including water quality test is disclosed daily.	✓	✓	When new test report is obtained.
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
			* WUSC has developed or obtained necessary items for awareness program.	✓		
46	Information Disclosure	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
		* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
		* WUSC understands national level laws, regulations and policy on water sector.	✓			
47	Public Awareness	* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
		* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
		* WUSC interacts with other WUSCs regularly.	✓			
48	Online Services	* WUSC organizes yearly observation tour to visit other WUSCs.	✓			
			✓			
			✓			
49	Government		✓			
			✓			
			✓			
50	WUSC Network		✓			
			✓			
			✓			

Surveyor Name with Organization and Position

Ms. Ajita Devkota
Engineer, FWSSMP
butwal

Signature

WUSC Responsible Person Name:

Mr. Om Raj Faudar
Chairman, Sauraha farsatikar WUSC

Signature

WUSC Name: Devdaha WUSC
 Inspector Name: Ms. Ajita Devkota

Survey Date:
 Respondent Name: Mr. Sagari Lal Sharma (Position: Secretary)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.		✓	Unanimous decision
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.		✓	Planning to do
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		Planning to do
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		Verbally
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.		✓	Planning to do
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		Co-finance project ongoing
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓		
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		No pressure gauge
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Needs training Insufficient
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Expanding service area No fire hydrant, air valves
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	No workshop
Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Need training Lack of skilled manpower Every 6 month
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. * The annual plan of periodical maintenance is formulated.	✓		
32	Periodical Operations	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			

		* WUSC records Periodical Operations in a record book.	✓	✓	Flowmeters not working.
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓ Need training
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓	
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	Flowmeters not working.
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓

Surveyor Name with Organization and Position

Ms. Ajita Devkota
Engineer, FWSSMP
butwal

Signature

WUSC Responsible Person Name:

Mr. Sagari Lal Sharma
Secretary, Devdaha WUSC

Signature

WUSC Name: Parasi WUSC (Ramgram WUSC)
 Inspector Name: Ms. Ajita Devkota

Survey Date: _____
 Respondent Name: Mr. Khageswor Panthi (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓	✓	
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓	✓	Planning to do
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Installation charge very low Planning to do
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		Verbally
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓	✓	Planning to do Planning to do
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No treatment plant
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No treatment plant
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	No pressure gauge, damaged flowmeters
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Needs training Insufficient
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	No fire hydrant, air valves
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No experience
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Solar installed
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No treatment plant
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	No workshop
Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No slow sand
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Need training Lack of skilled manpower Monthly
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance. * The annual plan of periodical maintenance facilities is formulated.	✓	✓	In annual report

	32	Periodical Operations	* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓				
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓				
			34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓		
			35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓		
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	Bulkmeters damaged		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.	✓				
	38	Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	No internal audit		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓				
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓				
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓				
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly. * Procurement is always authorized by relevant sub-committee.	✓				
	43	Procurement	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓				
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓				
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	When new test report is obtained.		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓				
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓				
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓				
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓				

Surveyor Name with Organization and Position

Ms. Ajita Devkota
Engineer, FWSSMP
butwal

Signature

WUSC Responsible Person Name:

Mr. Khageswor Panthi
Chairman, Parasi WUSC

Signature

WASMIIP-II: WUSC Water Supply Management Checklist

WUSC Name: Dhulabari WUSC

Survey Date: 24th Oct, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
* The minutes of Management Board meeting are recorded.			✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
5	Internal Audit	* Each sub-committee holds meeting regularly.	✓			
		* Each sub-committee makes decisions effectively.	✓			
		* Internal Audit Committee is established.	✓			
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓			
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓			
		* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	No such request so far, lack of awareness	
6	Social Considerations	* WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of awareness	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
7	Goal Management	* All staff know such mission statement or vision.	✓			
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓	Lack of knowledge to prepare such plan	
8	Mid-Term Plan	* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No such plan	
9	Annual Report	* WUSC compiles and submits annual report timely.	✓			
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓		
			* All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions.	✓		
			* The workload of manager and each staff are appropriate.	✓		
	12	Staff Communications	* The workload of manager and each staff are evenly distributed.	✓		
			* Staff reports their duties and problems regularly.	✓		
			* Manager visits, monitors and advises staff regularly.	✓		
13	Staff Appraisals	* Communication among staff to share problems is frequent.	✓			
		* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
14	Motivation	* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
		* Staff have high motivation to work.	✓			
15	Knowledge and Skills	* Staff retention is high enough.	✓			
		* The knowledge and skills required for manager and staff have been identified.	✓			
16	Training	* Manager and Staff have sufficient knowledge and skills for their duties.		✓	upto some extent	
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)		✓	upto some extent	
		* Staff receive training to increase knowledge and skill for their duties.		✓	upto some extent	
		* Training materials are archived for knowledge sharing among staff.		✓	upto some extent	
Facility	17	Water Source	* WUSC conducts induction training for new staff.	✓		
			* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
			* Existing water sources can provide sufficient volume of water.		✓	Source is limited
	18	Facility for Water Volume	* Existing water sources can provide safe water.	✓		
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	19	Facility for Water Quality	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓		
			* WUSC has expansion and/or new Water Treatment Plant constructions.	✓		
			* Service Hours is long enough to respond to water demand.	✓		
	20	Measurement Equipment	* Service Hours is same throughout rainy season and dry season.	✓		
			* Water Treatment Plant has necessary facilities to improve water quality.	✓		
	21	Maintenance Equipment	* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓		
			* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓		
			* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	22	Distribution Network	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓		
			* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓		
			* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
			* WUSC has toolkit for maintenance and repair of facilities.	✓		
* WUSC has cleaning tools for facilities.			✓			
23	Disaster management	* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
		* WUSC maintains (develops and/or updates) a map of distribution network.	✓			
23	Disaster management	* Household connections are high enough.	✓			
		* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
23	Disaster management	* WUSC has disaster management plan.		✓	Lack of knowledge to prepare such plan	
		* Facilities are resistant/protected to natural disaster.	✓			
			* WUSC has an insurance for water supply facilities.		✓	Insufficient budget, lack of awareness

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	Poor preventive maintenance
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓	✓	Insufficient budget
	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	Lack of knowledge
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of knowledge
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	Poor Technicality
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Lack of awareness,experiences Poor Technicality Lack of knowledge
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Poor preventive maintenance Lack of awareness,experiences
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓		
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓		
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	flowmeters are malfunctioned Lack of Knowledge
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	Sub-committee has not formed so far.(not needed so far)
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	Lack of knowledge
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	Lack of knowledge Lack of awareness,experiences
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	Lack of knowledge to prepare such plan

Surveyor Name with Organization and Position
Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Manager
Signature

WUSC Name : Juropani WUSC

Survey Date : Oct 25th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. (Position:)

Category	No	Item	Descriptions	Yes	No	If No, Reason		
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓				
			* The schedule of Annual General Meeting is notified to all users.	✓				
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓				
	Governance	2	Election	* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓			
				* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓			
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project				
		Governance	3	Management Board	* The members of Management Board are selected by election.	✓		
					* The election is conducted regularly in a transparent way.	✓		
					* The election is conducted with participation of all members of users committee.	✓		
Governance			4	Sub Committees	* Management Board holds regular meeting.	✓		
					* The minutes of Management Board meeting are recorded.	✓		
					* Management Board gives necessary instructions to Manager timely.	✓		
	Governance		5	Internal Audit	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓		
					* Each sub-committee holds meeting regularly.	✓		
					* Each sub-committee makes decisions effectively.	✓		
		Governance	6	Social Considerations	* Internal Audit Committee is established.	✓		
					* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓		
					* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
Governance			7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓		
					* WUSC has adapted a policy on consideration for poor households.		✓	Lack of knowledge,awareness
					* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of knowledge,awareness
	Human Resources		8	Mid-Term Plan	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓		
					* All staff know such mission statement or vision.	✓		
		Human Resources	9	Annual Report	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓		
					* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
Human Resources			10	Code of Conduct	* WUSC compiles and submits annual report timely.	✓		
					* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
	Human Resources		11	Job Descriptions	* WUSC has stipulated Code of Conduct for staff.	✓		
					* All staff recognize and comply with Code of Conduct.	✓		
		Human Resources	12	Staff Communications	* The duties of manager and each staff are explicitly described in job descriptions.	✓		
					* The workload of manager and each staff are appropriate.	✓		
					* The workload of manager and each staff are evenly distributed.	✓		
Human Resources			13	Staff Appraisals	* Staff reports their duties and problems regularly.	✓		
					* Manager visits, monitors and advises staff regularly.	✓		
					* Communication among staff to share problems is frequent.	✓		
	Human Resources		14	Motivation	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓		
					* Staff can receive incentives/acknowledgement for his/her good performance.	✓		
		Human Resources	15	Knowledge and Skills	* Staff have high motivation to work.	✓		
					* Staff retention is high enough.	✓		
Human Resources			16	Training	* The knowledge and skills required for manager and staff have been identified.	✓		
					* Manager and Staff have sufficient knowledge and skills for their duties.		✓	upto some extent
					* Manager has sufficient management skills. (e.g., leadership, team building, time management)		✓	upto some extent
	Facility		17	Water Source	* Staff receive training to increase knowledge and skill for their duties.	✓		
					* Training materials are archived for knowledge sharing among staff.	✓		
					* WUSC conducts induction training for new staff.		✓	Lack of knowledge,awareness
		Facility	18	Facility for Water Volume	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
					* Existing water sources can provide sufficient volume of water.	✓		
					* Existing water sources can provide safe water.	✓		
Facility			19	Facility for Water Quality	* WUSC has a plan to increase new water resource (surface/groundwater).	✓		
					* Water Treatment Plant has sufficient capacity to respond to water demand.	✓		
					* WUSC has expansion and/or new Water Treatment Plant constructions.	✓		
	Facility		20	Measurement Equipment	* Service Hours is long enough to respond to water demand.	✓		
					* Service Hours is same throughout rainy season and dry season.	✓		
		Facility	21	Maintenance Equipment	* Water Treatment Plan has necessary facilities to improve water quality.	✓		
					* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓		
					* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓		
Facility			22	Distribution Network	* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
					* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓		
					* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)		✓	not working
	Facility		23	Disaster management	* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
					* WUSC has toolkit for maintenance and repair of facilities.		✓	Isufficient budget
					* WUSC has cleaning tools for facilities.		✓	Isufficient budget
		Facility	24	Power Supply	* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)		✓	Poor Technical Knowledge
					* WUSC has safety tools and equipment.		✓	Lack of knowledge,awareness
Facility			25	Lifetime of Facility	* WUSC maintains (develops and/or updates) a map of distribution network.	✓		
					* Household connections are high enough.		✓	
					* Metered Ratio for houses and commercial buildings is high enough.		✓	Lack of knowledge,awareness
Facility	25		Lifetime of Facility	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
				* WUSC has disaster management plan.	✓			
				* Facilities are resistant/protected to natural disaster.	✓			
Facility	25	Lifetime of Facility	* WUSC has an insurance for water supply facilities.	✓				
			* Power supply is stable.	✓				
			* WUSC has backup generator in case of power failure.	✓				
Facility	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓				
			* Breakdown of facilities is not frequent.	✓				
			* WUSC has cleaned the Water Treatment Plant.	✓				

	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓ ✓ ✓		
O&M Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓ ✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓		
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓		
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓		
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	✓	Sub-committee has not formed so far. (not needed so far)
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓	sometimes organises
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓	Not mandatory

Surveyor Name with Organization and Position

Ms. Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:

Mr.
Chairperson

Signature

WUSC Name: Gauradaha WUSC

Survey Date: Oct 26th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Shree Prasad Tajpuriya (Position:)

Category	No	Item	Descriptions	Yes	No	If No, Reason		
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓				
			* The schedule of Annual General Meeting is notified to all users.	✓				
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓				
	Governance	2	Election	* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓			
				* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓			
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project				
		Governance	3	Management Board	* The members of Management Board are selected by election.	✓		
					* The election is conducted regularly in a transparent way.	✓		
					* The election is conducted with participation of all members of users committee.	✓		
Governance			4	Sub Committees	* Management Board holds regular meeting.	✓		
					* The minutes of Management Board meeting are recorded.	✓		
					* Management Board gives necessary instructions to Manager timely.	✓		
	Governance		5	Internal Audit	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓		
					* Each sub-committee holds meeting regularly.	✓		
					* Each sub-committee makes decisions effectively.	✓		
		Governance	6	Social Considerations	* Internal Audit Committee is established.	✓		
					* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓		
					* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
Governance			7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.		✓	Lack of awareness
					* WUSC has adapted a policy on consideration for poor households.		✓	Lack of awareness
					* WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences
	Governance		8	Mid-Term Plan	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓		
					* All staff know such mission statement or vision.	✓		
					* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓		
		Governance	9	Annual Report	* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
					* WUSC compiles and submits annual report timely.	✓		
					* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources			10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓		
					* All staff recognize and comply with Code of Conduct.	✓		
					* The duties of manager and each staff are explicitly described in job descriptions.	✓		
	Human Resources		11	Job Descriptions	* The workload of manager and each staff are appropriate.	✓		
					* The workload of manager and each staff are evenly distributed.	✓		
					* Staff reports their duties and problems regularly.	✓		
		Human Resources	12	Staff Communications	* Manager visits, monitors and advises staff regularly.	✓		
					* Communication among staff to share problems is frequent.	✓		
					* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓		
Human Resources			13	Staff Appraisals	* Staff can receive incentives/acknowledgement for his/her good performance.	✓		
					* Staff have high motivation to work.	✓		
					* Staff retention is high enough.	✓		
	Human Resources		14	Motivation	* The knowledge and skills required for manager and staff have been identified.	✓		
					* Manager and Staff have sufficient knowledge and skills for their duties.	✓		
					* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
		Human Resources	15	Knowledge and Skills	* Staff receive training to increase knowledge and skill for their duties.	✓		
					* Training materials are archived for knowledge sharing among staff.	✓		
					* WUSC conducts induction training for new staff.	✓		
Human Resources			16	Training	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
					* Existing water sources can provide sufficient volume of water.	✓		
					* Existing water sources can provide safe water.	✓		
	Facility		17	Water Source	* WUSC has a plan to increase new water resource (surface/groundwater).	✓		
					* Water Treatment Plant has sufficient capacity to respond to water demand.	✓		
					* WUSC has expansion and/or new Water Treatment Plant constructions.		✓	No new project so far, insufficient budget
		Facility	18	Facility for Water Volume	* Service Hours is long enough to respond to water demand.	✓		
					* Service Hours is same throughout rainy season and dry season.	✓		
					* Water Treatment Plant has necessary facilities to improve water quality.	✓		
Facility			19	Facility for Water Quality	* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓		
					* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓		
					* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	Facility		20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓		
					* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓		
					* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
		Facility	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities.	✓		
					* WUSC has cleaning tools for facilities.	✓		
					* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓		
Facility			22	Distribution Network	* WUSC has safety tools and equipment.	✓		
					* WUSC maintains (develops and/or updates) a map of distribution network.	✓		
					* Household connections are high enough.	✓		
	Facility		23	Disaster management	* Metered Ratio for houses and commercial buildings is high enough.	✓		
					* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Poor O&M
					* WUSC has disaster management plan.		✓	Lack of knowledge to prepare such plan
		Facility	24	Power Supply	* Facilities are resistant/protected to natural disaster.	✓		
					* WUSC has an insurance for water supply facilities.		✓	Insufficient budget, lack of awareness
					* Power supply is stable.	✓		
Facility			25	Lifetime of Facility	* WUSC has backup generator in case of power failure.	✓		
					* The age of facilities and equipment is within their lifetime.	✓		
					* Breakdown of facilities is not frequent.		✓	Poor O&M
	Facility		26	Office	WUSC has cleaned the Water Treatment Plant.	✓		
					* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓		
					* WUSC has laboratory for water quality test.		✓	Insufficient budget
		Facility	26	Office	* WUSC has workshop and inventory stores for repair and maintenance.	✓		

O&M Operation and Maintenance	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓ ✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓	✓	Lack of Knowledge
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems.	✓ ✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Poor technical knowledge, lack of awareness
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.		✓	Poor technical knowledge, lack of awareness
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough.	✓ ✓ ✓		
* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.			✓ ✓	✓	Poor Knowledge, need training	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	✓	test is not done daily.
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	✓	Management Board does
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	✓	Test is not done
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓	Lack of awareness

Surveyor Name with Organization and Position

Ms. Pabina Muktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:

Mr. Shree Prasad Tajpuriya

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Sanishare WUSC

Survey Date: Oct 27th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Bipana Chapagai (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓			
			* The schedule of Annual General Meeting is notified to all users.	✓			
			* Management Board member, attendance Rate of Annual General Meeting is high.		✓	Poor Interest	
		2	Election	* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
				* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
		3	Management Board	* The members of Management Board are selected by election.	✓		
				* The election is conducted regularly in a transparent way.	✓		
				* The election is conducted with participation of all members of users committee.	✓		
4		Sub Committees	* Management Board holds regular meeting.		✓	Lack of awareness	
			* The minutes of Management Board meeting are recorded.	✓			
			* Management Board gives necessary instructions to Manager timely.	✓			
5	Internal Audit	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)		✓	Management Committee does		
		* Each sub-committee holds meeting regularly.		✓	Committee is not formed		
		* Each sub-committee makes decisions effectively.		✓	Committee is not formed		
6	Social Considerations	* Internal Audit Committee is established.	✓				
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓				
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓				
7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓				
		* WUSC has adapted a policy on consideration for poor households.		✓	No such request so far,		
		* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of awareness		
8	Mid-Term Plan	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓				
		* All staff know such mission statement or vision.	✓				
Human Resources	9	Annual Report	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓			
			* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓			
	10	Code of Conduct	* WUSC compiles and submits annual report timely.	✓			
			* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
	11	Job Descriptions	* WUSC has stipulated Code of Conduct for staff.	✓			
			* All staff recognize and comply with Code of Conduct.	✓			
12	Staff Communications	* The duties of manager and each staff are explicitly described in job descriptions.	✓				
		* The workload of manager and each staff are appropriate.	✓				
		* The workload of manager and each staff are evenly distributed.	✓				
13	Staff Appraisals	* Staff reports their duties and problems regularly.	✓				
		* Manager visits, monitors and advises staff regularly.	✓				
		* Communication among staff to share problems is frequent.	✓				
14	Motivation	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓				
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓				
15	Knowledge and Skills	* Staff have high motivation to work.	✓				
		* Staff retention is high enough.	✓				
16	Training	* The knowledge and skills required for manager and staff have been identified.	✓				
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓				
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓				
17	Water Source	* Staff receive training to increase knowledge and skill for their duties.	✓				
		* Training materials are archived for knowledge sharing among staff.		✓	Lack of Knowledge,awareness		
		* WUSC conducts induction training for new staff.		✓	Lack of awareness		
Facility	18	Facility for Water Volume	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
	19	Facility for Water Quality	* Existing water sources can provide sufficient volume of water.		✓	Storage capacity is low, High house connection	
			* Existing water sources can provide safe water.	✓			
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
	20	Measurement Equipment	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
			* WUSC has expansion and/or new Water Treatment Plant constructions.	✓			
			* Service Hours is long enough to respond to water demand.		✓	Storage capacity is low, High house connection	
21	Maintenance Equipment	* Service Hours is same throughout rainy season and dry season.		✓	consumption varies		
		* Water Treatment Plan has necessary facilities to improve water quality.	✓				
		* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓				
22	Distribution Network	* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓				
		* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓				
		* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓				
23	Disaster management	* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓				
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓				
		* WUSC has toolkit for maintenance and repair of facilities.	✓				
24	Power Supply	* WUSC has cleaning tools for facilities.	✓				
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓				
		* WUSC has safety tools and equipment.	✓				
25	Disaster management	* WUSC maintains (develops and/or updates) a map of distribution network.	✓				
		* Household connections are high enough.	✓				
		* Metered Ratio for houses and commercial buildings is high enough.	✓				
26	Disaster management	* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓				
27	Disaster management	* WUSC has disaster management plan.		✓	Policy making, low budget		
		* Facilities are resistant/protected to natural disaster.	✓				
		* WUSC has an insurance for water supply facilities.		✓	Lack of Knowledge,awareness		
28	Power Supply	* Power supply is stable.		✓	Insufficient budget		
		* WUSC has backup generator in case of power failure.		✓	Insufficient budget		

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.		✓	Poor O&M
			* Breakdown of facilities is not frequent.		✓	Poor O&M
	26	Office	WUSC has cleaned the Water Treatment Plant.	✓		
			* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓		
			* WUSC has laboratory for water quality test.		✓	Insufficient budget
			* WUSC has workshop and inventory stores for repair and maintenance.	✓		
	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.		✓	Storage capacity is low, High house connection
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any).		✓	No such filter
			* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓			
		* WUSC has manuals for equipment and use them.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
		* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓			
30	Water Quality	* WUSC understands proper sampling points in water supply systems.	✓			
		* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓			
		* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓			
		* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓			
31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.	✓			
		* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported.	✓			
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
		* WUSC records Periodical Operations in a record book.	✓			
		* Immediate action is taken for the problems.	✓			
33	Troubleshooting	* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.	✓			
		* WUSC records all the troubleshooting in a record book.	✓			
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock.	✓			
		* Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly.	✓			
35	Office	* WUSC office is cleaned and tidied regularly.	✓			
		* WUSC has a computer to record and analyze data.	✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓		
			* Manager checks the operation and inspection records regularly.	✓		
			* Result of water quality test is recorded and disclosed to the public daily.		✓	Water quality test is not done daily
37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓			
		* Staff have sufficient knowledge and skills to operate computer systems.	✓			
		* Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
		* Important documents are filed and stored orderly.	✓			
38	Document Management	* Documents are regularly checked by Manager for inspection.	✓			
		* Documents are regularly checked by Internal Audit Committee for audit.	✓			
39	Water Tariff	* Current level of water tariff can cover operating cost.	✓			
		* Current level of water tariff is at an affordable level.	✓			
		* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
		* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
		* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
42	Accounting	* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
		* Procurement is always authorized by relevant sub-committee.		✓	Management Committee does	
43	Procurement	* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
			* Customer satisfaction is high for water service.	✓		
			* The result of water supply operations including water quality test is disclosed daily.	✓		
	46	Information Disclosure	* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓		
* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)			✓			
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
50	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
		* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Insufficient budget	

Surveyor Name with Organization and Position

Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:

Mr. Bipana Chapagai
President

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Shivasatakchi WUSC

Survey Date: Oct 28th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. (Position:)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
* The minutes of Management Board meeting are recorded.			✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)		✓	not needed so far	
5	Internal Audit	* Each sub-committee holds meeting regularly.		✓	committee is not formed	
		* Each sub-committee makes decisions effectively.		✓	committee is not formed	
		* Internal Audit Committee is established.		✓	Lack of knowledge, awareness	
6	Social Considerations	* Internal Audit Committee submits findings and recommendations to Management Board regularly.		✓	committee is not formed	
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	committee is not formed	
7	Goal Management	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	No such request so far, lack of experiences	
8	Mid-Term Plan	* WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
9	Annual Report	* All staff know such mission statement or vision.	✓			
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓	Lack of knowledge to prepare such plan	
Human Resources	10	Code of Conduct	* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	No such plan
			* WUSC compiles and submits annual report timely.	✓		
	11	Job Descriptions	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
			* WUSC has stipulated Code of Conduct for staff.	✓		
	12	Staff Communications	* All staff recognize and comply with Code of Conduct.	✓		
			* The duties of manager and each staff are explicitly described in job descriptions.	✓		
	13	Staff Appraisals	* The workload of manager and each staff are appropriate.	✓		
* The workload of manager and each staff are evenly distributed.			✓			
14	Motivation	* Staff reports their duties and problems regularly.	✓			
		* Manager visits, monitors and advises staff regularly.	✓			
15	Knowledge and Skills	* Communication among staff to share problems is frequent.	✓			
		* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
16	Training	* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
		* Staff have high motivation to work.	✓			
		* Staff retention is high enough.	✓			
		* The knowledge and skills required for manager and staff have been identified.	✓			
Facility	17	Water Source	* Manager and Staff have sufficient knowledge and skills for their duties.	✓		
			* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	18	Facility for Water Volume	* Staff receive training to increase knowledge and skill for their duties.	✓		
			* Training materials are archived for knowledge sharing among staff.	✓		
	19	Facility for Water Quality	* WUSC conducts induction training for new staff.	✓		
			* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
	20	Measurement Equipment	* Existing water sources can provide sufficient volume of water.	✓		
* Existing water sources can provide safe water.			✓			
21	Maintenance Equipment	* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
		* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
22	Distribution Network	* WUSC has expansion and/or new Water Treatment Plant constructions.	✓			
		* Service Hours is long enough to respond to water demand.	✓			
23	Disaster management	* Service Hours is same throughout rainy season and dry season.	✓			
		* Water Treatment Plan has necessary facilities to improve water quality.	✓		Insufficient budget	
24	Power Supply	* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓		No such facilities	
		* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓			
25	Lifetime of Facility	* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓			
		* Water production facilities are equipped with meter and gauge for water volume and pressure.		✓	Improper O&M	
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓			
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
		* WUSC has toolkit for maintenance and repair of facilities.	✓			
		* WUSC has cleaning tools for facilities.	✓			
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
		* WUSC maintains (develops and/or updates) a map of distribution network.		✓	Lack of awareness, knowledge	
		* Household connections are high enough.	✓			
		* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
		* WUSC has disaster management plan.		✓	Lack of knowledge to prepare such plan	
		* Facilities are resistant/protected to natural disaster.	✓			
		* WUSC has an insurance for water supply facilities.		✓	Insufficient budget, lack of awareness	
		* Power supply is stable.	✓			
		* WUSC has backup generator in case of power failure.		✓	Insufficient budget	
		* The age of facilities and equipment is within their lifetime.	✓			
		* Breakdown of facilities is not frequent.	✓			
		WUSC has cleaned the Water Treatment Plant.	✓			

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
O&M Operati n and Maintena nce	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Insufficient budget
	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems.	✓	✓	Lack of knowledge, insufficient training.
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Poor technical knowledge, lack of awareness
* WUSC sends samples to a laboratory for monthly or yearly water quality test.				✓	Lack of knowledge	
* The result of water quality test is good (to meet the National Drinking Water Quality Standards).				✓	Iron content is high	
* WUSC discloses report of water quality test results to the consumers.				✓	Lack of awareness, knowledge	
31	Water Leakage	* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
		* WUSC records Periodical Operations in a record book.	✓			
33	Troubleshooting	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough.	✓			
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.		✓	Poor Knowledge, need training	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓			
Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost.	✓		
			* Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓		
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
42	Accounting	* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily.	✓			
		* Balance of deposits in all bank accounts is checked at least monthly.	✓			
43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	Sub-committee is not been formed so far	
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	Lack of awareness, knowledge	
Communi cations	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	Lack of awareness, knowledge
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	No Test is done, lack of knowledge
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	Lack of awareness, knowledge
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓	Lack of awareness, knowledge
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
50	WUSC Network	* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
		* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	Lack of knowledge to prepare such plan	

Surveyor Name with Organization and Position

Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:

President

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Topgachi-I WUSC

Survey Date: Oct 29th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Chandra Pokhrel (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.		✓	Lack of knowledge,experiences .
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. * WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓		
	6	Social Considerations	* WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	Lack of knowledge to prepare such plan
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.		✓	No new project so far, insufficient budget
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	Insufficient budget No such facilities
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Poor O&M
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓		
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Lack of knowledge to prepare such plan Insufficient budget, lack of awareness
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Insufficient budget
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Insufficient budget
	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).		✓	Poor technical knowledge
			* WUSC understands proper sampling points in water supply systems.		✓	Lack of knowledge
* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)				✓	Lack of Knowledge	
* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.			✓	✓	Lack of knowledge	
31	Water Leakage	* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓			
33	Troubleshooting	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Poor Knowledge, need training	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	Insufficient budget, no computerized system	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓		
			* Manager checks the operation and inspection records regularly.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)		✓	Insufficient budget, poor technical knowledge
* Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)				✓	No computerized system	
38	Document Management	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	Lack of knowledge and committee has not been formed so far.	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost.	✓		
			* Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓		
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
42	Accounting	* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓			
43	Procurement	* Procurement is always authorized by relevant sub-committee.		✓	Sub-committee has not formed so far.(not needed so far)	
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.		✓	Lack of awareness, knowledge	
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	No Test is done
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	Lack of knowledge, experiences
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓	Lack of knowledge, experiences
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	No digitalization	
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Lack of knowledge to prepare such plan	

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Topgachi-II WUSC

Survey Date: Oct 31st, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Dilip Bhandari (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.		✓	Lack of knowledge,experiences .
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. * WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓		
	6	Social Considerations	* WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.		✓	No such request so far, lack of experiences
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	Lack of knowledge to prepare such plan
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓		
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No such facilities
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Lack of knowledge
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓		Lack of knowledge to prepare such plan
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		Insufficient budget, lack of awareness
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		Insufficient budget

WASMIP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Insufficient budget
	27	Security and Safety	* Facilities have sufficient security.	✓		
			* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)		✓	Lack of knowledge and importance of such items.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓		
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).		✓	Poor technical knowledge
			* WUSC understands proper sampling points in water supply systems.		✓	Lack of knowledge
* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)				✓	Lack of Knowledge	
* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.			✓	✓	Lack of knowledge	
31	Water Leakage	* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓			
33	Troubleshooting	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Poor Knowledge, need training	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	Insufficient budget, no computerized system	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓		
			* Manager checks the operation and inspection records regularly.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)		✓	Insufficient budget, poor technical knowledge
* Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)				✓	No computerized system	
38	Document Management	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	Lack of knowledge and committee has not been formed so far.	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost.	✓		
			* Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓		
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
42	Accounting	* All financial transactions are recorded timely.	✓			
		* Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓			
43	Procurement	* Procurement is always authorized by relevant sub-committee.		✓	Sub-committee has not been formed so far.(not needed so far)	
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.		✓	Lack of awareness, knowledge	
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	No Test is done
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	Lack of knowledge, experiences
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓	Lack of knowledge, experiences
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	No digitalization	
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Lack of knowledge to prepare such plan	

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Topgachi-III WUSC

Survey Date: Nov 1st, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Mitralal Pokhrel (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No such request so far
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	Lack of awareness, insufficient budget
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	No new sources Chlorination unit is not installed
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No new sources No new project
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Lack of awareness, Poor O&M
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	Insufficient budget, lack of awareness Poor O&M, insufficient budget
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Insufficient budget

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Operation and Maintenance	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓			
			* Breakdown of facilities is not frequent.	✓			
	26	Office	WUSC has cleaned the Water Treatment Plant.	✓			
			* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓			
			* WUSC has laboratory for water quality test.		✓	Lack of awareness, insufficient budget	
	O&M	27	Security and Safety	* WUSC has workshop and inventory stores for repair and maintenance.	✓		
				* Facilities have sufficient security.	✓		
		28	Utilization of Facilities	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
				* Actual water production volume is close to water supply capacity.	✓		
				* Production Ratio (supplied water per person) is at an appropriate level.	✓		
O&M		29	Manuals	* WUSC has periodically scraped and washed the sand in slow sand filter (if any).		✓	No such filter
				* WUSC has Schematic Flow Diagram (water supply system drawing).	✓		
		30	Water Quality	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
				* WUSC has manuals for equipment and use them.	✓		
				* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	31	Water Leakage	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).		✓	Poor technical knowledge	
			* WUSC understands proper sampling points in water supply systems.	✓			
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Lack of awareness, poor knowledge	
	O&M	32	Periodical Operations	* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓		
				* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
33		Troubleshooting	* WUSC discloses report of water quality test results to the consumers.	✓			
			* Case of water leakage is at an acceptable level.	✓			
			* Water leakage is repaired within short time after a case is reported.	✓			
Information		34	Inventory Management	* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
				* The annual plan of periodical maintenance is formulated.	✓		
		35	Office	* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
				* WUSC records Periodical Operations in a record book.	✓		
				* Immediate action is taken for the problems.	✓		
	36	Operation Record	* There is NO out of order in the water supply facilities.	✓			
			* NRW (Non-Revenue Water) is low enough.	✓			
			* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error.		✓	Poor Technical knowledge	
	Finance	37	ICT	* WUSC records all the troubleshooting in a record book.	✓		
				* Spare parts are stocked orderly in a designated space or shelf.	✓		
38		Document Management	* Spare parts are replenished timely in case of out of stock.	✓			
			* Quantity of spare parts are counted and recorded regularly.	✓			
			* Water treatment facilities and water source are cleaned regularly.	✓			
Finance		39	Water Tariff	* WUSC office is cleaned and tidied regularly.	✓		
				* WUSC has a computer to record and analyze data.		✓	Insufficient budget
		40	Cost Management	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓		
				* Manager checks the operation and inspection records regularly.	✓		
				* Result of water quality test is recorded and disclosed to the public daily.		✓	Lack of awareness
	Finance	41	Tariff Collection	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)		✓	Insufficient budget
				* Staff have sufficient knowledge and skills to operate computer systems.		✓	No computerization
		42	Accounting	* Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	No computerization
				* Important documents are filed and stored orderly.	✓		
				* Documents are regularly checked by Manager for inspection.	✓		
Finance		43	Procurement	* Documents are regularly checked by Internal Audit Committee for audit.	✓		
				* Current level of water tariff can cover operating cost.	✓		
		44	Financial Analysis	* Current level of water tariff is at an affordable level.	✓		
				* Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
				* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	Customer Management	45	Customers Management	* Schedule of meter reading and billing is fixed.	✓		
				* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
		46	Information Disclosure	* All financial transactions are recorded timely.	✓		
				* Cash on hand is checked and stored in a lockable safe daily.	✓		
				* Balance of deposits in all bank accounts is checked at least monthly.	✓		
Customer Management		47	Public Awareness	* Procurement is always authorized by relevant sub-committee.	✓		
				* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
		48	Online Services	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓		
				* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
				* WUSC responds to claim and requests from customers timely.	✓		
	Customer Management	49	Government	* All claims from customers are recorded.	✓		
				* Customer satisfaction is high for water service.	✓		
		50	WUSC Network	* The result of water supply operations including water quality test is disclosed daily.		✓	No test is done daily
				* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
				* WUSC has developed or obtained necessary items for awareness program.	✓		
Customer Management		51	Information Disclosure	* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓		
				* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	No computerization
		52	Online Services	* WUSC understands national level laws, regulations and policy on water sector.	✓		
				* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓		
				* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		
	Customer Management	53	Public Awareness	* WUSC interacts with other WUSCs regularly.		✓	Lack of co-ordination
				* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Insufficient Budget, lack of awareness

Surveyor Name with Organization and Position
 Ms.Pabina Moktan / Mr. Humendra Prasad Dev
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Mr. Mitralal Pokhrel
 Treasurer

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Chandragadi-I WUSC

Survey Date: Nov 2nd, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Baburam Karki (Position: Secretary)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
* The minutes of Management Board meeting are recorded.			✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
		* Each sub-committee holds meeting regularly.	✓			
5	Internal Audit	* Each sub-committee makes decisions effectively.	✓			
		* Internal Audit Committee is established.	✓			
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓			
6	Social Considerations	* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓			
		* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	Discount was given during pandemic	
7	Goal Management	* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of awareness	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
		* All staff know such mission statement or vision.	✓			
8	Mid-Term Plan					
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓			
		* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓			
9	Annual Report					
		* WUSC compiles and submits annual report timely.	✓			
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓		
			* All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions				
			* The duties of manager and each staff are explicitly described in job descriptions.	✓		
			* The workload of manager and each staff are appropriate.	✓		
			* The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly.	✓		
* Manager visits, monitors and advises staff regularly.			✓			
13	Staff Appraisals	* Communication among staff to share problems is frequent.	✓			
		* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
14	Motivation					
		* Staff have high motivation to work.	✓			
		* Staff retention is high enough.	✓			
15	Knowledge and Skills					
		* The knowledge and skills required for manager and staff have been identified.	✓			
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
16	Training					
		* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.	✓			
		* WUSC conducts induction training for new staff.	✓			
		* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water.	✓		
			* Existing water sources can provide safe water.	✓		
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓		
			* WUSC has expansion and/or new Water Treatment Plant constructions.	✓		
			* Service Hours is long enough to respond to water demand.	✓		
			* Service Hours is same throughout rainy season and dry season.	✓		
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality.	✓		
			* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓		
			* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓		
		* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓			
20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓			
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓			
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities.	✓			
		* WUSC has cleaning tools for facilities.	✓			
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
22	Distribution Network					
		* WUSC maintains (develops and/or updates) a map of distribution network.	✓			
		* Household connections are high enough.	✓			
		* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
23	Disaster management					
		* WUSC has disaster management plan.	✓			
		* Facilities are resistant/protected to natural disaster.	✓			
		* WUSC has an insurance for water supply facilities.	✓			

WASMIP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason	
Operati n and Maintena nce	24	Power Supply	* Power supply is stable.	✓			
			* WUSC has backup generator in case of power failure.	✓			
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓			
			* Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓			
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓			
			* WUSC has laboratory for water quality test.	✓			
			* WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓			
	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓			
	O&M	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
				* Production Ratio (supplied water per person) is at an appropriate level.	✓		
* WUSC has periodically scraped and washed the sand in slow sand filter (if any).				✓			
* WUSC has Schematic Flow Diagram (water supply system drawing).				✓			
29		Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓			
			* WUSC has manuals for equipment and use them.	✓			
			* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
30		Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓			
			* WUSC understands proper sampling points in water supply systems.	✓			
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓			
31	Water Leakage	* WUSC discloses report of water quality test results to the consumers.	✓				
		* Case of water leakage is at an acceptable level.	✓				
		* Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓				
		* WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓				
		* WUSC records Periodical Operations in a record book.	✓				
33	Troubleshooting	* Immediate action is taken for the problems.	✓				
		* There is NO out of order in the water supply facilities.	✓				
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓				
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓				
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓				
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓				
Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly.	✓			
			* Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓			
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓				
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
	42	Accounting	* All financial transactions are recorded timely.	✓			
			* Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓			
43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓				
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
Commun ications	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓			
			* All claims from customers are recorded. * Customer satisfaction is high for water service.	✓			
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓			
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.	✓			
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓				
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓				
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓				
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓				

Surveyor Name with Organization and Position
Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Mr.Baburam karki
Secretary

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Chandragadi-II WUSC

Survey Date: Nov 3rd, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr. Nar Bahadur Magar (Position: Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
* The minutes of Management Board meeting are recorded.			✓			
4	Sub Committees	* Management Board gives necessary instructions to Manager timely.	✓			
		* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
		* Each sub-committee holds meeting regularly.	✓			
5	Internal Audit	* Each sub-committee makes decisions effectively.	✓			
		* Internal Audit Committee is established.	✓			
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓			
6	Social Considerations	* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓			
		* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	Lack of awareness	
7	Goal Management	* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of awareness	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
		* All staff know such mission statement or vision.	✓			
8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓			
		* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓			
9	Annual Report	* WUSC compiles and submits annual report timely.	✓			
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓		
			* All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions.	✓		
			* The workload of manager and each staff are appropriate.	✓		
			* The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly.	✓		
			* Manager visits, monitors and advises staff regularly.	✓		
	13	Staff Appraisals	* Communication among staff to share problems is frequent.	✓		
* WUSC conducts staff appraisals to objectively evaluate their performance of staff.			✓			
* Staff can receive incentives/acknowledgement for his/her good performance.			✓			
14	Motivation	* Staff have high motivation to work.	✓			
		* Staff retention is high enough.	✓			
15	Knowledge and Skills					
		* The knowledge and skills required for manager and staff have been identified.	✓			
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
16	Training	* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
		* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.	✓			
17	Water Source	* WUSC conducts induction training for new staff.	✓			
		* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
		* Existing water sources can provide sufficient volume of water.	✓			
18	Facility for Water Volume	* Existing water sources can provide safe water.	✓			
		* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
		* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
19	Facility for Water Quality	* WUSC has expansion and/or new Water Treatment Plant constructions.	✓			
		* Service Hours is long enough to respond to water demand.	✓			
		* Service Hours is same throughout rainy season and dry season.	✓			
20	Measurement Equipment	* Water Treatment Plan has necessary facilities to improve water quality.	✓			
		* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓			
		* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓			
21	Maintenance Equipment	* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓			
		* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓			
		* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓			
22	Distribution Network	* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
		* WUSC has toolkit for maintenance and repair of facilities.	✓			
		* WUSC has cleaning tools for facilities.	✓			
23	Disaster management	* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
		* WUSC maintains (develops and/or updates) a map of distribution network.	✓			
23	Disaster management	* Household connections are high enough.	✓			
		* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
23	Disaster management	* WUSC has disaster management plan.	✓			
		* Facilities are resistant/protected to natural disaster.	✓			
		* WUSC has an insurance for water supply facilities.	✓			

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operati n and Maintena nce	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Insufficient budget
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant.	✓ ✓ ✓		
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓ ✓ ✓ ✓		
	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓		
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓			
Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communi cations	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	✓	Lack of awareness
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		

Surveyor Name with Organization and Position
Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Mr. Nar Bahadur Magar
Manager

Signature

WASMP-II: WUSC Water Supply Management Checklist

WUSC Name: Gaurishankar WUSC

Survey Date: Nov 5th, 2021

Inspector Name: Ms. Pabina Muktan Respondent Name: Mr. (Position:)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
	2	Election	* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	3	Management Board	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	4	Sub Committees	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
5	Internal Audit	* The minutes of Management Board meeting are recorded.	✓			
		* Management Board gives necessary instructions to Manager timely.	✓			
6	Social Considerations	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)		✓	Lack of knowledge,experiences	
		* Each sub-committee holds meeting regularly.		✓	Lack of knowledge,experiences	
7	Goal Management	* Each sub-committee makes decisions effectively.		✓	Lack of knowledge,experiences	
		* Internal Audit Committee is established.		✓	Lack of knowledge,experiences	
8	Mid-Term Plan	* Internal Audit Committee submits findings and recommendations to Management Board regularly.		✓	Committee has not been formed so far	
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.		✓	Committee has not been formed so far	
9	Annual Report	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	Lack of knowledge,experiences	
10	Code of Conduct	* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of awareness	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓			
11	Job Descriptions	* All staff know such mission statement or vision.	✓			
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓			
12	Staff Communications	* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓			
		* WUSC compiles and submits annual report timely.	✓			
13	Staff Appraisals	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
		* WUSC has stipulated Code of Conduct for staff.	✓			
14	Motivation	* All staff recognize and comply with Code of Conduct.	✓			
		* The duties of manager and each staff are explicitly described in job descriptions.	✓			
15	Knowledge and Skills	* The workload of manager and each staff are appropriate.	✓			
		* The workload of manager and each staff are evenly distributed.	✓			
16	Training	* Staff reports their duties and problems regularly.	✓			
		* Manager visits, monitors and advises staff regularly.	✓			
17	Water Source	* Communication among staff to share problems is frequent.	✓			
		* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓			
18	Facility for Water Volume	* Staff can receive incentives/acknowledgement for his/her good performance.	✓			
		* Staff have high motivation to work.	✓			
19	Facility for Water Quality	* Staff retention is high enough.	✓			
		* The knowledge and skills required for manager and staff have been identified.	✓			
20	Measurement Equipment	* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
21	Maintenance Equipment	* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.		✓	Lack of knowledge	
22	Distribution Network	* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
		* Existing water sources can provide sufficient volume of water.	✓			
23	Disaster management	* Existing water sources can provide safe water.	✓			
		* WUSC has a plan to increase new water resource (surface/groundwater).	✓			

WASMP-II: WUSC Water Supply Management Checklist

Category	No	Item	Descriptions	Yes	No	If No, Reason
Operation and Maintenance	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	Insufficient Budget
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. * WUSC has cleaned the Water Treatment Plant.	✓ ✓ ✓		
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. * Facilities have sufficient security.	✓ ✓ ✓ ✓	✓	Insufficient Budget
	27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓	Lack of awareness
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓		
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	Poor technical skills
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓			
35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓			
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓		
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓	✓	Management committee does
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓ ✓	lack of awareness lack of awareness
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓	Insufficient Budget

Surveyor Name with Organization and Position
 Ms.Pabina Moktan
 Engineer
 FWSSMP, Biratnagar
 Signature

WUSC Responsible Person Name:
 Mr.

Signature

WUSC Name: Sundarbazar WUSC

Survey Date: 30th Nov,2021

Inspector Name: Mr. Balram

Respondent Name: (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason	
	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓			
			* The schedule of Annual General Meeting is notified to all users.	✓			
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓			
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓			
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓			
				MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓			
			* The election is conducted regularly in a transparent way.	✓			
			* The election is conducted with participation of all members of users committee.	✓			
3	Management Board	* Management Board holds regular meeting.	✓				
		* The minutes of Management Board meeting are recorded.	✓				
			* Management Board gives necessary instructions to Manager timely.	✓			
4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓				
		* Each sub-committee holds meeting regularly.	✓				
		* Each sub-committee makes decisions effectively.	✓				
5	Internal Audit	* Internal Audit Committee is established.	✓				
		* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓				
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓				
6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓				
		* WUSC has adapted a policy on consideration for poor households.	✓	✓	Planning to		
		* WUSC has adapted a policy on consideration for disabled people.	✓	✓	Not prepared		
7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)	✓				
		* All staff know such mission statement or vision.	✓				
8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision.	✓				
		* The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓				
9	Annual Report	* WUSC compiles and submits annual report timely.	✓				
		* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓				
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff.	✓			
			* All staff recognize and comply with Code of Conduct.	✓			
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions.	✓			
			* The workload of manager and each staff are appropriate.	✓			
			* The workload of manager and each staff are evenly distributed.	✓			
	12	Staff Communications	* Staff reports their duties and problems regularly.	✓			
			* Manager visits, monitors and advises staff regularly.	✓			
			* Communication among staff to share problems is frequent.	✓			
13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff.	✓				
		* Staff can receive incentives/acknowledgement for his/her good performance.	✓				
14	Motivation	* Staff have high motivation to work.	✓				
		* Staff retention is high enough.	✓				
15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified.	✓				
		* Manager and Staff have sufficient knowledge and skills for their duties.	✓				
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓				
16	Training	* Staff receive training to increase knowledge and skill for their duties.	✓				
		* Training materials are archived for knowledge sharing among staff.	✓				
		* WUSC conducts induction training for new staff.	✓	✓	No new staff appointed till today		
			* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water.	✓	✓	Require new source to fulfill demand.	
			* Existing water sources can provide safe water.	✓			
			* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand.	✓	✓	WTP is old and has low capacity.	
			* WUSC has expansion and/or new Water Treatment Plant constructions.	✓	✓	WUSC has asked support from FWSSMP, WSSDO, local bodies for new WTP.	
			* Service Hours is long enough to respond to water demand.	✓	✓	More problems in dry season	
				* Service Hours is same throughout rainy season and dry season.	✓		
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality.	✓			
			* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓	✓		
			* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓			
				* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓			
* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)			✓				
* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)			✓		yes but the date is expired		
21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities.	✓				
		* WUSC has cleaning tools for facilities.	✓				
		* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓				
			* WUSC has safety tools and equipment.	✓			
22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network.	✓				
		* Household connections are high enough.	✓				
		* Metered Ratio for houses and commercial buildings is high enough.	✓				
			* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓			
23	Disaster management	* WUSC has disaster management plan.	✓				
		* Facilities are resistant/protected to natural disaster.	✓				
		* WUSC has an insurance for water supply facilities.	✓	✓	No such plans		
24	Power Supply	* Power supply is stable.	✓				
		* WUSC has backup generator in case of power failure.	✓	✓	Not Necessary		
25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime.	✓	✓	WTP is old and is in risk of landslide.		
		* Breakdown of facilities is not frequent.	✓	✓			
		* WUSC has cleaned the Water Treatment Plant.	✓	✓			
26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.	✓	✓	Lack of infrastructure		
		* WUSC has laboratory for water quality test.	✓	✓			
		* WUSC has workshop and inventory stores for repair and maintenance.	✓	✓			
			* Facilities have sufficient security.	✓			
27	Security and Safety	* Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓				
			✓				
			✓				
			✓				
28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓	✓			
		* Production Ratio (supplied water per person) is at an appropriate level.	✓	✓			
		* WUSC has periodically scraped and washed the sand in slow sand filter (if any).	✓	✓	Not done yet.		
		* WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓			

O&M Operation and Maintenance	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓	Used to do every month now date is expired
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓ ✓	Processing
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓		
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓		Not done yet.
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.	✓ ✓ ✓ ✓	✓	
38		Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓ ✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		If necessary
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		If necessary

Surveyor Name with Organization and Position

Mr. Balam, Engineer
FWSSMP Lamjung

Signature

WUSC Responsible Person Name:

Chairman

Signature

WUSC Name: Jamungachi WUSC

Survey Date:

Nov 8th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr.Laxmi Prasad Pokhrel (Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting.	✓		
			* The schedule of Annual General Meeting is notified to all users.	✓		
			* Management Board member, attendance Rate of Annual General Meeting is high.	✓		
			* WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting.	✓		
			* WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG.	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	* The members of Management Board are selected by election.	✓		
			* The election is conducted regularly in a transparent way.	✓		
	3	Management Board	* The election is conducted with participation of all members of users committee.	✓		
* Management Board holds regular meeting.			✓			
4	Sub Committees	* The minutes of Management Board meeting are recorded.	✓			
		* Management Board gives necessary instructions to Manager timely.	✓			
5	Internal Audit	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement)	✓			
		* Each sub-committee holds meeting regularly.	✓			
6	Social Considerations	* Each sub-committee makes decisions effectively.	✓			
		* Internal Audit Committee is established.	✓			
7	Goal Management	* Internal Audit Committee submits findings and recommendations to Management Board regularly.	✓			
		* An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓			
8	Mid-Term Plan	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness.	✓			
		* WUSC has adapted a policy on consideration for poor households.		✓	Lack of demands from consumers.	
9	Annual Report	* WUSC has adapted a policy on consideration for disabled people.		✓	Lack of demands from consumers.	
		* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision)		✓		
10	Code of Conduct	* All staff know such mission statement or vision.		✓		
		* WUSC has a mid-term management plan to detail the concept of mission statement or vision.		✓		
11	Job Descriptions	* The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓		
		* WUSC compiles and submits annual report timely.	✓			
12	Staff Communications	* The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓			
		* WUSC has stipulated Code of Conduct for staff.	✓			
13	Staff Appraisals	* All staff recognize and comply with Code of Conduct.	✓			
		* The duties of manager and each staff are explicitly described in job descriptions.	✓			
14	Motivation	* The workload of manager and each staff are appropriate.	✓			
		* The workload of manager and each staff are evenly distributed.	✓			
15	Knowledge and Skills	* Staff reports their duties and problems regularly.	✓			
		* Manager visits, monitors and advises staff regularly.	✓			
16	Training	* Communication among staff to share problems is frequent.	✓			
		* WUSC conducts staff appraisals to objectively evaluate their performance of staff.		✓	Lack of knowledge	
17	Water Source	* Staff can receive incentives/acknowledgement for his/her good performance.		✓	Lack of awareness	
		* Staff have high motivation to work.	✓			
18	Facility for Water Volume	* Staff retention is high enough.	✓			
		* The knowledge and skills required for manager and staff have been identified.	✓			
19	Facility for Water Quality	* Manager and Staff have sufficient knowledge and skills for their duties.	✓			
		* Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓			
20	Measurement Equipment	* Staff receive training to increase knowledge and skill for their duties.	✓			
		* Training materials are archived for knowledge sharing among staff.		✓	Lack of knowledge	
21	Maintenance Equipment	* WUSC conducts induction training for new staff.		✓	Lack of awareness	
		* WUSC dispatch staffs to training in NWSSTC when they are invited.	✓			
22	Distribution Network	* Existing water sources can provide sufficient volume of water.	✓			
		* Existing water sources can provide safe water.	✓			
23	Disaster management	* WUSC has a plan to increase new water resource (surface/groundwater).	✓			
		* Water Treatment Plant has sufficient capacity to respond to water demand.	✓			
24	Power Supply	* WUSC has expansion and/or new Water Treatment Plant constructions.	✓			
		* Service Hours is long enough to respond to water demand.	✓			
25	Lifetime of Facility	* Service Hours is same throughout rainy season and dry season.	✓			
		* Water Treatment Plan has necessary facilities to improve water quality.	✓			
26	Office	* Water Treatment Plant is backwashed and/or maintained in a timely manner.	✓			
		* WUSC understands dosing amount of chlorine solution for using chlorination unit.	✓			
27	Facility	* Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓			
		* Water production facilities are equipped with meter and gauge for water volume and pressure.	✓			
28	Facility	* WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter)	✓			
		* WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓			
29	Facility	* WUSC has toolkit for maintenance and repair of facilities.	✓			
		* WUSC has cleaning tools for facilities.	✓			
30	Facility	* WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester)	✓			
		* WUSC has safety tools and equipment.	✓			
31	Facility	* WUSC maintains (develops and/or updates) a map of distribution network.		✓	Lack of knowledge	
		* Household connections are high enough.		✓	Lack of awareness	
32	Facility	* Metered Ratio for houses and commercial buildings is high enough.	✓			
		* WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Lack of knowledge	
33	Facility	* WUSC has disaster management plan.		✓	Lack of knowledge,experiences	
		* Facilities are resistant/protected to natural disaster.	✓			
34	Facility	* WUSC has an insurance for water supply facilities.		✓	Lack of knowledge	
		* Power supply is stable.	✓			
35	Facility	* WUSC has backup generator in case of power failure.		✓	Insufficient Budget	
		* The age of facilities and equipment is within their lifetime.	✓			
36	Facility	* Breakdown of facilities is not frequent.	✓			
		* WUSC has cleaned the Water Treatment Plant.	✓			
37	Facility	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure.		✓	Insufficient Budget	
		* WUSC has laboratory for water quality test.		✓	Insufficient Budget	
38	Facility	* WUSC has workshop and inventory stores for repair and maintenance.		✓	Insufficient Budget	

O&M Operati on and Maintena nce	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓ ✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity.	✓		
			* Production Ratio (supplied water per person) is at an appropriate level.	✓	✓	No such filter
			* WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓		
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities.	✓		
			* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓		
			* WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓	✓	Lack of awareness
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓		
31	Water Leakage	* Case of water leakage is at an acceptable level.	✓			
		* Water leakage is repaired within short time after a case is reported.	✓			
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.	✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓			
33	Troubleshooting	* Immediate action is taken for the problems.	✓			
		* There is NO out of order in the water supply facilities.	✓			
		* NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓	✓ ✓	Poor technical skills	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓			
		* Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓			
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓			
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓	✓		
Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓	✓	
			* Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓		
38	Document Management	* Important documents are filed and stored orderly.	✓			
		* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓			
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost.	✓		
			* Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓		
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
	42	Accounting	* All financial transactions are recorded timely.	✓		
* Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.			✓ ✓			
43	Procurement	* Procurement is always authorized by relevant sub-committee.		✓	Management committee does	
		* Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly.	✓			
		* The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓			
Communi cations	45	Customers Management	* WUSC responds to claim and requests from customers timely.	✓		
			* All claims from customers are recorded.	✓		
			* Customer satisfaction is high for water service.	✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓		
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	lack of awareness
* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)				✓	lack of awareness	
48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓		
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓			
		* WUSC communicates with Federal Government (DWSSM/NWSSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly.	✓			
		* WUSC organizes yearly observation tour to visit other WUSCs.		✓	Insufficient Budget	

Surveyor Name with Organization and Position

Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:

Mr. Laxmi Prasad Pokhrel (Manager)

Signature

WUSC Name: Tankisinuwari WUSC
 Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr.Nawaraj Bista (Chairman)

Survey Date Nov 9th, 2021

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.		✓	Lack of demands from consumers.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		Lack of demands from consumers.
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.		✓	
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.		✓	Lack of knowledge
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓		
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Lack of knowledge Lack of awareness
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓		Lack of knowledge,experiences
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		Lack of knowledge
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓		Insufficient Budget

O&M Operatio n and Maintena nce	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓ ✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓ ✓ ✓ ✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓	Lack of awareness
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓ ✓	
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓ ✓	Poor technical skills
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	✓	
	Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	✓ ✓
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓		
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communi cations	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓	✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓ ✓	lack of awareness lack of awareness
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓	
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓	✓	Insufficient Budget

Surveyor Name with Organization and Position
Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Mr. Nawaraj Bista (Chairperson)

Signature

WUSC Name: Itahara WUSC

Survey Date Nov 12th, 2021

Inspector Name: Ms. Pabina Moktan

Respondent Name: Mr.Meghraj Kattel (Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
Governance	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.		✓	By common understanding of consumers. No election so far No election so far
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.		✓	Lack of demands from consumers. Lack of demands from consumers.
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.		✓	
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.		✓	
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		Not stipulated as a document.
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.		✓	
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		Ned trainings.
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		Lack of knowledge
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓		
	19	Facility for Water Quality	* Water Treatment Plan has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓		
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓		
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓		
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.		✓	Lack of knowledge Need to increase.
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓		Lack of knowledge,experiences
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓		Lack of knowledge
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓		

O&M Operati on and Maintena nce	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Insufficient Budget
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Lack of awareness.
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No such filter
	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓	✓	Lack of awareness
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓	✓	
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓	Lack of technical skills
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓	✓	
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓	✓	
Informati on	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓	✓	
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓	✓	
Financ e	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓	✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓	✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓	✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓	✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓	✓	
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓	✓	
Communi cations	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓	✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓	✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	lack of awareness lack of awareness
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓	
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓	✓	
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓	

Surveyor Name with Organization and Position
Ms.Pabina Moktan
Engineer
FWSSMP, Biratnagar
Signature

WUSC Responsible Person Name:
Mr. Meghraj Kattel (Chairperson)

Signature

WUSC Name: Manthali WUSC

Survey Date: 9th Dec,2021

Inspector Name: Respondent Name: (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓		
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	Planning to
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓	✓	Not prepared
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓		
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓			
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓		
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓		
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓		
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓		
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓		
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓		
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	No new staff appointed till today
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	Require new source to fulfill demand. Chlorination unit not installed.
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	WTP is not in operation. No plan for now. More problems in dry season Less in dry season
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	WTP not in operation WTP not in operation
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓		yes but the date is expired
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓		
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓		
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No such plans
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓	✓	WTP is not in operation.
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	Lack of infrastructure
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓		
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	Not done yet.
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems.	✓		
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	Water quality tests is not performed.
			* WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓		
			* WUSC has major fittings in stock for emergency water leakage maintenance.	✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Processing
			* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓		
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓			
		* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓		Not done yet.	
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓		
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓	✓	
			* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓		
			* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓		
			* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		If necessary
			* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓		If necessary

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

FWSSMP Ramechaap

Chairman

Signature

Signature

WUSC Name: Ramechaap WUSC

Survey Date: 10th Dec,2021

Inspector Name: Respondent Name: (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Planning to Not prepared
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	Require new source.
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No WTP No plan for now. Require new source.
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No WTP No WTP
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Did not attend orientation training Did not attend orientation training
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Tool kit not enough Requires training.
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Planning to
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No such plans
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No WTP
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Lack of infrastructure
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	
28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No WTP	

O&M Operation and Maintenance	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * NRW (Non-Revenue Water) is low enough. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓	Requires test kit Requires training. Requires training.
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓	Processing
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓		
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	✓	
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		If necessary
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		If necessary If necessary

Surveyor Name with Organization and Position

FWSSMP Ramechaap

Signature

WUSC Responsible Person Name:

Chairman

Signature

WUSC Name: Pakarbas I WUSC

Survey Date: 11th Dec,2021

Inspector Name: Respondent Name: (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Planning to Not prepared
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
Facility	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		Requires chlorination unit.
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No WTP No plan for now. Require new source.
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No WTP No chlorination unit.
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Did not attend orientation training
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Tool kit not enough
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Planning to
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No such plans
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No WTP
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Lack of infrastructure
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No WTP

O&M Operation and Maintenance	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓	Requires test kit Requires training. Requires training.
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓	Processing
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓		
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.	✓ ✓ ✓ ✓	✓ ✓	
38		Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		If necessary
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		If necessary If necessary

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

FWSSMP Ramechaap

Chairman

Signature

Signature

WUSC Name: Pakarbas II WUSC

Survey Date: 12th Dec,2021

Inspector Name: Respondent Name: (Position: Chairman)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓		
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓		
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓		
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓		
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	Planning to Not prepared
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓		
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓		
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓		
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓		
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓		
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓		
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓		
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓		
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓		
Facility	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓		
	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓		Requires chlorination unit.
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	No WTP No plan for now. Require new source.
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	No WTP No chlorination unit.
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	Did not attend orientation training
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Tool kit not enough
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	Planning to
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No such plans
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	No WTP
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	Lack of infrastructure
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓		
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	No WTP

O&M Operation and Maintenance	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓		
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓	Requires test kit Requires training. Requires training.
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓	Processing
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓		
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection) * Important documents are filed and stored orderly.	✓ ✓ ✓ ✓	✓ ✓	
38		Document Management	* Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓	✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓		
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		If necessary
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		If necessary If necessary

Surveyor Name with Organization and Position

WUSC Responsible Person Name:

FWSSMP Ramechaap

Chairman

Signature

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 		✓	Shall conduct after operation
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓	✓	
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓	✓	
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓	✓	
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓	✓	
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓	✓	
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓	✓	
	9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓	✓	
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓	✓	
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓	✓	
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓	✓	
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓	✓	
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓	✓	
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓	✓	
Facility	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	
	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	No treatment plant
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	No treatment plant
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Need training
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	No Distribution line
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No experience
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. 	✓	✓	
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	No facility No office
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓	✓	Only mask
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	No slowsand
	29		<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓	✓	Will do in future
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).		✓	Need training
			* WUSC understands proper sampling points in water supply systems.		✓	
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)		✓	As required
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.		✓	Yearly
			* The result of water quality test is good (to meet the National Drinking Water Quality Standards).		✓	
			* WUSC discloses report of water quality test results to the consumers.		✓	
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓		
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓			
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.		✓	No knowledge	
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.		✓	No knowledge	
33	Troubleshooting	* Immediate action is taken for the problems.		✓		
		* There is NO out of order in the water supply facilities.		✓		
		* NRW (Non-Revenue Water) is low enough.		✓		
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.		✓	No knowledge	
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.		✓		
		* Spare parts are replenished timely in case of out of stock.		✓		
		* Quantity of spare parts are counted and recorded regularly.		✓		
35	Office	* Water treatment facilities and water source are cleaned regularly.		✓		
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.		✓		
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.		✓	
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)		✓	
	38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.		✓	
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.		✓	
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.		✓	
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.		✓	
			* WUSC is making an effort that uncollected bills of water tariff are minimal.		✓	
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.		✓	
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.		✓	
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.		✓		
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.		✓	
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.		✓	
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).		✓	
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓	
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)		✓	
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)		✓	
49	Government	* WUSC understands national level laws, regulations and policy on water sector.		✓		
		* WUSC communicates with Federal Government (DWSSM/NWSSTC).	✓			
		* WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓			
50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓	✓		

Surveyor Name with Organization and Position

Mr. Vivek Shrestha
Engineer, WASMIP 2

Signature

WUSC Responsible Person Name:

Mr. Jagannath Chalise
Chairman, Melamchi WUSC

Signature

WUSC Name: Chautara WUSC
 Inspector Name: Mr. Vivek Shrestha, Engineer, WASMIP-2

Survey Date: 2022/1/21
 Respondent Name: Mr. Anuj Shrestha (Manager)

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	<ul style="list-style-type: none"> * WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. 	✓		
			MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project			
	2	Election	<ul style="list-style-type: none"> * The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee. 	✓	✓	Unanimous Selection If election is done transparency is maintained.
	3	Management Board	<ul style="list-style-type: none"> * Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely. 	✓		
	4	Sub Committees	<ul style="list-style-type: none"> * Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively. 	✓		
	5	Internal Audit	<ul style="list-style-type: none"> * Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee. 	✓		
	6	Social Considerations	<ul style="list-style-type: none"> * WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people. 	✓	✓	No such demand
	7	Goal Management	<ul style="list-style-type: none"> * WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision. 	✓	✓	No such demand
	8	Mid-Term Plan	<ul style="list-style-type: none"> * WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities. 	✓	✓	
9	Annual Report	<ul style="list-style-type: none"> * WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year. 	✓	✓		
Human Resources	10	Code of Conduct	<ul style="list-style-type: none"> * WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct. 	✓	✓	
	11	Job Descriptions	<ul style="list-style-type: none"> * The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed. 	✓	✓	
	12	Staff Communications	<ul style="list-style-type: none"> * Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent. 	✓	✓	
	13	Staff Appraisals	<ul style="list-style-type: none"> * WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance. 	✓	✓	
	14	Motivation	<ul style="list-style-type: none"> * Staff have high motivation to work. * Staff retention is high enough. 	✓	✓	
	15	Knowledge and Skills	<ul style="list-style-type: none"> * The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management) 	✓	✓	
	16	Training	<ul style="list-style-type: none"> * Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited. 	✓	✓	
Facility	17	Water Source	<ul style="list-style-type: none"> * Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater). 	✓	✓	Require new source.
	18	Facility for Water Volume	<ul style="list-style-type: none"> * Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season. 	✓	✓	WTP needs rehab work. No plan for now. Require new source.
	19	Facility for Water Quality	<ul style="list-style-type: none"> * Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant. 	✓	✓	WTP needs rehab work. WTP needs rehab work.
	20	Measurement Equipment	<ul style="list-style-type: none"> * Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter) 	✓	✓	
	21	Maintenance Equipment	<ul style="list-style-type: none"> * WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment. 	✓	✓	Tool kit not enough Requires training.
	22	Distribution Network	<ul style="list-style-type: none"> * WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network. 	✓	✓	Planning to
	23	Disaster management	<ul style="list-style-type: none"> * WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities. 	✓	✓	No such plans
	24	Power Supply	<ul style="list-style-type: none"> * Power supply is stable. * WUSC has backup generator in case of power failure. 	✓	✓	
	25	Lifetime of Facility	<ul style="list-style-type: none"> * The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant. 	✓	✓	WTP needs rehab work.
	26	Office	<ul style="list-style-type: none"> * WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance. 	✓	✓	Lack of infrastructure
	27	Security and Safety	<ul style="list-style-type: none"> * Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask) 	✓	✓	
	28	Utilization of Facilities	<ul style="list-style-type: none"> * Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing). 	✓	✓	WTP needs rehab work.
	29	Manuals	<ul style="list-style-type: none"> * WUSC has a SOP (Standard Operating Procedure) for all facilities. 	✓		

O&M Operation and Maintenance	29	Manuals	* WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓			
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit).	✓			
			* WUSC understands proper sampling points in water supply systems.	✓			
			* WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine)	✓			
			* WUSC sends samples to a laboratory for monthly or yearly water quality test.	✓			
				* The result of water quality test is good (to meet the National Drinking Water Quality Standards).	✓		
				* WUSC discloses report of water quality test results to the consumers.	✓		
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported.	✓			
		* WUSC has major fittings in stock for emergency water leakage maintenance.	✓				
32	Periodical Operations	* The annual plan of periodical maintenance is formulated.		✓			
		* WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓	✓	Processing		
33	Troubleshooting	* Immediate action is taken for the problems.	✓				
		* There is NO out of order in the water supply facilities.	✓				
		* NRW (Non-Revenue Water) is low enough.	✓				
		* WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓	✓			
34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf.	✓				
		* Spare parts are replenished timely in case of out of stock.	✓				
		* Quantity of spare parts are counted and recorded regularly.	✓				
35	Office	* Water treatment facilities and water source are cleaned regularly.	✓				
		* WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓				
Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓			
	37	ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System)	✓	✓		
			* Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓			
38	Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓				
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓			
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓			
	41	Tariff Collection	* Schedule of meter reading and billing is fixed.	✓			
			* WUSC is making an effort that uncollected bills of water tariff are minimal.	✓			
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓			
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓			
44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓				
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓			
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily.	✓			
			* The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓			
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program.		✓		
			* WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓			
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓			
49	Government	* WUSC understands national level laws, regulations and policy on water sector.	✓				
		* WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓		If necessary		
50	WUSC Network	* WUSC interacts with other WUSCs regularly.	✓		If necessary		
		* WUSC organizes yearly observation tour to visit other WUSCs.	✓		If necessary		

Surveyor Name with Organization and Position

Mr. Vivek Shrestha
Engineer, WASMIP 2

Signature

WUSC Responsible Person Name:

Mr. Anuj Shrestha
Manager

Signature

Category	No	Item	Descriptions	Yes	No	If No, Reason
	1	Annual General Meeting	* WUSC holds an Annual General Meeting. * The schedule of Annual General Meeting is notified to all users. * Management Board member, attendance Rate of Annual General Meeting is high. * WUSC invites MoPID or WSSDO or FWSSMP or Local Government (LG) in an Annual General Meeting. * WUSC reports important decision of an Annual General Meeting to MoPID or WSSDO or FWSSMP or LG. MoPID: Ministry of Physical Infrastructure Development, WSSDO: Water Supply and Sanitation Division Office FWSSMP: Federal Water Supply and Sewerage Management Project	✓		
	2	Election	* The members of Management Board are selected by election. * The election is conducted regularly in a transparent way. * The election is conducted with participation of all members of users committee.	✓	✓	unanimous selection If election is done, transparency is maintained.
	3	Management Board	* Management Board holds regular meeting. * The minutes of Management Board meeting are recorded. * Management Board gives necessary instructions to Manager timely.	✓	✓	
	4	Sub Committees	* Sub-committees are established for key management areas. (e.g., Water Safety Plan, procurement) * Each sub-committee holds meeting regularly. * Each sub-committee makes decisions effectively.	✓	✓	Did not find necessary
	5	Internal Audit	* Internal Audit Committee is established. * Internal Audit Committee submits findings and recommendations to Management Board regularly. * An improvement plan is implemented according to the recommendations by Internal Audit Committee.	✓	✓	
	6	Social Considerations	* WUSC has adapted a policy on Gender Equality and Social Inclusiveness. * WUSC has adapted a policy on consideration for poor households. * WUSC has adapted a policy on consideration for disabled people.	✓	✓	No such requests received from consumers
	7	Goal Management	* WUSC has explicitly declared statements for its goal. (e.g., mission statement, vision) * All staff know such mission statement or vision.	✓	✓	
	8	Mid-Term Plan	* WUSC has a mid-term management plan to detail the concept of mission statement or vision. * The mid-term management plan includes rehabilitation and/or replacement of facilities.	✓	✓	
	9	Annual Report	* WUSC compiles and submits annual report timely. * The annual report covers financial statements, auditors' report, and budget for the next fiscal year.	✓	✓	
Human Resources	10	Code of Conduct	* WUSC has stipulated Code of Conduct for staff. * All staff recognize and comply with Code of Conduct.	✓	✓	
	11	Job Descriptions	* The duties of manager and each staff are explicitly described in job descriptions. * The workload of manager and each staff are appropriate. * The workload of manager and each staff are evenly distributed.	✓	✓	
	12	Staff Communications	* Staff reports their duties and problems regularly. * Manager visits, monitors and advises staff regularly. * Communication among staff to share problems is frequent.	✓	✓	
	13	Staff Appraisals	* WUSC conducts staff appraisals to objectively evaluate their performance of staff. * Staff can receive incentives/acknowledgement for his/her good performance.	✓	✓	
	14	Motivation	* Staff have high motivation to work. * Staff retention is high enough.	✓	✓	
	15	Knowledge and Skills	* The knowledge and skills required for manager and staff have been identified. * Manager and Staff have sufficient knowledge and skills for their duties. * Manager has sufficient management skills. (e.g., leadership, team building, time management)	✓	✓	
	16	Training	* Staff receive training to increase knowledge and skill for their duties. * Training materials are archived for knowledge sharing among staff. * WUSC conducts induction training for new staff. * WUSC dispatch staffs to training in NWSSTC when they are invited.	✓	✓	
Facility	17	Water Source	* Existing water sources can provide sufficient volume of water. * Existing water sources can provide safe water. * WUSC has a plan to increase new water resource (surface/groundwater).	✓	✓	
	18	Facility for Water Volume	* Water Treatment Plant has sufficient capacity to respond to water demand. * WUSC has expansion and/or new Water Treatment Plant constructions. * Service Hours is long enough to respond to water demand. * Service Hours is same throughout rainy season and dry season.	✓	✓	
	19	Facility for Water Quality	* Water Treatment Plant has necessary facilities to improve water quality. * Water Treatment Plant is backwashed and/or maintained in a timely manner. * WUSC understands dosing amount of chlorine solution for using chlorination unit. * Permissible turbid water (lower turbidity) is used in a water treatment plant.	✓	✓	
	20	Measurement Equipment	* Water production facilities are equipped with meter and gauge for water volume and pressure. * WUSC has toolkit to measure electric equipment. (i.e., insulation tester, clamp meter) * WUSC has toolkit to measure water quality. (i.e., water quality test kit, turbidity meter)	✓	✓	No pressure gauge
	21	Maintenance Equipment	* WUSC has toolkit for maintenance and repair of facilities. * WUSC has cleaning tools for facilities. * WUSC understands how to use the electrical devices (e.g., insulation continuity tester, digital clamp meter, earth tester) * WUSC has safety tools and equipment.	✓	✓	Training required
	22	Distribution Network	* WUSC maintains (develops and/or updates) a map of distribution network. * Household connections are high enough. * Metered Ratio for houses and commercial buildings is high enough. * WUSC has valves or air valves or washout valves or fire hydrant in a distribution network.	✓	✓	No fire hydrant
	23	Disaster management	* WUSC has disaster management plan. * Facilities are resistant/protected to natural disaster. * WUSC has an insurance for water supply facilities.	✓	✓	No experience Lack of information
	24	Power Supply	* Power supply is stable. * WUSC has backup generator in case of power failure.	✓	✓	
	25	Lifetime of Facility	* The age of facilities and equipment is within their lifetime. * Breakdown of facilities is not frequent. WUSC has cleaned the Water Treatment Plant.	✓	✓	
	26	Office	* WUSC office is spacious enough as a working environment, and equipped with sufficient infrastructure. * WUSC has laboratory for water quality test. * WUSC has workshop and inventory stores for repair and maintenance.	✓	✓	
	27	Security and Safety	* Facilities have sufficient security. * Staff wear items for securities during certain O&M (Operation and Maintenance) works. (e.g., helmet, mask, goggle, mask)	✓	✓	Only mask
	28	Utilization of Facilities	* Actual water production volume is close to water supply capacity. * Production Ratio (supplied water per person) is at an appropriate level. * WUSC has periodically scraped and washed the sand in slow sand filter (if any). * WUSC has Schematic Flow Diagram (water supply system drawing).	✓	✓	constructed recently

O&M Operation and Maintenance	29	Manuals	* WUSC has a SOP (Standard Operating Procedure) for all facilities. * WUSC has manuals for equipment and use them. * WUSC conducts operation and preventative maintenance as per instruction of SOP.	✓ ✓ ✓	✓	
	30	Water Quality	* WUSC understands how to use water quality test kits (e.g. ENPHO kit). * WUSC understands proper sampling points in water supply systems. * WUSC conducts daily water quality test for four test parameters. (pH, turbidity, Total Dissolved Solid, Free Residual Chlorine) * WUSC sends samples to a laboratory for monthly or yearly water quality test. * The result of water quality test is good (to meet the National Drinking Water Quality Standards). * WUSC discloses report of water quality test results to the consumers.	✓ ✓ ✓ ✓ ✓ ✓	✓	As necessary
	31	Water Leakage	* Case of water leakage is at an acceptable level. * Water leakage is repaired within short time after a case is reported. * WUSC has major fittings in stock for emergency water leakage maintenance.	✓ ✓ ✓		
	32	Periodical Operations	* The annual plan of periodical maintenance is formulated. * WUSC conducts operation and preventative maintenance as per instruction of SOP. * WUSC records Periodical Operations in a record book.	✓ ✓ ✓	✓ ✓ ✓	Will do after training
	33	Troubleshooting	* Immediate action is taken for the problems. * There is NO out of order in the water supply facilities. * NRW (Non-Revenue Water) is low enough. * WUSC uses a domestic water meter calculation method of instrumental error when a consumer made claim on water meter error. * WUSC records all the troubleshooting in a record book.	✓ ✓ ✓ ✓ ✓	✓	Lack of knowledge
	34	Inventory Management	* Spare parts are stocked orderly in a designated space or shelf. * Spare parts are replenished timely in case of out of stock. * Quantity of spare parts are counted and recorded regularly.	✓ ✓ ✓		
	35	Office	* Water treatment facilities and water source are cleaned regularly. * WUSC office is cleaned and tidied regularly. * WUSC has a computer to record and analyze data.	✓ ✓ ✓	✓	recently constructed
	Information	36	Operation Record	* Flow meters are read and recorded daily, and water meters for domestic are read and recorded monthly. * Manager checks the operation and inspection records regularly. * Result of water quality test is recorded and disclosed to the public daily.	✓ ✓ ✓	
37		ICT	* WUSC has a computerized system. (e.g., billing, accounting, Management Information System) * Staff have sufficient knowledge and skills to operate computer systems. * Security measures are implemented to protect data. (e.g., data backup, password protection)	✓ ✓ ✓	✓ ✓ ✓	No computer system
38		Document Management	* Important documents are filed and stored orderly. * Documents are regularly checked by Manager for inspection. * Documents are regularly checked by Internal Audit Committee for audit.	✓ ✓ ✓		
Finance	39	Water Tariff	* Current level of water tariff can cover operating cost. * Current level of water tariff is at an affordable level. * Surcharges are applied for delayed payment, and it works effectively to improve Collection Ratio.	✓ ✓ ✓		
	40	Cost Management	* Unit Production Cost (NPR/m ³) is controlled at an appropriate level.	✓		
	41	Tariff Collection	* Schedule of meter reading and billing is fixed. * WUSC is making an effort that uncollected bills of water tariff are minimal.	✓ ✓		
	42	Accounting	* All financial transactions are recorded timely. * Cash on hand is checked and stored in a lockable safe daily. * Balance of deposits in all bank accounts is checked at least monthly.	✓ ✓ ✓		
	43	Procurement	* Procurement is always authorized by relevant sub-committee. * Suppliers can provide equipment and consumables necessary for operation and maintenance for water supply timely.	✓ ✓		
	44	Financial Analysis	* WUSC produces trial balance (amount of money) regularly at least quarterly. * The financial status is reported to the Manager and Management Board regularly at least quarterly.	✓ ✓	✓	Yearly
Communications	45	Customers Management	* WUSC responds to claim and requests from customers timely. * All claims from customers are recorded. * Customer satisfaction is high for water service.	✓ ✓ ✓		
	46	Information Disclosure	* The result of water supply operations including water quality test is disclosed daily. * The annual report is shared with stakeholders (WUSC member, consumers, local government, WSSDO or FWSSMP, etc.).	✓ ✓		
	47	Public Awareness	* WUSC has developed or obtained necessary items for awareness program. * WUSC conducts awareness programs regularly. (e.g., water conservation, tariff, sanitation)	✓ ✓		
	48	Online Services	* WUSC utilizes Internet/mobile for communications with customers. (e.g., e-mail, messenger, Social Network System)	✓	✓	Planning to
	49	Government	* WUSC understands national level laws, regulations and policy on water sector. * WUSC communicates with Federal Government (DWSSM/NWSSTC). * WUSC communicates with Provincial or Local Government regularly for operation and maintenance.	✓ ✓ ✓		
	50	WUSC Network	* WUSC interacts with other WUSCs regularly. * WUSC organizes yearly observation tour to visit other WUSCs.	✓ ✓		

Surveyor Name with Organization and Position

Mr. Vivek Shrestha
Engineer, WASMIP 2

Signature

WUSC Responsible Person Name:

Mr. Rajesh Shakya
Vice Chairman, Barabise WUSC

Signature

Appendix 2.36

Training Implementation Guideline



WASMiP



For providing safe and quality drinking water to people

TRAINING IMPLEMENTATION GUIDELINE

Ver 1.0

May 2020

Department of Water Supply and Sewerage Management
National Water Supply and Sanitation Training Center

TABLE OF CONTENTS

CHAPTER 1	INTRODUCTION	1
CHAPTER 2	OUTLINE OF TRAININGS IMPLEMENTED BY NWSSTC	1
CHAPTER 3	PROCEDURE TO IMPLEMENT EACH TRAINING	4
3.1	COMMON PROCEDURE.....	4
3.1.1	Training Needs Assessment.....	4
3.1.2	Formulation of Annual Plan and Securing Budget.....	4
3.1.3	Formulation of Syllabus	5
3.1.4	Assignment of Trainers/Speakers	5
3.1.5	Development of Training Materials.....	5
3.1.6	Selection of Trainees	5
3.1.7	Preparation before Training.....	5
3.1.8	Implementation.....	6
3.1.9	Evaluation.....	6
3.1.10	Feedback.....	6
3.1.11	Reporting.....	6
3.2	TRAINING OF TRAINERS (ToT).....	6
3.3	BASIC TRAINING.....	6
3.4	ON-SITE TRAINING	7
3.5	REFRESHER TRAINING / OBSERVATION AND INTERACTION WORKSHOP	7

Appendix-1 Standard Syllabus

Chapter 1 Introduction

This Training Implementation Guideline (hereinafter referred to as “Guideline”) describes the administrative procedures of trainings for Water Users and Sanitation Committees (hereinafter referred to as “WUSC”) in semi-urban towns by the Department of Water Supply and Sewerage Management (hereinafter referred to as “DWSSM”), and National Water Supply and Sanitation Training Center (hereinafter referred to as “NWSSTC”) under DWSSM. Furthermore, it is expected that the Guideline shall be utilized not only to conduct the trainings for improvement of WUSC’s capacity but also to enhance the interaction of trainings conducted by NWSSTC.

The following points shall be considered to plan/conduct trainings for WUSCs in semi-urban towns.

- i) In order to learn basic knowledge and skills for sound management of water supply service through proper operation and maintenance (hereinafter referred to as “O&M”), lectures as “Basic Training” will be conducted.
- ii) Lectures and trainings will be planned/conducted for WUSCs in semi-urban towns (not for large and small scale WUSCs).
- iii) Training contents are focused on management and O&M of water supply facilities in WUSCs.
- iv) The acquired knowledge and skills will be applied by the WUSCs through the “On-site Training”.
- v) The goals of the On-site Training are 1) to understand the current condition of their water supply facilities, 2) to recover/improve its function, 3) to analyze the current management situation and 4) to make improvement plan by the WUSCs.
- vi) Opportunity to share information and exchange opinions among the WUSCs will be provided in “Refresher Training/Observation and Interaction Workshop”.
- vii) Interaction among the participated WUSCs will be ensured through the above the trainings.

Chapter 2 Outline of Trainings Implemented by NWSSTC

This Guideline covers the following four trainings. The outline of these trainings is shown in the following table. These trainings shall be conducted by NWSSTC in accordance with the annual training plan prepared by NWSSTC.

- **Training of Trainers (ToT)**
- **Basic Training**
- **On-site Training**
- **Refresher Training / Observation and Interaction Workshop**

Item	Contents	
ToT	Objective	<ul style="list-style-type: none"> ✓ To enhance teaching skills and knowledge necessary for the Basic Training. ✓ To provide updates on syllabus and training materials. ✓ To share evaluation results and feedbacks from the previous training activities.

Item	Contents	
	Trainer	Trainers who experienced both ToT and Basic Training
	Trainee	Trainer candidates selected by DWSSM/NWSSTC
	Facilitator	NWSSTC
	Training Period	1 to 2 days (standard period)
	Outline	Key points of “Standard Operating Procedure (SOP)” ¹ and “Management” as well as updates on syllabus and training materials are provided by lecture and exercise. Evaluation results and feedbacks from the previous training activities are shared.
	Goal	Teaching skills and necessary knowledge for the Basic Training are acquired. Trainers for the Basic Training are developed.
Supplemental ToT	Objective	<ul style="list-style-type: none"> ✓ To enhance teaching skills and knowledge necessary for the On-site Training. ✓ To provide updates on syllabus and training materials. ✓ To share evaluation results and feedbacks from the previous training activities.
	Trainer	Engineers of FWSSMP (Federal Water Supply and Sewerage Management Project) who experienced both ToT and Basic Training
	Trainee	FWSSMP Engineers nominated by DWSSM/NWSSTC (Participants: Engineer/staff of MoPID (Ministry of Physical Infrastructure Development), WSSDO (Water Supply and Sanitation Division Office) and Local Government)
	Facilitator	NWSSTC
	Training Period	One day (standard period)
	Outline	Key points to conduct the On-site Training as well as updates on syllabus and training materials are provided by lecture and exercise. Evaluation results and feedbacks from the previous training activities are shared.
	Goal	Teaching skills and necessary knowledge for the On-site Training are acquired.
Basic Training	Objective	<ul style="list-style-type: none"> ✓ To learn/understand “SOP” and “Management” for independent management of water supply facilities to provide safe drinking water to consumers stably and efficiently. ✓ To analyze the current management situation and make improvement plan from the viewpoint of stability, efficiency, safety and independence.
	Trainer	Trainers nominated by DWSSM/NWSSTC
	Trainee	Manager (1) and/or incase that manager position is vacant, key board member (1) and key technician (1) of the nominated WUSCs
	Sponsor	NWSSTC
	Training Period	4 days (standard period)
	Outline	Provide practical skills and knowledge for water supply management and O&M of facilities. <ul style="list-style-type: none"> ✓ The management component will introduce/explain checklist for qualitative analysis, key performance indicators (KPIs) and benchmarking for quantitative analysis in order to prepare business

Item	Contents	
		<p>plan.</p> <p>✓ The O&M component will explain the SOPs of water supply facility, water quality management, distribution network, and water meters management in order to conduct preventive maintenance.</p>
	Goal	WUSCs in semi-urban towns will be able to provide safe and sufficient water in sustainable, efficient, and accountable ways.
On-site Training	Objective	To practically learn how to apply the knowledge and skills acquired from the Basic Training.
	Trainer	Trainer(s) nominated by DWSSM/NWSSTC
	Trainee	Key board member, manager and key technician of the nominated WUSCs
	Facilitator	NWSSTC/ FWSSMP (Participants: Engineer/staff of MoPID, WSSDO and Local Government)
	Training Period	1 day for 1 WUSC (standard period)
	Outline	Check/confirm whether the actual activities of the target WUSCs are carried out in accordance with the SOP and management procedure which provided by the Basic Training. Necessary instruction, suggestion and advise will be provided by the trainer(s), and it will be shared among the WUSCs.
	Goal	WUSCs in semi-urban towns apply the knowledges and skills acquired from the Basic Training continuously.
Refresher Training/ Observation and Interaction Workshop	Objective	<p>✓ To introduce new subjects/topics which are not covered by Basic Training.</p> <p>✓ To obtain feedback on Basic Training and On-site Training.</p> <p>✓ To share good practices & key issues of WUSCs in semi-urban towns.</p> <p>✓ To learn proper O&M and management of water supply with model WUSC's introduction and visiting the facilities.</p> <p>✓ To introduce policy and technology related to water sector</p> <p>✓ To facilitate interaction among WUSCs in semi-urban towns and support organizations.</p>
	Trainer	Chief and/or engineer of NWSSTC, chairperson of the model WUSC, guest speaker
	Trainee / Participant	Board members and manager of WUSCs near the model WUSC region, engineers/staffs of FWSSMP, MoPID, WSSDO, Local Government etc.
	Facilitator	NWSSTC and the model WUSC
	Training Period	1 to 2 days (standard period)
	Outline	<p>NWSSTC shall select a model WUSC to conduct this training and to introduce the O&M and management as good practice to participated WUSCs.</p> <p>This training provides an opportunity for WUSCs in semi-urban towns to update and share their experience and good practices of O&M and management, and facilitate interaction among WUSCs, DWSSM, NWSSTC and other related organizations to incubate innovate ideas for improvement of water supply sector.</p>
	Goal	The above objectives will be achieved.

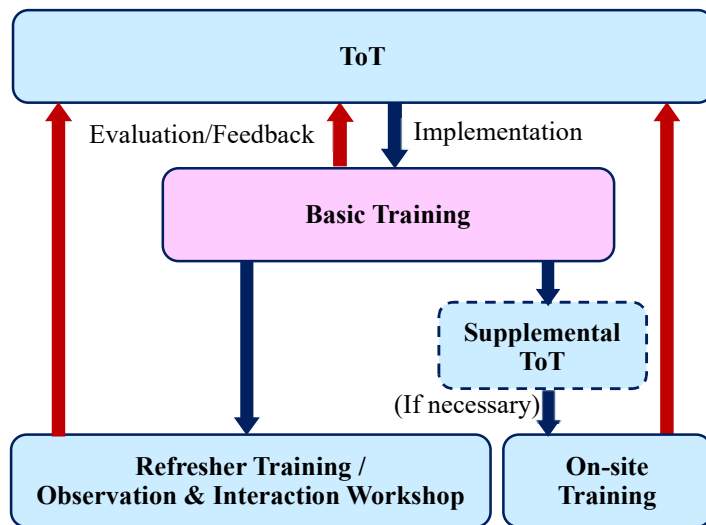
*1) "SOP" has developed for the following purposes:

- To introduce the standard O&M procedure of water supply facility for WUSCs in semi-urban towns.
- To provide safe and effective O&M procedure for WUSC staffs.

- To ensure the quality of O&M activities performed by different staffs.

Basically, the above mentioned trainings are carried out in order to provide not only necessary knowledge and skill for sound management of water supply through proper O&M, but also required instruments/essential equipment to WUSCs in semi-urban towns. Furthermore, it is desirable that the WUSCs will utilize the acquired knowledge and skills from these trainings and publicize safe and reliable water supply to stakeholders including consumers.

The relationship of these four trainings is shown in the following figure.



Chapter 3 Procedure to Conduct Each Training

3.1 Common Procedure

3.1.1 Training Needs Assessment

- (1) NWSSTC shall conduct a training needs assessment so as to optimize the training plan (hereinafter referred to as “Annual Plan”) and syllabus of the training for WUSCs in the semi-urban towns.

3.1.2 Formulation of Annual Plan and Securing Budget

- (1) NWSSTC shall prepare the Annual Plan of the next fiscal year based on the results of training needs assessment and evaluation/feedback from the completed trainings.
- (2) The Annual Plan shall include the following information:
 - ✓ Name of training course
 - ✓ Objectives
 - ✓ Venue
 - ✓ Target trainees (board member, manager, operator, plumber, meter reader, accountant etc.)
 - ✓ Approximate number of trainees/participants
 - ✓ Training period
 - ✓ Budget/ Estimated cost
- (3) NWSSTC shall request the required budget based on the Annual Plan to DWSSM.

- (4) DWSSM shall secure the sufficient financial allocation to implement the Annual Plan in this fiscal year.

3.1.3 Formulation of Syllabus

- (1) NWSSTC shall prepare the Syllabus of each training as specified in the approved Annual Plan.
- (2) The Syllabus shall include the contents as shown in Appendix-1.
- (3) The Syllabus shall be finalized **at least two weeks before implementation of each training.**

3.1.4 Assignment of Trainers/Guest Speakers

- (1) NWSSTC shall prepare the list of trainer candidates for each training based on the Syllabus.
- (2) DWSSM shall select the eligible trainer candidates in consideration of their availability, level of knowledge and experience, attitude and disciplines.
- (3) If any guest speaker is required to implement the training, DWSSM/NWSSTC shall select the speakers among those who have appropriate level of knowledge and experience required to conduct the training.
- (4) The list of trainer candidates shall be finalized **at least two weeks before implementation of each training.**

3.1.5 Development of Training Materials

- (1) NWSSTC and the nominated trainers shall prepare the training materials.
- (2) NWSSTC and the nominated trainers shall review the standard training materials and update them if necessary.
- (3) If any new training material is required for the planned training, such training materials shall be prepared by the trainers/speakers who will conduct the training. NWSSTC shall support them.
- (4) NWSSTC shall review the prepared training materials and finalize the materials **at least two weeks before implementation of each training.**

3.1.6 Selection of Trainees

- (1) DWSSM/NWSSTC shall finalize the selection of the trainees of each training based on the Annual Plan and the Syllabus **at least two weeks before implementation of each training.**

3.1.7 Preparation before Training

- (1) NWSSTC shall ensure the venue, accommodation and transportation etc. according to the Syllabus **at least two weeks before implementation of each training.**
- (2) NWSSTC shall make a training schedule and send notification letters including necessary information (schedule, venue etc.) to all participants **at least one week before implementation of each training.**
- (3) NWSSTC and/or the model/host WUSC shall prepare the following items **before implementation of each training.**
 - ✓ Handout of training materials
 - ✓ Stationery

- ✓ Necessary instruments/materials for the training
- ✓ Arrangement of the training place to accommodate participants
- ✓ Preparation of lunch and light meals

3.1.8 Implementation

- (1) NWSSTC shall comprehensively manage and proceed the trainings according to the Syllabus and schedule.
- (2) The nominated trainer shall conduct each part of training.
- (3) NWSSTC shall support the training activities if necessary.
- (4) NWSSTC shall prepare a training record by using the specified format and taking photo and/or video during the training.
- (5) NWSSTC shall issue the certificates to the fully participated trainees at the closing session.
- (6) NWSSTC shall allow necessary expenses to the participants in accordance with NWSSTC's norm.

3.1.9 Evaluation

- (1) NWSSTC shall evaluate the training including the trainer's performance by using the specified format (questionnaire sheet).

3.1.10 Feedback

- (1) NWSSTC shall obtain feedback from the trainees immediately after the training.

3.1.11 Reporting

- (1) The trainer shall submit a brief report to NWSSTC immediately after the training by using the specified format.
- (2) NWSSTC shall compile a report including the evaluation results, the analysis of feedback from trainees and the report from the trainers. The report shall be submitted to DWSSM within one month after implementation of the training.

3.2 Training of Trainers (ToT)

- (1) Training programs shall be updated/revised based on the evaluation and feedback of the trainings implemented in the previous fiscal year.
- (2) NWSSTC shall select candidate trainers from the related organizations and make a plan of ToT.
- (3) NWSSTC shall conduct ToT to develop and recruit trainers.

3.3 Basic Training

- (1) Training programs shall be updated/revised based on the evaluation and feedback of the trainings implemented in the previous fiscal year.
- (2) Basically, Basic Training shall be conducted at NWSSTC in Nagarkot.
- (3) Manager of the nominated WUSCs shall be invited to Basic Training. However, in case that manager is absence or not designated, one board member and one key technician shall be invited.

- (4) The maximum number of trainees shall be within forty considering the capacity of classroom of NWSSTC in Nagarkot and to be for thoughtful and scrupulous instruction.
- (5) Each lecture shall be conducted by one trainer and one assistant. In case of practical training, one trainer shall manage within ten trainees, and backup trainers can assist trainees in the practical training session.

3.4 On-site Training

- (1) Training programs shall be updated/revised based on the evaluation and feedback of the trainings conducted in the previous fiscal year.
- (2) Basically, the On-site Training shall be conducted at the target WUSC sites.
- (3) The trainer(s), managers and key technicians of the target WUSCs shall check/confirm whether actual activities of the target WUSC have been carried out in accordance with the SOPs and management procedure. The manager and/or key technician of the target WUSC shall explain actual O&M and management activity for the trainer(s). Necessary instruction, suggestion and advise will be provided by the trainer(s) according to the results, and it will be shared with the trainees.

3.5 Refresher Training / Observation and Interaction Workshop

- (1) Training programs shall be updated/revised based on the evaluation and feedback of the trainings implemented in the previous fiscal year.
- (2) Refresher Training / Observation and Interaction Workshop shall be conducted at model WUSCs as shown in the Annual Plan.
- (3) Basically, a model WUSC shall be nominated for the training/workshop by NWSSTC, and the WUSC shall hold the training/workshop with NWSSTC and arrange the study tour such as visit of water treatment planta, intake sites, water distribution facilities and so on.
- (4) Participants shall be the suburbs of the model WUSC.

Appendix-1 Standard Syllabus

1. Standard Syllabus of ToT

(1) Objectives

- To enhance teaching skills and knowledge necessary for Basic Training and On-site Training.
- To share evaluation results and feedbacks from the previous training activities.
- To provide updates on syllabus and training materials.

(2) Method

Lecture and exercise

(3) Venue

NWSSTC in Nagarkot and/or DWSSM conference room

(4) Training Period

1 day or 2 days (depending on the volume of updates and number of participants)

(5) Trainer

Trainers who experienced both ToT and Basic Training

(6) Trainee

Trainer candidates selected by DWSSM/NWSSTC

(7) Modules

Class	Time	Session	Contents	Materials
Day 1				
Class 1	90 min.	Opening Session	* Opening Remark	N/A
			* Orientation and instruction to participants during training	N/A
			* Self introduction of participants	N/A
			* Objectives of TOT/ Basic Training	Power Point
		Module 1: Introduction	* Lecture: Summary of Module 1	Power Point + Basic Info/Checklist (Excel)
Lunch	45 min.			
Class 2	90 min.	Module 2: Water Supply Facilities	* Lecture: Summary of Module 2	Power Point + Movies (10 min.)
		Module 3: Daily O&M	* Lecture: Summary of Module 3	Power Point + Movies (20 min.)
			* Exercise: Chlorination Dosing Calculation	Worksheet
Break	15 min.			
Class 3	90 min.	Module 4: Periodical O&M	* Lecture: Summary of Module 4	Power Point + Movies (25 min.)
Day 2				
Class 1	90 min.	Module 4: Periodical O&M (Cont'd)	* Exercise: Insulation Tester and Clamp Meters	Electrical panel, Insulation tester, Clamp meter
		Module 5: Water Quality Management	* Lecture: Summary of Module 5	Power Point + Movies (30 min.)
Break	15 min.			
Class 2	90 min.	Module 5: Water Quality Management (Cont'd)	* Exercise: Water Quality Test Kit	Water Quality Test Kit
		Module 6: Distribution Facilities	* Lecture: Summary of Module 6	Power Point + Movies (5 min.)
Lunch	45 min.			
Class 3	90 min.	Module 7: Analysis of Water Supply Management	* Lecture: Summary of Module 7	Exercise Sheet (Word)
		Module 8: Planning of Water Supply Management	* Lecture: Summary of Module 8	Power Point
Break	15 min.			
Class 4	90 min.	Closing Session	* Preparation for Basic Training	Power Point
			* Feedback from Participants	N/A
			* Certificates	Certificates

2. Standard Syllabus of Basic Training

(1) Objectives

- To learn/understand “Standard Operating Procedure (SOP)” and “Management” for independent management of water supply facilities to provide safe drinking water to consumers stably and efficiently.
- To analyze the current management situation and make improvement plan from the point of view of stability, efficiency, safety and independence.

(2) Method

Lecture, exercise, groupwork and discussion.

(3) Venue

NWSSTC in Nagarkot

(4) Training Period

approximately 4 days

(5) Trainer

Trainers nominated by DWSSM/NWSSTC

(6) Trainee

Manager or key board member and key technician of the nominated WUSCs

(7) Modules

Class	Time	Session	Contents	Materials
Day 1				
Class 1	90 min.	Opening Session	* Opening Remark	N/A
			* Orientation and instruction to participants during training	Power Point
			* Self introduction of participants	N/A
Break	15 min.			
Class 2	90 min.	Module 1: Introduction	* Lecture: 1-1. Water Users and Sanitation Committee	Power Point
			* Lecture: 1-2. Objectives of Water Supply Management	Checklist (Excel)
			* Exercise: 1-3. Filling in Basic Information and Checklist	Basic Information(Excel)
Lunch	45 min.			
Class 3	90 min.	Module 2: Water Supply Facilities	* Lecture: 2-1. Purpose and Category of Operation and Maintenance	Power Point
			* Movies: Overview of Water Supply Facilities	Movie (10 min.)
			* Lecture: 2-2. Outline of Water Supply Facilities	Power Point
Break	15 min.			
Class 4	90 min.	Module 2: Water Supply Facilities (Cont'd)	* Exercise: 2-3. Self Analysis of WUSC Facilities	Exercise Sheet (Word)
			* Lecture: Review of Day 1	N/A
Day 2				
Class 1	90 min.	Module 3: Daily O&M	* Lecture: 3-1. Purpose of Daily Inspection and Keeping Records	Power Point
			* Movies: Daily Inspections	Movie (20 min.)
			* Lecture: 3-2. Method of Daily Inspection and Trouble Shooting	Power Point
Break	15 min.			
Class 2	90 min.	Module 3: Daily O&M (Cont'd)	* Lecture: 3-3. How to keep Daily Operation / Inspection Record	Power Point
Lunch	45 min.			
Class 3	90 min.	Module 3: Daily O&M (Cont'd)	* Exercise: 3-4. Calculation of Chlorination Dosing	Exercise Sheet (Word)
			* Observation: User of Chlorination Unit	Chlorination Unit
Break	15 min.			
Class 4	90 min.	Module 4: Periodical O&M	* Lecture: 4-1. Purpose of Periodic Inspection	Power Point
			* Movies: Periodic Inspections	Movie (25 min.)
			* Lecture: Review of Day 2	

Class	Time	Session	Contents	Materials
Day 3				
Class 1	90 min.	Module 4: Periodical O&M (Cont'd)	* Lecture: 4-2. Method of Periodic Inspection	Power Point
			* Lecture: 4-3. How to keep Periodic Inspection Record	Power Point
Break	15 min.			
Class 2	90 min.	Module 4: Periodical O&M (Cont'd)	* Exercise: Insulation Tester and Clamp Meter	Electrical panel, Insulation tester, Clamp meter
Lunch	45 min.			
Class 3	90 min.	Module 5: Water Quality Management	* Lecture: 5-1. Scope of Water Quality Management	Power Point
			* Lecture: 5-2. Important Points on Water Quality Management	Power Point
			* Movies : Water Quality Test	Movie (30 min.)
			* Lecture: 5-3. Procedure of Water Quality Test	Power Point
Break	15 min.			
Class 4	90 min.	Module 5: Water Quality Management (Cont'd)	* Lecture: 5-4. Procedure of Water Quality Management	Power Point
			* Lecture: 5-5. Troubleshooting	Power Point
			* Lecture: Review of Day 3	
Day 4				
Class 1	90 min.	Module 5: Water Quality Management (Cont'd)	* Exercise 5-6. Water Quality Test	Water Quality Test Kit
Break	15 min.			
Class 2	90 min.	Module 6: Distribution and Water Meters	* Movies: Water Distribution Facility	Movie (5 min.)
			* Lecture: 6-1. Water Distribution Facility	Power Point
			* Lecture: 6-2. Water Meters	Power Point
Lunch	45 min.			
Class 3	90 min.	Module 7: Analysis of Water Supply Management	* Lecture: 7-1. Analysis Method	Power Point
			* Lecture: 7-2. Key Performance Indicator	Power Point
Break	15 min.			
Class 4	90 min.	Module 7: Analysis of Water Supply Management (Cont'd)	* Exercise: 7-3. Calculation of Key Performance Indicator	KPI Sheet (Excel)

Class	Time	Session	Contents	Materials
Day 5				
Class 1	90 min.	Module 7: Analysis of Water Supply Management (Cont'd)	* Exercise: 7-3. Finalizing KPI and Checklist	Checklist (Excel)
				KPI Sheet (Excel)
Break	15 min.			
Class 2	90 min.	Module 8: Planning of Water Supply Management	* Lecture: 8-1. Business Plan	Power Point
			* Exercise: Identify Priority Areas	KPI Sheet/ Checklist (Excel)
Lunch	45 min.			
Class 3	90 min.	Closing Session	* Feedback from Participants	Feedback forms
			* Closing Remarks	N/A
Break	15 min.			
Class 4	90 min.	Closing Session (Cont'd)	* Certificates	Certificates

3. Standard Syllabus of On-site Training

(1) Objectives

To practically learn how to apply the knowledge acquired from Basic Training

(2) Method

Observation, inspection and providing necessary instruction/suggestion/advice

(3) Venue

The target WUSC's site

(4) Training Period

1 day (according to the site situation)

(5) Trainer

Trainer(s) nominated by DWSSM/NWSSTC

(6) Trainee

Board member, Manager and key technician of the nominated WUSCs

(7) Modules

1) Module 1: Water Treatment Plant (Water Supply Facility)

a) Standard Time: half to one day (according to the site situation)

b) Contents:

- Inspection of O&M procedure/activity for main facility/equipment
- Inspection of O&M records
- Inspection of inventory management for spare parts
- Providing necessary instruction, suggestion and advice

2) Module 2: Water Supply Management

a) Standard Time: half day

b) Contents:

- Collection of KPIs data
- Conduct of interview survey to board members and/or manager with the management sheet
- Confirmation of the schematic flow diagrams (water supply system drawings)
- Detection of required essential equipment such as flow meter, chlorination unit, valve and so on
- Confirmation of essential equipment installations
- Inspection of water quality test record
- Inspection of distribution network maps
- Inspection of annual report including financial statements and internal audit
- Inspection of customer complaints register
- Providing necessary instruction, suggestion and advice

4. Standard Syllabus of Refresher Training / Observation and Interaction Workshop

(1) Objectives

- To introduce new subjects/topics which are not covered by Basic Training
- To obtain feedback on the Basic Training and On-site Training
- To share good practices & key issues of among participated WUSCs in semi-urban towns
- To introduce policy and technology related to water sector
- To facilitate interaction among participated WUSCs in semi-urban towns and support organizations

(2) Method

Forum style

(3) Venue

Model WUSC meeting room or suitable places (hotel, hall etc.)

(4) Training Period

Basically 2 days (according to the number of training modules)

(5) Trainer

Chief and/or engineer of NWSSTC, chairperson /manager of the model WUSC, guest speaker

(6) Trainee / Participant

Board members and/or Manager of the invited WUSCs, engineers of FWSSMP, MoPID, WSSDO and Local Government etc.

(7) Modules

The modules shall be designed and developed according to the results of needs assessment, the evaluation and feedback of the trainings implemented in the previous fiscal year. The following examples shall be modified accordingly.

1) Example Module 1: Water Sector Policy

- a) Objectives: To familiarize with recent movement of water sector policy and possible impacts on WUSC in semi-urban towns
- b) Standard Time: within 60 minutes
- c) Trainer: 1 guest speaker

2) Example Module 2: WASMIP-II Achievements and Lessons Learnt

- a) Objectives: To share the achievements and best practices of WUSC in semi-urban towns which are benefited from WASMIP-II
- b) Standard Time: within 60 minutes
- c) Trainer: Chief of NWSSTC

Appendix 2.37

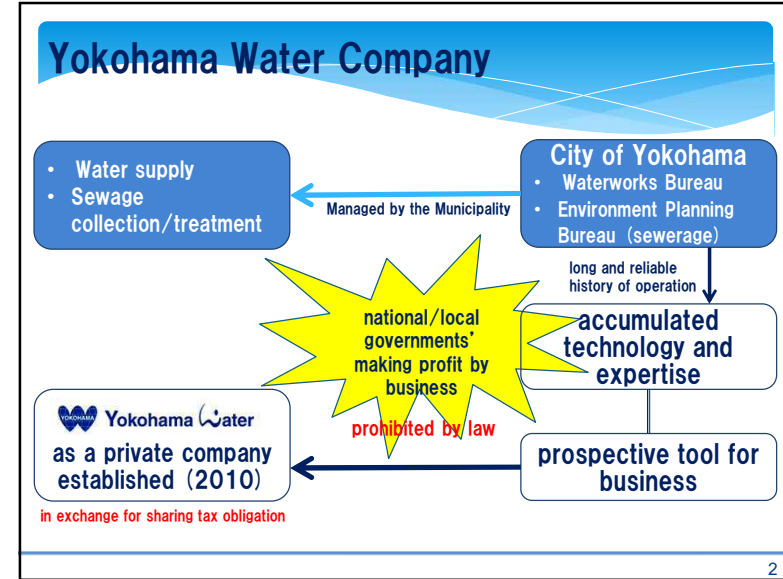
1st Training in Japan Training Materials in 2017

Program Orientation

4 September 2017
Kozo HAYASHISHITA
Training Management and Curriculum
Development
WASMIIP II

For providing safe and quality drinking water to people

1



2

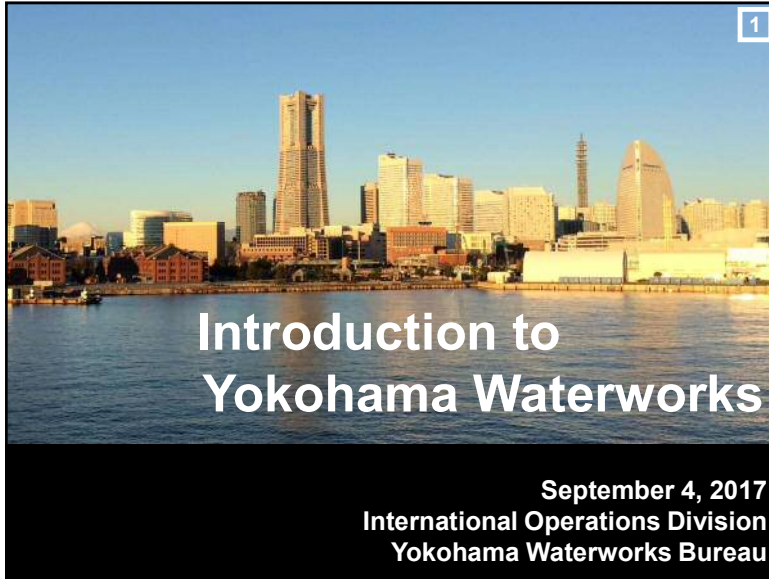
Program

date	hour	subject	lecturer		language	Venue
			name	affiliation		
4-Sep	11:30 - 12:00	Program Orientation	Kozo HAYASHISHITA	Yokohama Water Company	E	JICA Yokohama
	13:30 - 15:00	1 Introduction to waterworks in Yokohama	Ms. Ko NAKAMIJURA	International Operations Division, Yokohama Waterworks Bureau (YWWB)	E	JICA Yokohama
	15:30 - 16:30	Discussion in regard to water supply and human resource development	Mr. Satoru ONIKI	NJS Consultants	E	JICA Yokohama
5-Sep	9:30 - 11:30	2 The role of national government and water supply in Japan	Mr. Takeshi SASAKI	Water Supply Division, Ministry of Health, Labour and Welfare (MHLW)	J	NJSC, Tokyo
	13:00 - 15:00	3 The role of organization as a center for maintaining nation-wide technical standard	Mr. Yuto NIWA	International Division, Japan Water Works Association (JWWA)	J	JWWA, Tokyo
6-Sep	10:30 - 12:00	4 Operation and maintenance of small/medium-sized water utility (morning: lecture, afternoon: site visit)	Mr. Yushi FUKUI	HAKONE Water Partners Corporation	J	Hakone Water Center (Hakone Town, 80km west of Yokohama)
	13:00 - 15:00					
7-Sep	9:30 - 10:45	5 Sound management of water supply business	Mr. Tadashi YAMAMOTO	Management Planning Division, YWWB	J	JICA Yokohama
	10:45 - 12:00	6 Financial planning of water supply business	Ms. Sakiko YODA	Management Planning Division, YWWB	E	
	13:00 - 14:00	7 Personnel procurement	Mr. Kenji Kondo	Personnel Affairs Division, YWWB	J	
	14:00 - 15:00	8 Human resource development vision	Mr. Kaaki YOSHIKAWA	Human Resource Development Division, YWWB	J	
8-Sep	15:00 - 16:00	9 Technology and knowledge succession	Mr. Tetsuo FUKUSHI	Human Resource Development Division, YWWB	J	
	10:00 - 12:00	Wrap-up Meeting Closing Ceremony	Mr. Satoru ONIKI	NJS Consultants	E	JICA Yokohama
8-Sep	13:00 - 15:00	Meeting with JICA officials	Mr. Shigeyuki MATSUMOTO	Deputy Director General, Global Environment Department, JICA HQ	E	JICA Yokohama
9-Sep		Departure from Japan			E: English J: Japanese with English Interpretation	

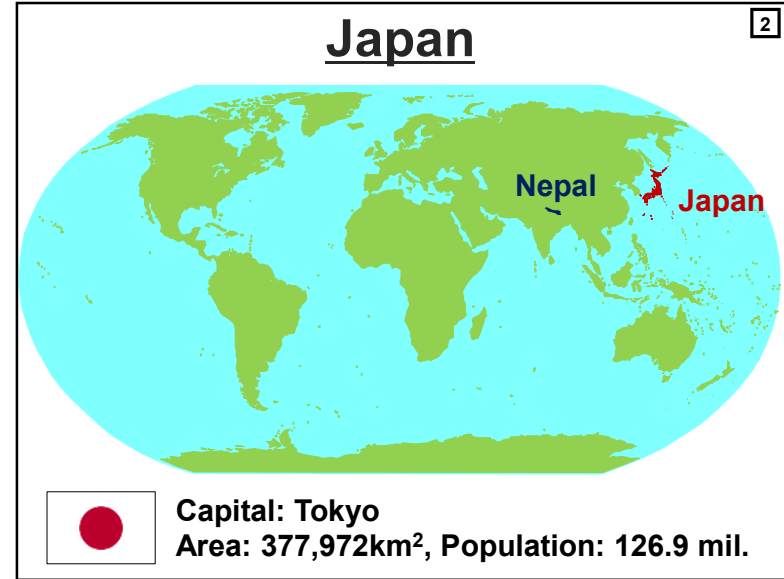
3



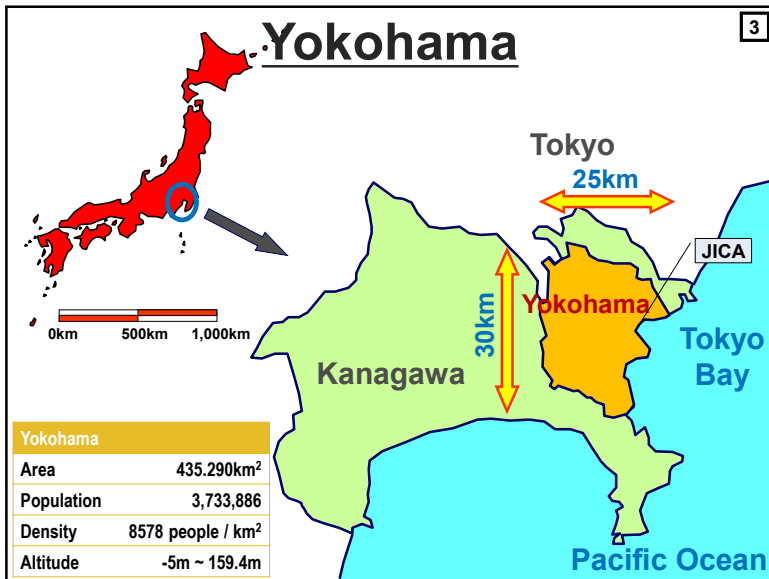
4



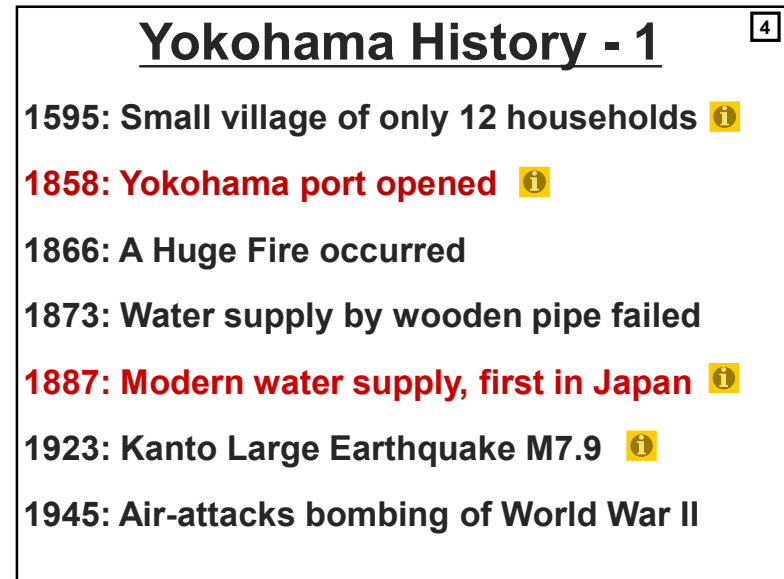
1



2



3



4

Yokohama History - 2

5

- 1960: Industrial water supply started ⓘ
- 1964: Tokyo Olympic
- 1969: Yokohama + 3bodies established KWSA
(bulk water supply authority)
- 1992: Highest water supply 1,607,000m³/day
- 2002: Final game of FIFA World Cup
- 2011: the Great East Japan Earthquake M_w 9.0

5

Outline of Y.W.W.B.

6

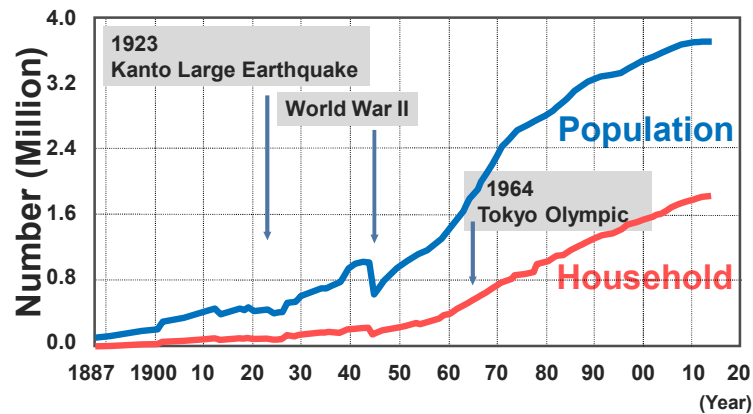
• Start of service	17/Oct/1887 (130Ys ago)
• Served population	3,726,317 (F.Y.2015)
• Connections	1,824,383 (F.Y.2015)
• Service rate	100.00 % (since 1988)
• Daily supply (average)	1,127,804 m ³ (F.Y.2015)
• Pipelines length	9,250.6 km (F.Y.2015)
• Fee collection rate	99.9 % (F.Y.2015)
• Leakage (NRW) rate	5.6 (8.2) % (F.Y.2016)

6

Population & Households

7

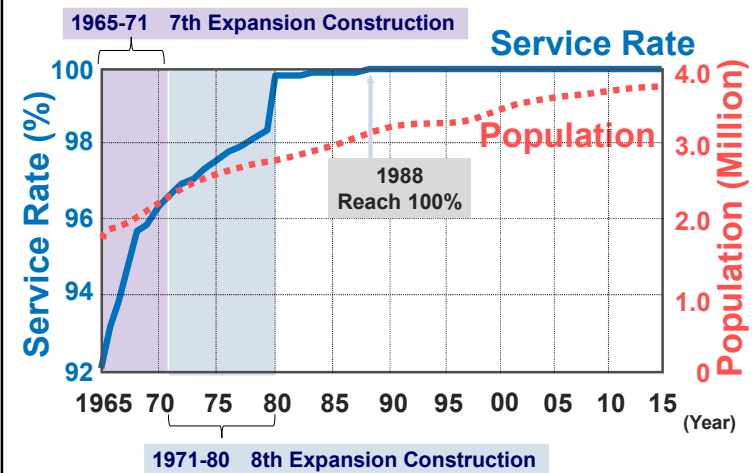
Change of Population & Households



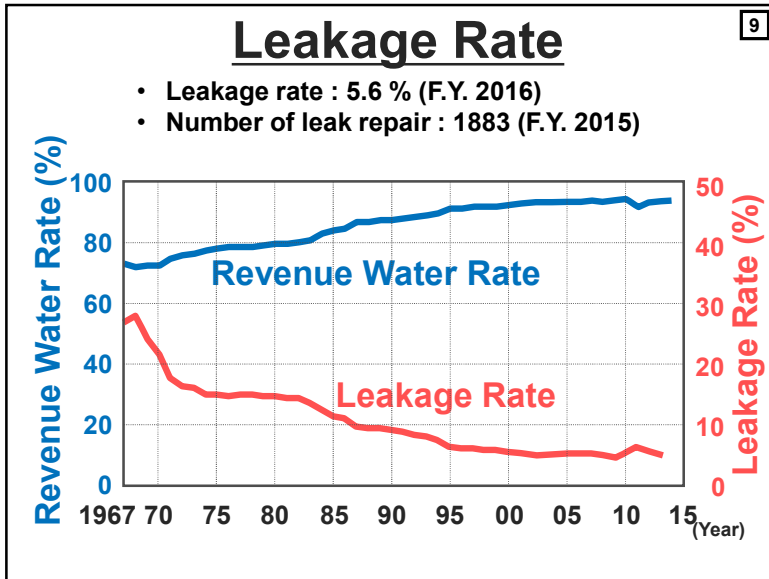
7

History of Service Rate

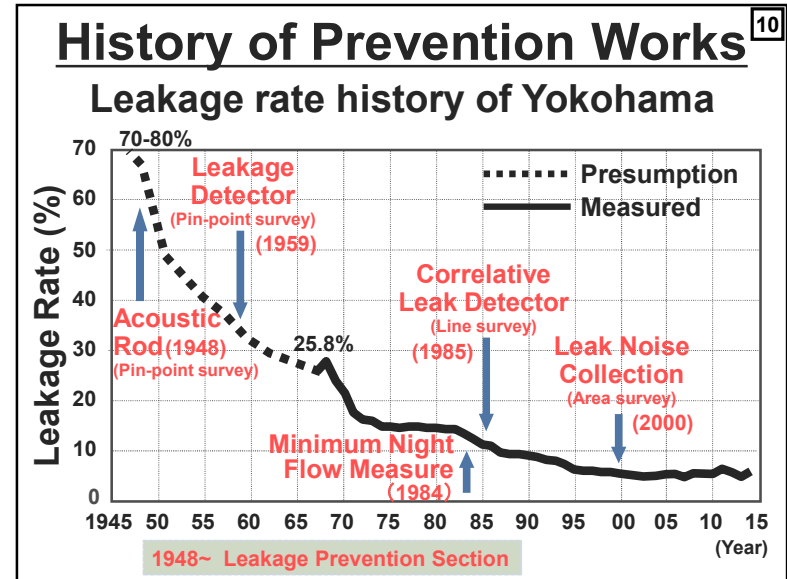
8



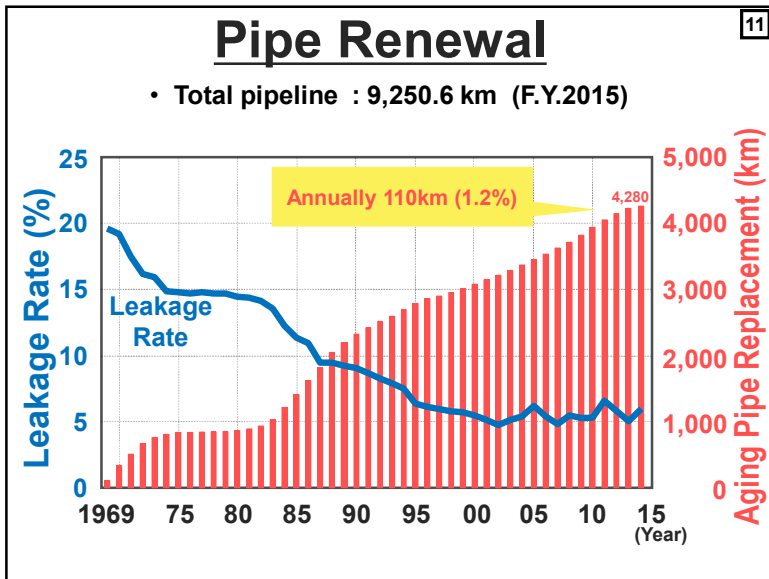
8



9



10



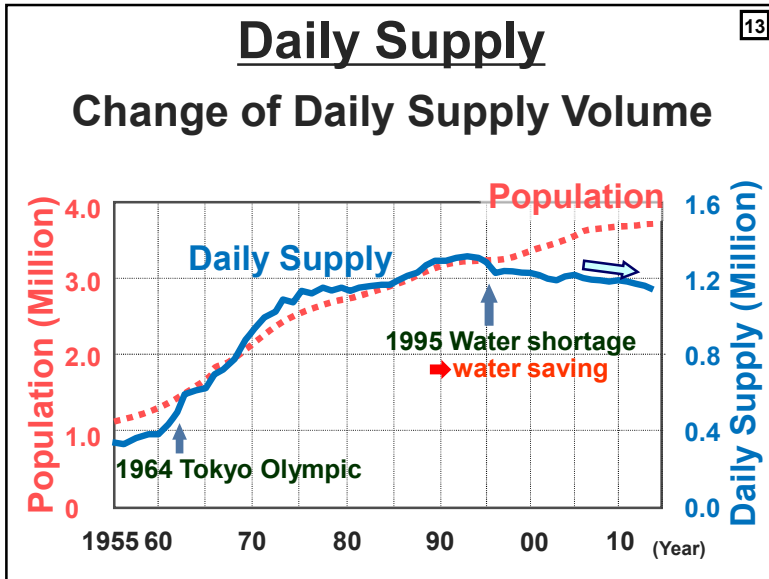
11

Analysis of Distributed Water 12

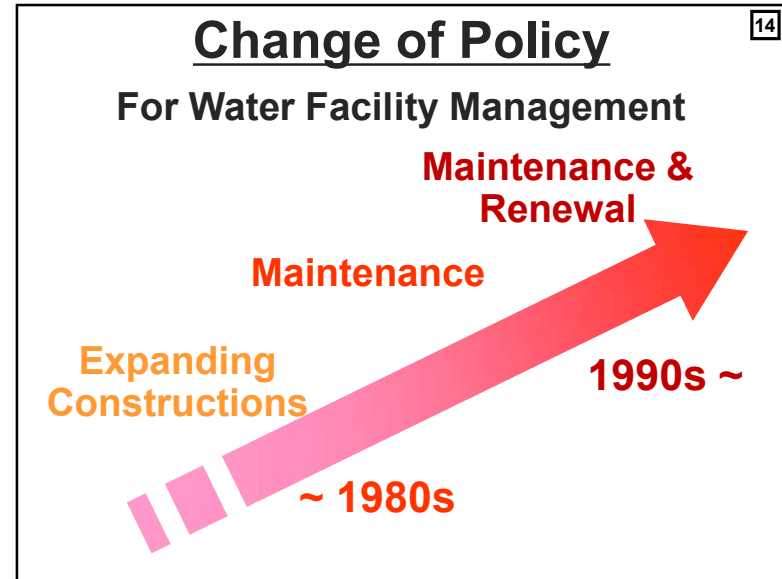
Distributed Water 100%	Revenue 91.8%	Billed metered consumption	91.8
		Billed unmetered consumption	+0.0
	Non-Revenue 8.2%	Unbilled metered consumption	0.2
		Unbilled unmetered consumption	0.5
		Unauthorized consumption	0.0
		Customer meter inaccuracies	1.9
	Leakage Water (assumed)	5.6	

(F.Y. 2016)

12



13



14

Pipeline

- Conveyance Aqueduct : 92.6 km
- Distribution Pipes: 9,250.6 km (F.Y. 2015)

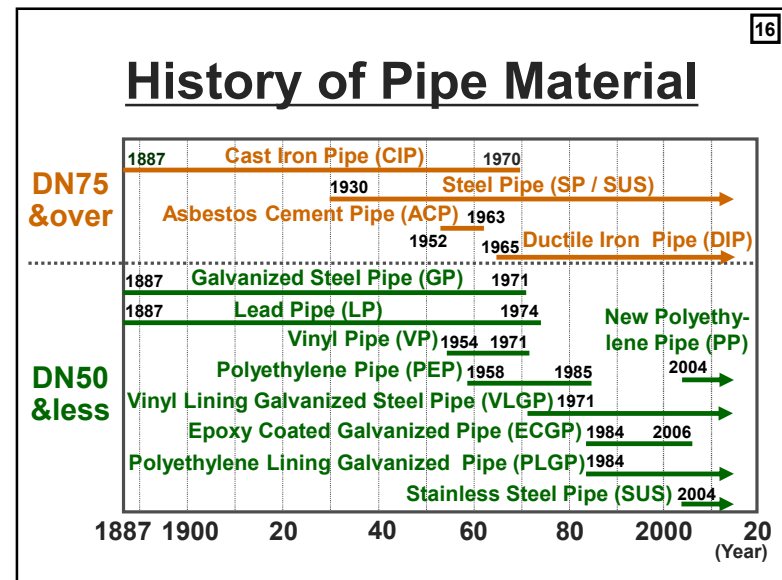
Over 75mm Pipes

• Ductile Iron:	6,887.5km
• Steel:	310.3km
• Concrete:	4.4km

Under 50mm Pipes

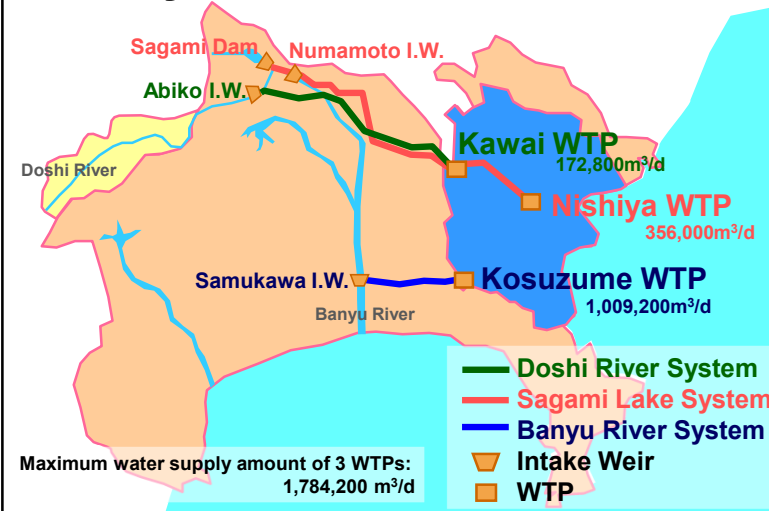
• Steel (VLGP, PLGP):	1206.9km
• Plastic (PVC, PEP):	803.0km
• Ductile Iron:	38.5km

15



16

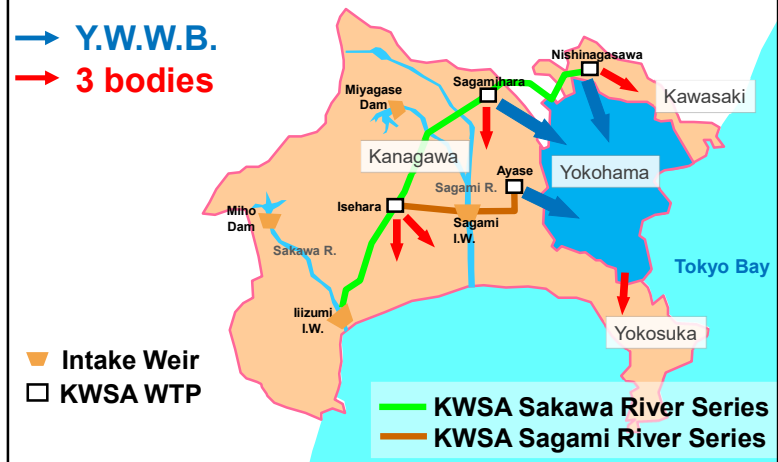
Facility of Intake & Treatment 17



17

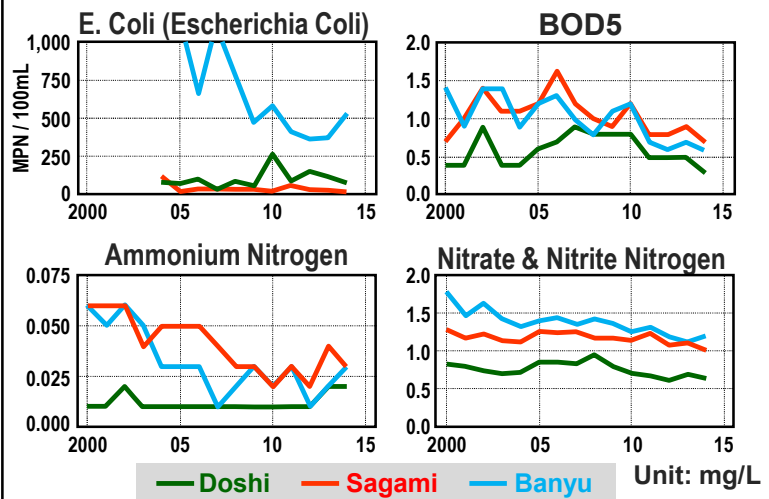
KWSA Bulk Water Supply 18

Kanagawa Water Supply Authority (1969~)



18

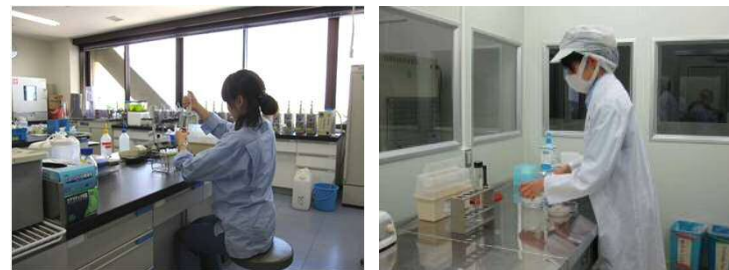
Quality of Water Source 19



19

Control of Water Quality 20

- ISO9001
all water treatment units
- Water quality inspection
51 items : under the Waterworks Act
Other items : own inspection standard



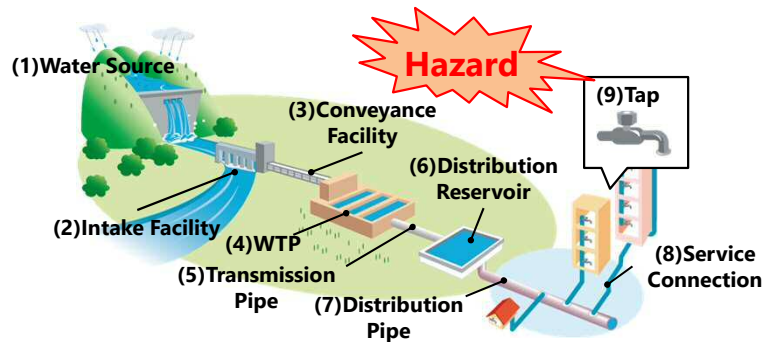
20

Control of Water Quality

21

Y.W.W.B. Water Safety Plan

extraction, evaluation and management method of hazards in all water supply steps from intake to tap

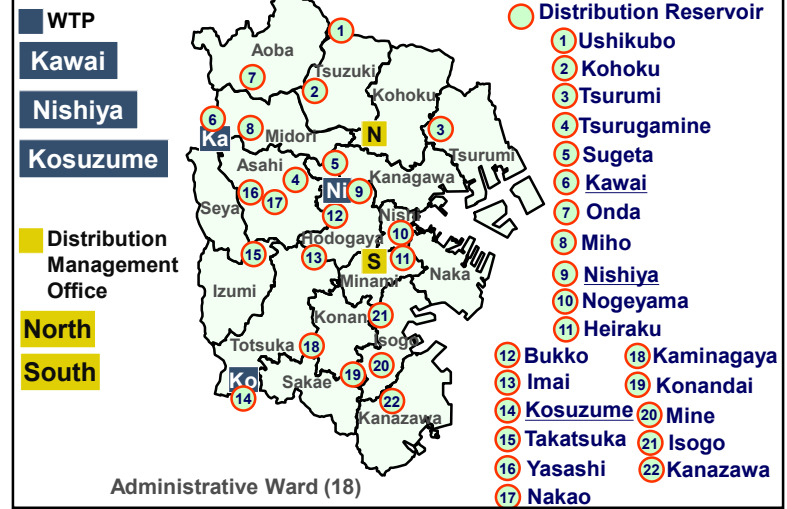


* Applicable range of ISO9001: (2)Intake facility, (3)Conveyance facility, (4)WTP, (6)Distribution reservoir

21

Facility of Distribution

22

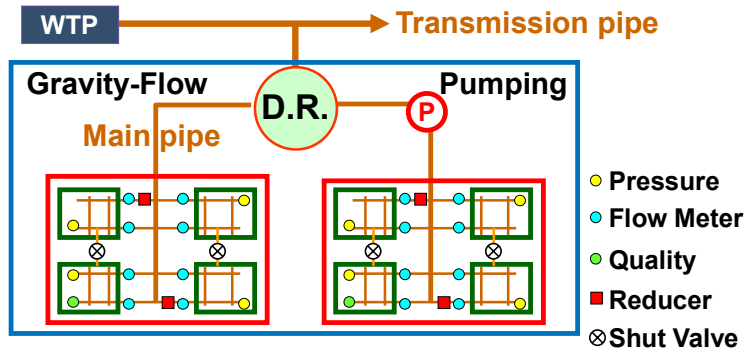


22

Concept of Block System

23

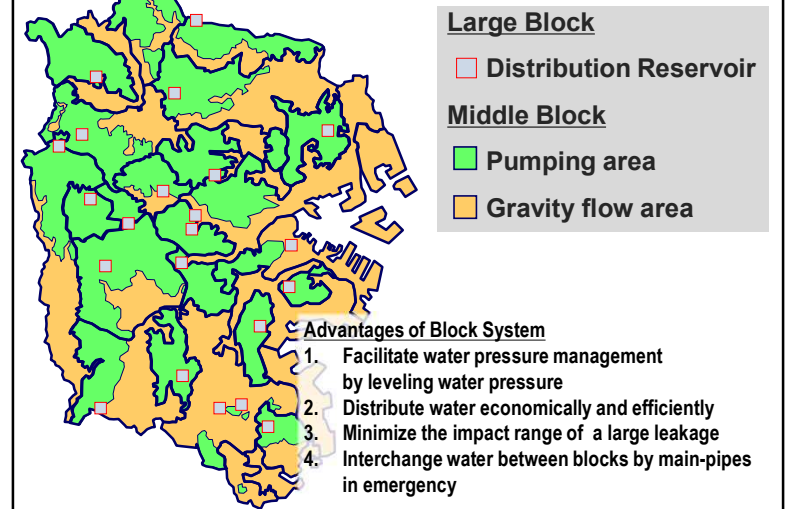
- Large block:** Distribution Reservoir Area (25)
- Middle block:** Gravity-Flow and Pumping Area (37)
- Small block:** District Metered Area



23

Block System

24



- Advantages of Block System
1. Facilitate water pressure management by leveling water pressure
 2. Distribute water economically and efficiently
 3. Minimize the impact range of a large leakage
 4. Interchange water between blocks by main-pipes in emergency

24

SCADA Monitoring / Mapping 25

SCADA (Supervisory Control And Data Acquisition)

- Radio Communication Network

Mapping System

- Digital data for pipeline map
- Control Water distribution
- Exchange data with road administrators
- Provide data of laid pipelines

■ WTP
□ Reservoir
● Pumping Station
▲ Intake Office, etc

● Pipeline network analysis
● Forecast of water suspension

25

Water Tariff 26

(One household, for 2months, tax excluded)

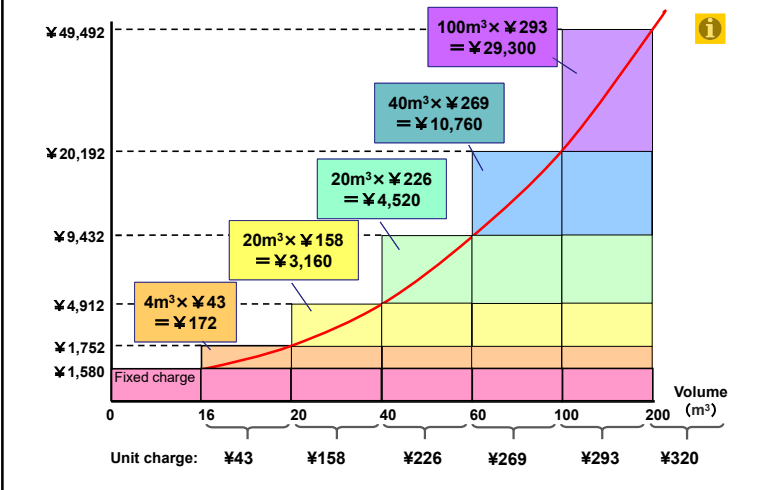
Demand Class	Basic Rate	Metered Rate (JPY/m ³)								
		0-16 m ³	17-20 m ³	21-40 m ³	41-60 m ³	61-100 m ³	101-200 m ³	201-600 m ³	601-2000 m ³	2001 m ³ -
Domestic	1,580 yen	Within Basic rate	43	158	226	269	293	320		
Business					320	369	409			
Public bath			42							

← Progressive water rate system →

- Domestic:** use for daily living
- Business:** use for other than daily living (ex. hotel, restaurant, factory, etc.)
- Public Bath:** use in the general public bathing facilities

26

Progressive Water rate 27



27

Long-Term Vision 28

(2016~2046)

- Basic Principle**
“Water of Yokohama supports the future of our life and city”
- Direction of the Activities**

Safe and high-quality water	Strong water facilities in disaster	Environmentally friendly water supply system
Extensive information dissemination and services	Social contribution both at domestic and abroad	Sustainable management foundation

28

Mid-Term Management Plan 29

(2016~2019)

<p>(Long-Term Vision) Policy Goal</p>	<p>(Mid-Tem Management Plan) 51 Projects</p>
--	---

Safe & high-quality water	[9] Water source forest conservation, Re-establishment of Water Treatment Plant, etc.
Strong water facilities in disaster	[10] Emergency water supply system, Pipeline replacement & resistance of earthquake
Environmentally friendly water supply system	[7] Continuous introduction of renewable energy, conservation of water forests, etc.
Extensive information dissemination & services	[9] Activities to reflect customer's voice to business, promotion of open data, etc.
Social contribution both at domestic & abroad	[8] Promotion of international contributions, Activities to support social welfare, etc.
Sustainable management foundation	[9] Improvement of organizational strength by HRD, Study of water tariff structure, etc.

29

Organization Chart 30

Director General

Technical Administrator

Number of YWWB staff

Year	Staff Count
98	2,555
00	2,400
05	2,100
10	1,800
15	1,362

- Improve Efficiency of Business
- Outsourcing
- Reemployment of Retiree

General Affairs Dept.

Business Management Dept.

Business Promotion Dept.

Water Supply Service Dept.

Water Distribution Dept.

Water Purification Dept.

Facilities Dept.

30

**If you have any question,
please contact :**

Ko NAKAMURA
International Operations Division
Yokohama Waterworks Bureau, JAPAN
Tel +81-45-633-0161
E-mail ko09-nakamura@city.yokohama.jp

31

Yokohama, small fish village (18th Century)

32

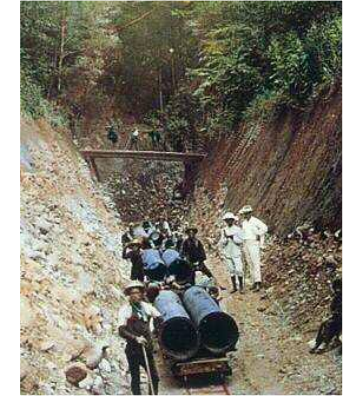
Yokohama Port opened (1858)



33

Construction of Conveyance Aqueducts (1885)

CIP 18 inch x 2 Lines

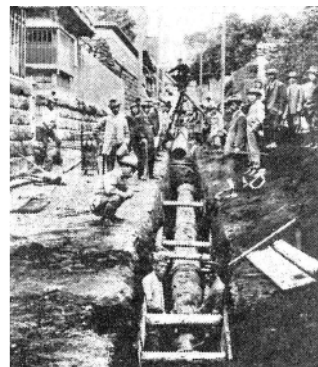


34

Construction of Distribution Pipes (1913)



CIP 36 inch



CIP 15.5 inch



35

History of Japanese Water

1878: Cholera was prevalent

1883: Kanagawa Governor asked H. S. Palmer
to construct Yokohama Waterworks

1886: Cholera was prevalent again

1887: First modern waterworks in Yokohama
Slow sand filtration in Nogeyama WTP

1890: Establishment of Old Waterworks Law

1912: Rapid sand filtration in Keage WTP; Kyoto

1937: Dysentery accident cause of water

1957: Establishment of New Waterworks Law

36

Start of Service History of Water Supply

Year	World	Year	Japan
1619	London, GRB	1887	Yokohama
1800	New York, USA	1889	Hakodate
1808	Paris, FRA	1891	Nagasaki
1872	Jakarta, IDN	1895	Osaka
1878	Manila, PHL	1898	Tokyo
1883	Shanghai, CHN	1899	Hiroshima
1886	Colombo, LKA	1900	Kobe
1894	Hanoi, VNM	1905	Okayama

37

History of World Water

1619 House connection supply in London
 1761 Distribution by steam pump in London
 1829 Slow sand filtration in London
 1856 Water chemical examination in London
 1882 Rapid sand filtration in New Jersey; US
 1885 Bacteriological examination in London
 1893 Ozonation in Netherlands and France
 1902 Bleaching powder disinfection in Belgium
 1910 Chlorine gas disinfection in US
 1924 Treat by activated carbon in Chicago; US

38

Disaster of Large Earthquake (1923)



Isezaki-cho area view from Nogeyama



39

Industrial water supply (1960~)



steel product
manufacturing companies



City Zoo



40

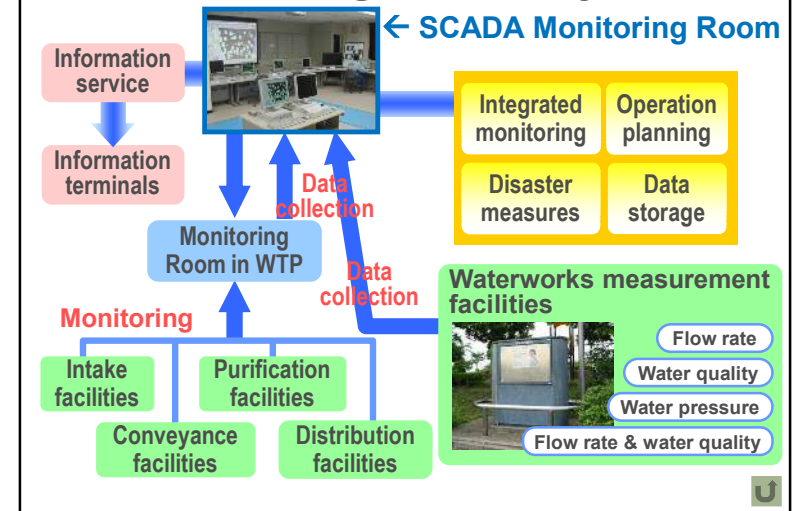
Industrial Water Supply

Industrial		Tap water
< 28 C deg	Temperature	-
< 16 deg	Turbidity	< 2 deg
6.0 – 8.6	pH	5.8 – 8.6
< 100 mg/L	Hardness	< 300 mg/L
< 250 mg/L	Total Residue (TR)	< 500 mg/L
< 50 mg/L	Chloride Ion	< 200 mg/L

■ **Water Charge** (e.g. 75,000m³/month)
 Water Tariff = (2,400m³ x 30day x 25.1JPY + 72,000m³ x 4.0JPY + 3,000m³ x 87.3JPY) x 1.08 = 2,474,955JPY
 ■ **Contract Volume:** 100m³/hr (2,400m³/day) → 25.1 JPY/m³
 ■ **Consumption:** 72,000m³/month → 4.0 JPY/m³
 ■ **Excess Volume:** 3,000m³/month → 87.3 JPY/m³
 If Tap Water for Commercial = 31,487,704JPY ← X 12

41

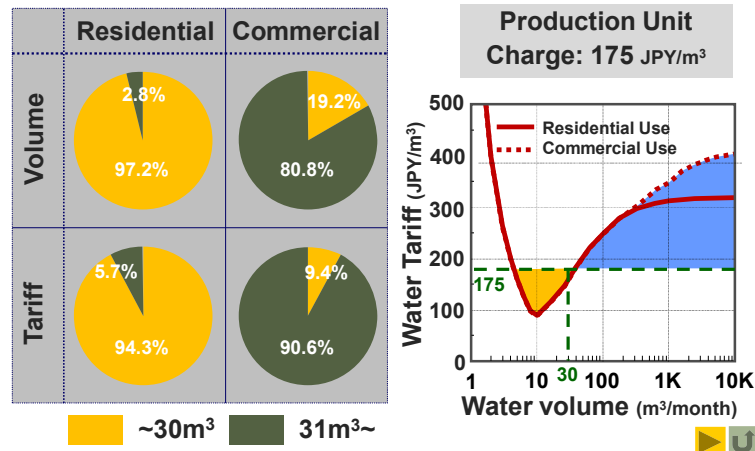
Total Management System



42

Structure of Water Tariff

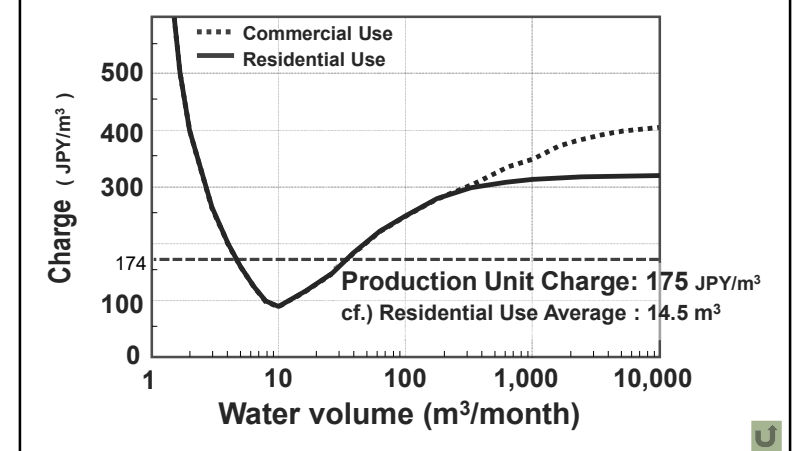
Consumption Volume & Tariff



43

Structure of Water Tariff

Progressive Rate System



44

Outline of Water Supply in Japan



Takeshi SASAKI
Water Supply Division
Pharmaceutical Safety and Environmental Health Bureau
Ministry of Health, Labour and Welfare

1

Topics

1. Outline of water supply in Japan
2. Major current issues of water supply in Japan
3. Promotion of New Waterworks Vision of Japan

2

2

1. Outline of Water Supply in Japan

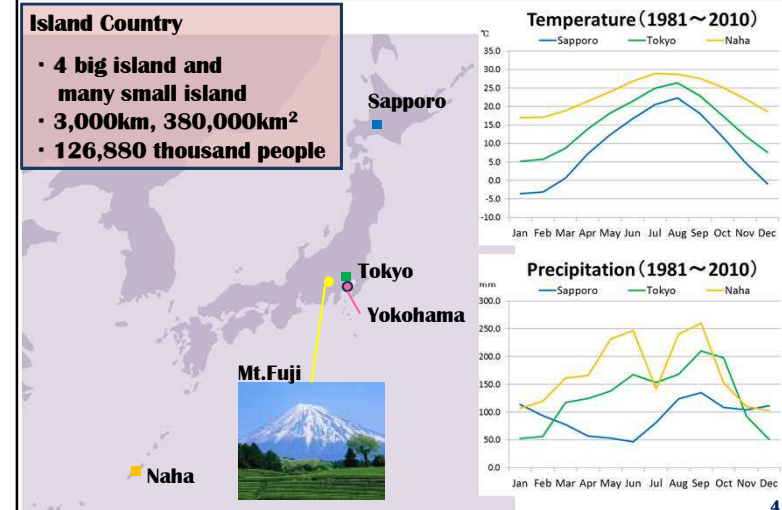
3

3

General Information of Japan

Island Country

- 4 big island and many small island
- 3,000km, 380,000km²
- 126,880 thousand people



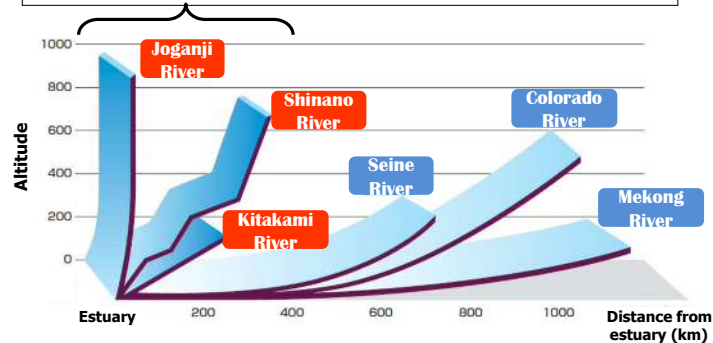
4

General Information of Japan

○ River gradients of Japan and the World

【Characteristic of Rivers in Japan】

The length is short, the inclination is steep. So, the water of the river flows out to the sea.

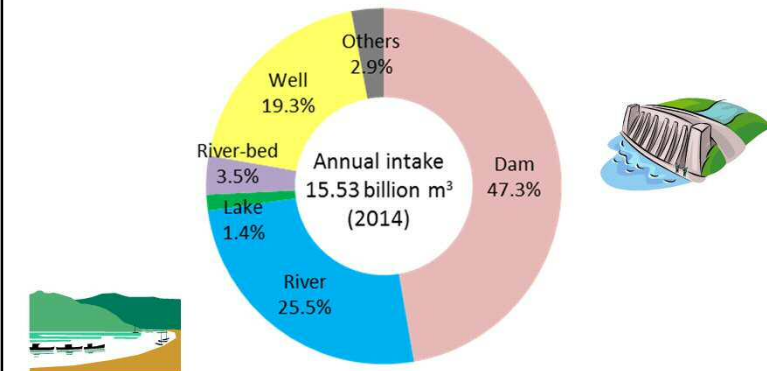


http://www.mlit.go.jp/river/pamphlet_jirei/kasen/gaiyou/panf/gaiyou2005/pdf/c1.pdf 5

5

Water sources of water supplies

In Japan, we have secured to the water necessary for National Consumer Affairs and economic activities, by the dam.



6

6

History of Modern Waterworks

The modern waterworks is to supply water purification to consumers, by pumping in the pipeline.



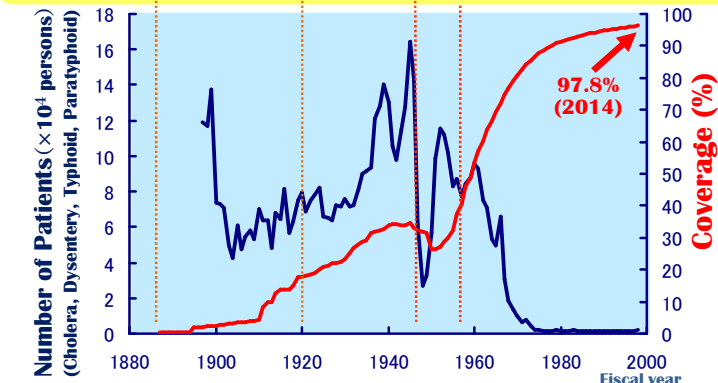
- 1887 The first modern waterworks in Yokohama City
- 1889 Hakodate City
- 1891 Nagasaki City
- 1895 Osaka City
- 1898 Tokyo
- ...

7

7

History of Modern Waterworks

- 1854 The foundation of a country
- Introductory period of modern waterworks
- 1945 The end of World War II
- Disinfections (Chlorination)
- 1957 Waterworks Law

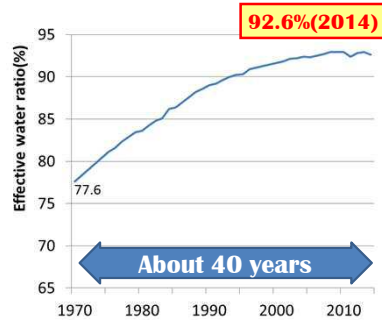


8

8

Efforts for the Reduction of Water Leakage

- National average of effective water ratio is 93% (Leakage is 7%).
 - Leak detection plan
 - Rehabilitation of old pipelines
- The goal of this ratio is set to be 98% for large utilities and 95% for small utilities.



Smaller leakage



- ◆ Save water
- ◆ Reduce cost
- ◆ Consolidate management
- ◆ Maintain adequate pressure

9

9

Administration

- In Japan, the administration of the water supply is carried out based on laws and ordinances.

[Laws and ordinances related to water supply]

The Waterworks Law, The Cabinet Order, The Ordinance of the Ministry

- Japanese administration has 3 layers.

[National Government] Ministries related to water (5 Ministries)

1	Ministry of Health, Labour and Welfare	Water supply
2	Ministry of Environment	Water Environment
3	Ministry of Land, Infrastructure and Transport	River Control Water Resource Sewerage system
4	Ministry of Economy, Trade and Industry	Industrial water
5	Ministry of Agriculture, Forestry and Fishery	Agricultural water

[Prefecture] 47 prefectures

[Cities, Towns and Villages] 1,718 communities (As of October 10, 2016)

*Prefecture, cities, town and village is the Local Government. 10

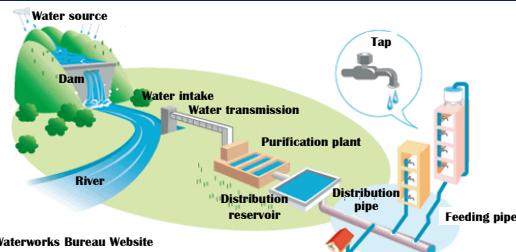
10

Regulations (Waterworks Law)

(Enacted in 1957, latest amendment in 2011)

■ Purpose of the Waterworks Law

- Supply of **clean and abundant, low-price water**
- **Improvement of public sanitation and improvement of living environment**
- **Planned improvement of water supply system**
- **Protection and fostering of water supply business**



Source: Yokohama Waterworks Bureau Website

11

11

The type of water supply system

1. Water supply systems 1,401 business

- Water supply for general needs. Except for the water supply population 100 people or less.
- In principle, managed by municipalities.
- License authorized by the MHLW or Prefecture Governor.

Small water supply systems 6,105 business

- Water supply population 5,000 or less of the water

2. Bulk water supply systems 95 business

- Wholesale of purified water to city water suppliers.
- Most managed by prefectures or groups of municipalities.
- License authorized by the MHLW or Prefecture Governor.

3. Private water supply systems 8,135 business

- Supply of water for private use for 101 or more residents.
- Confirmation of design by the prefecture governor before construction.

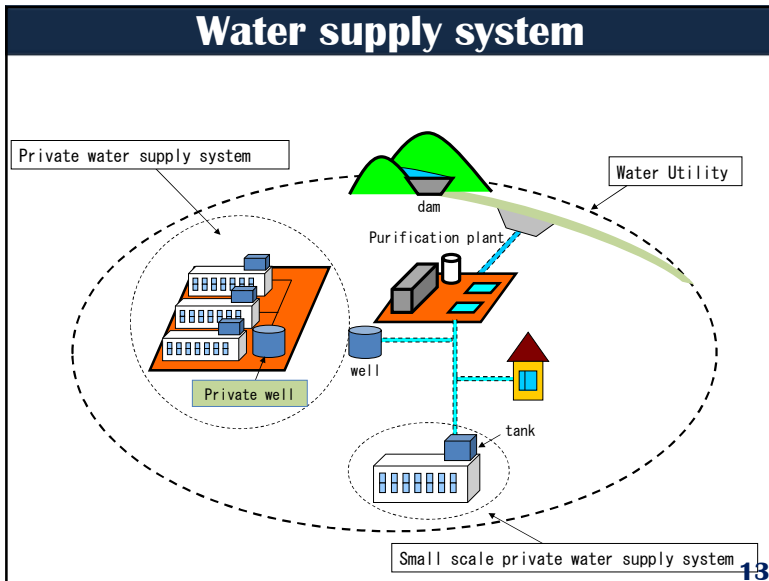
4. Small scale private water supply systems

- Water source is only water supplied from another water supply.
- Scale of the water receiving tank is more than 10 m³.
Ex. tanks of office buildings, apartment houses, condominiums, etc.

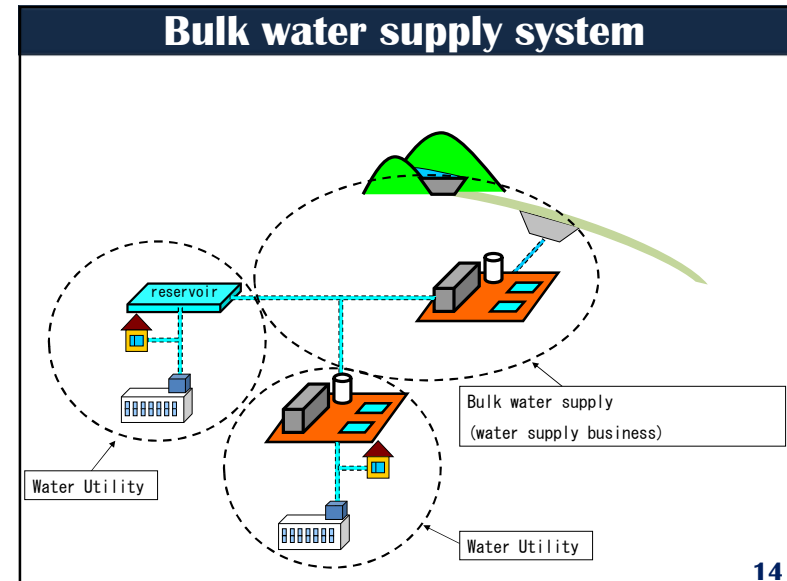
Note: Number of water supply systems in March 2014

12

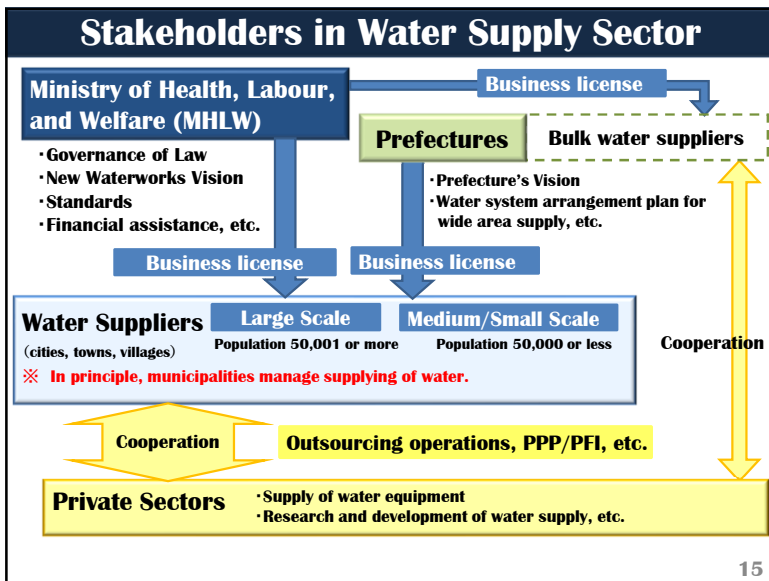
12



13



14



15

Configuration of The Waterworks Law

Chapter 1	General Provisions (Article 1~5)
Chapter 1.2	Extensive Water Facilities Reinforcement Program (Article 5.2)
Chapter 2	Water Supply Business
Part 1	License for Business (Article 6~13)
Part 2	Work (Article 14~25)
Part 3	Designated Water Service Installation Work Contractor (Article 25.2 - 25.11)
Part 4	Designated Examination Institution (Article 25.12 - 25.27)
Chapter 3	Bulk Water Supply Business (Article 26 - 31)
Chapter 4	Private Water Supply System (Article 32 - 34)
Chapter 4.2	Small Scale Private Water Supply System (Article 34.2 - 34.4)
Chapter 5	Supervision (Article 35 - 39)
Chapter 6	Miscellaneous Rules (Article 40 - 50.3)
Chapter 7	Punitive Provisions (Article 51 - 57)
Appendix (Omitted)	

16

Role of MHLW

(Ministry of Health, Labour and Welfare)

- 1. Governance of the Waterworks Law**
- 2. Business license**
- 3. Facility standards**
- 4. Structure and material of water service installation**
- 5. Drinking water quality standards**
- 6. Laboratory**
- 7. Supervisory guidance and site inspections**
- 8. Financial assistance**
- 9. Research and development of technologies**

17

17

Role of Prefectures

- 1. Drawing up a water system arrangement plan for wide area supply**
- 2. Business license**
Waterworks with design population served of 50,000 and below, private water supply, etc
- 3. Supervisory guidance and site inspections**
Waterworks with design population served of 50,000 and below, private water supply, etc

18

18

Role of Water Suppliers

- 1. Establishment of the rules of water supply**
- 2. Placement of technical administrators of waterworks**
- 3. Obligation of water supply**
- 4. Hygienic measures**
- 5. Inspection of water service installation**

19

19

Role of Private Sectors

- 1. Research and development of water supply facilities**
- 2. Operations outsourced from water utilities**
 - A) Technical operations**
 - B) Routine works (reading meters, reception desks, etc.)**
 - C) Technical works (design, quality tests, etc.)**
 - D) Others (cleaning, security, etc.)**
- 3. Public Private Partnership (PPP) – semi-core operation**

20

20

Role of MHLW

Governance of the Waterworks Law

■ Amendment of the Waterworks Law

“Problems” with waterworks are identified.

- The Water Supply Division makes an investigation and discusses measures.
- The Division draws up a draft if law amendment is necessary.
- The draft is submitted to the Diet through screening and consultation by departments concerned
- Law amendment

21

21

Role of MHLW

Business license

Article 6 of the Waterworks law

Business license and management agencies

1. Those who will manage a waterworks have to be licensed by the MHLW or the Prefectural Governor.
2. The management agencies of waterworks should be municipalities in principle.

Article 10 of the Waterworks law

Requirements for approval of the change of business

- 🔍 Expansion of the supply district
- 🔍 Increase of water supply population
- 🔍 Increase of water supply volume
- 🔍 Change of kind of water source
- 🔍 Change of location of water source
- 🔍 Change of method for water purification

22

22

Role of MHLW

Application for Business license

Article 7 of the Waterworks law

🔍 **Application form**

1. Address and name of applicant, 2. Location of waterworks office

🔍 **Business plan**

1. Water supply district, water supply population, and water supply volume
2. Summary of water supply facilities
3. Scheduled date of starting water supply
4. Total projected construction cost and sources of funds
5. Bases for calculations of water supply population and water volume
6. Summary of projected financial operations
7. Rate of water charge, sharing of water supply facilities construction cost and other conditions
8. Other matters as will be described by the ordinance of the MHLW

🔍 **Engineering specification**

1. The maximum water supply volume and average water supply volume per day
2. The kind and point(location) of water source
3. Estimation of the water volume from the source and results of water quality test
4. Location(including altitude water level), magnitude and structure of the water supply facilities
5. Method for purification of water
6. Maximum hydrodynamic pressure inside the water duct
7. Scheduled date for starting and completion of construction
8. Other matters as will be determined by the ordinance of the MHLW

23

23

Role of MHLW

Standard for approval

Article 8 of the Waterworks law

1. Starting of such water supply business operation shall be in conforming with the requirement and demand of the public.
2. The water supply business program shall be certain and rational.
3. The construction design of the water supply facilities shall comply with the standards of facilities as stipulated in Article 5.
4. The water supply district under application shall not overlap the water supply district of other water utility business.
5. The water supply conditions shall comply with the conditions provided in respective paragraphs of [Section 2 of Article 14](#).
6. In case the applicant is any party other than the local public body, he shall be required to have adequate financial resources to carry out the business.
7. It shall be required that the operation of such water supply business shall be needed for the public benefits.

24

24

Section 2 of Article 14

Article 14 of the Waterworks law

- The charges are considered fair and rational based on reasonable costing under efficient business operation.
- The charges are clearly established with fixed rate or price.
- The matters relating to the responsibilities of the water supplier and the consumers and the bases for calculations of the cost of construction of the water supply facilities and the sharing of such costs are clearly set out.
- There is no partial treatment of any specific group or parties.
- In the case of a reservoir supply system (water systems other than those that supply water for water supply business or private water supply systems) being established, matters pertaining to the responsibility for the reservoir supply system of the water supplier or the founder of the reservoir supply system in question are correctly and clearly set out.

Facility standards

Article 5 of the Waterworks law

For standardization of clarification and performance standards of water supply facilities, it has set the technical standards for water supply facilities.

- The minimum requirements for water supply facilities are standardized and stipulated in the Waterworks Law and a ministerial ordinance.
- The standards prescribe both general matters (placement of facilities, earthquake resistance, etc.) and particular matters according to facilities (including intake facilities, water conveyance facilities, water treatment facilities).
- By Ordinance of the MHLW, has established a more detailed technical standard.

Structure and material of water service installation

Article 16 of the Waterworks law

- Standards for the structure and materials of water service installation has been prescribed by a government ordinance.
- The ordinance stipulates attachment positions and pressure resistance and leak prevention and backflow prevention of water service installation, etc.

In general, water service installation is installed and managed by the consumers, not the belongings of the water supplier.

[Obligations of water suppliers]

Stable supply of water adapted to the water quality standards from the water service installation

- Guidance for consumers
- If the water supply equipment does not conform to the standards, the water supply stopped.

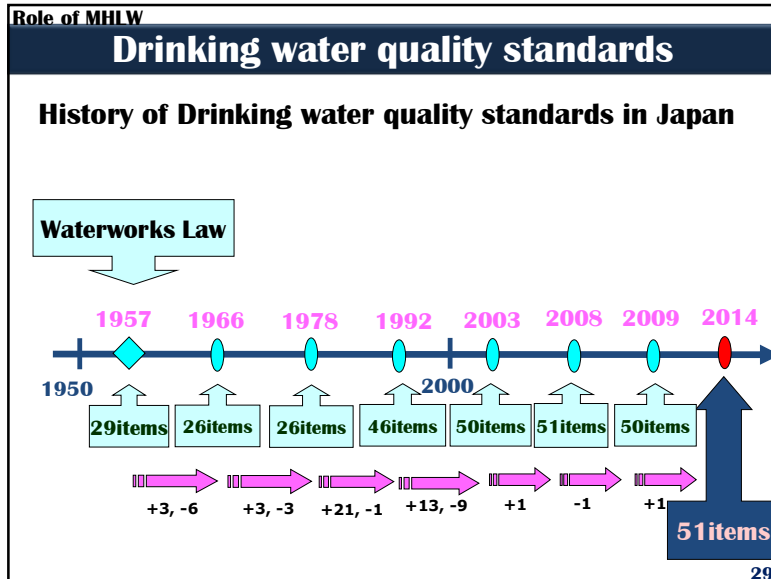
Drinking water quality management

■ Water Quality Standards

- Standard values for **51 items**
- Basically, based upon WHO-GDWQ (Guideline of Drinking Water Quality)
- Achievement rate: **99.9% (2012)**

■ Water Safety Plan

- Although the water quality standards are achieved at a high, there is still a lot of risk that may produce water contamination or stale water.
- In order to further improve the safety of drinking water, formulation of water safety plans at water treatment facilities is encouraged as an integrated water quality control technique between water resources and taps, proposed by WHO.
- The Water Supply Division has prepared and been distributing guidelines for water safety planning, case study findings and planning support tools.



29

Drinking water quality standards 1

No.	Items	Standard Value	No.	Items	Standard Value
1	Common Bacteria	100 per 1 ml	16	Cis-1,2-Dichloroethylene and trans-1,2-Dichloroethylene	0.04mg/L
2	E. coli	Not to be detected	17	Dichloromethane	0.02mg/L
3	Cadmium	0.01mg/L	18	Tetrachloroethylene	0.01mg/L
4	Mercury	0.0005mg/L	19	Trichloroethylene	0.01mg/L
5	Selenium	0.01mg/L	20	Benzene	0.01mg/L
6	Lead	0.01mg/L	21	Chlorate	0.6mg/L
7	Arsenic	0.01mg/L	22	Chloroacetic acid	0.02mg/L
8	Chromium (VI)	0.05mg/L	23	Chloroform	0.06mg/L
9	Nitrite Nitrogen	0.04mg/L as Nitrogen	24	Dichloroacetic acid	0.04mg/L
10	Cyanide ion and Cyanogens chloride	0.01mg/L as Cyanide	25	Dibromochloromethane	0.1mg/L
11	Nitrate and Nitrite	10mg/L as Nitrogen	26	Bromate	0.01mg/L
12	Fluoride	0.8mg/L	27	Total trihalomethanes (Total of Chloroform, Dibromochloromethane, Bromodichloromethane and Bromoform)	0.1mg/L
13	Boron	1.0mg/L	28	Trichloroacetic acid	0.2mg/L
14	Carbon tetrachloride	0.002mg/L	29	Bromodichloromethane	0.03mg/L
15	1,4-dioxane	0.05mg/L			

30

30

Drinking water quality standards 2

No.	Items	Standard Value	No.	Items	Standard Value
30	Bromoform	0.09mg/L	43	1,2,7,7 - Tetramethylbicyclo[2,2,1]Heptane-2-ol (Alias: 2-Methylisobolneol)	0.00001mg/L
31	Formaldehyde	0.08mg/L	44	Nonionic surface active agent	0.02mg/L
32	Zinc	1.0mg/L	45	Phenols	0.005mg/L in terms of Phenol
33	Aluminium	0.2mg/L	46	Organic substances (Total Organic Carbon)	3mg/L
34	Iron	0.3mg/L	47	pH Value	5.8 ~ 8.6
35	Copper	1.0mg/L	48	Taste	Not abnormal
36	Sodium	200mg/L	49	Odor	Not abnormal
37	Manganese	0.05mg/L	50	Color	5 degree
38	Chloride ion	200mg/L	51	Turbidity	2 degree
39	Calcium, Magnesium (Hardness)	300mg/L			
40	Total residue	500mg/L			
41	Anionic surface active agent	0.2mg/L			
42	(4S, 4aS, 8aR)-Octahydro-4,8a-Dimethylnaphthalene-4a(2H)-ol (Alias: Geosmin)	0.00001mg/L			

31

31

Role of MHLW

Supervisory guidance

Article 39 of the Waterworks law

Types of Supervisory Guidance

Prior guidance: Inspections

- Approval for a business "Article 6 of the Water Supply Law"
 - The operation of a water supply business requires approval by the national government or equivalent to be obtained.
 - In principle, a water supply business should be run by a municipality.
- Approval for a business change "Article 10 of the Water Supply Law"
 - Expansion of a business or changes in the classification of water source, purification treatment and suchlike require approval to be obtained.

Ex post facto supervision

- Reports and on-the-spot inspections "Article 39 of the Water Supply Law"
 - Receives reports on the progress of a business
 - Visits the place where the business is conducted and inspects the equipment, water quality, water volume, accounts, etc.
- Training and other informational activities
 - To ensure the appropriateness of the business, training may concern priority policies and technical issues.

32

32

Role of MHLW

Site inspections

Article 39 of the Waterworks law

● **The following particulars are checked.**

- ▶ **Supervision by the person in charge of technical control of tap water, the construction supervisor and suchlike**
- ▶ **Approvals, reports and the implementation of pre-supply inspections**
- ▶ **Compliance with the facility standards and other practices for the management of water supply systems**
- ▶ **Checkups, hygienic activities and other practices related to control of hygiene**
- ▶ **Implementation of water quality tests and compliance with the water quality standards**
- ▶ **Development of systems concerning pollution sources near the water source and water quality control**
- ▶ **Preparations and preventive actions against natural disasters, terrorism and other crises**
- ▶ **Actions in relation to the local people such as properly informing them of the supply regulations and other related information**
- ▶ **Resources and environment**
- ▶ **Other: Status of preparing a document defining the community's vision of its water supply**

33

33

Role of MHLW

Site inspections

Article 39 of the Waterworks law

Year	Number of water suppliers	Problems pointed out in written form	Problems pointed out verbally	Problems pointed out verbally / in written form combined	Problems detected per water supplier
2012	24 suppliers	30 cases	86 cases	116 cases	4.8 cases / 1 supplier
2013	53 suppliers	79 cases	242 cases	321 cases	6.1 cases / 1 supplier
2014	57 suppliers	70 cases	142 cases	212 cases	3.7 cases / 1 supplier
2015	52 suppliers	53 cases	131 cases	184 cases	3.5 cases / 1 supplier
2016	48 suppliers	72 cases	192 cases	264 cases	5.5 cases / 1 supplier

Source: Water Supply Division, Health Service Bureau, the Ministry of Health, Labour and Welfare

34

34

Role of Water Suppliers

Technical administrator of waterworks

Article 19 of the Waterworks law

1. The water supplier shall maintain one technical administrator to take charge of the technical aspect of the water business administration.

2. The technical administrator shall take charge of the following matters, and shall further supervise other personnel who will be in charge of the same matters:

- ① Inspection & examination of the water supply facilities to determine whether the facilities comply with the facility standards
- ② Testing of water quality and water supply facilities
- ③ Examination of the structure and materials of water service installation
- ④ Testing of water quality
- ⑤ Carrying out of the health check-up
- ⑥ Taking of sanitary measures
- ⑦ Emergency suspension of the water supply

35

35

Role of Water Suppliers

Responsibility for supply of water

Article 15 of the Waterworks law

● **The water supplier shall not be allowed to refuse, for the request for supply of water by the consumer within the district of its business program without sufficient reason.**

● **The water supplier shall have to always supply water to the consumer who shall be receiving water from the utility.**

● **The water supplier can stop supply of water for the duration of the following circumstances.**

- **When the consumer refuses to pay the water charges**
- **When the consumer refuses to allow the inspection of water service installation**
- **When water supplier have other justified reasons**

36

36

Role of Water Suppliers

Sanitary measures

Article 22 of the Waterworks law

The water supplier shall be required to take such sanitary and sterilizing measures as stipulated by the ordinance of the MHLW, pertinent to the control and administration of the water supply facilities.

- **Pollution prevention measures of water**
 - Water suppliers shall be always kept clean the water supply facilities (obtain, reserve, conduct, purify, etc).
 - Water supplier must ensure not enter easily a person or animal water facilities. More specifically, provided with a fence in the water supply facilities, it must be multiplied by the key.
 - By chlorine disinfection, water suppliers must retain the free residual chlorine of hydrant 0.1mg / liters or more.
 - Water suppliers shall conduct inspection of residual chlorine and color and turbidity of the water one or more times a day.

37

Role of Water Suppliers

Water service installation work

Article 16.2 of the Waterworks law

- In order to ensure that the structure and materials of the water service installation of the party who receives the supply of water from the water supply system meet the standards, the water supplier can designate a party that is recognized as able to appropriately carry out the water service installation work.
- Licensed contractors shall be staffed with a qualified chief engineer of water service installation as the technical supervisor of water service installation works.

Chief engineers of water service installation works, a national qualification necessary for technical management and supervision of engineering works and inspections, are qualified through the national exam every year (Total qualified persons: Approx. 280,000).

38

Role of Water Suppliers

Examples of water service installations

- To supply clean water, direct connecting system is recommended (need adequate pressure).
- Large receiving tanks should be examined for its management every year (Tanks are managed by owners).

Direct connecting system

Receiving tank and booster pump system

Direct boosting service system

Fig. Type of Water Service System

Reference; Water supply in Tokyo published in 2005 (Tokyo metropolitan waterworks)

Role of Water Suppliers

Financial Management

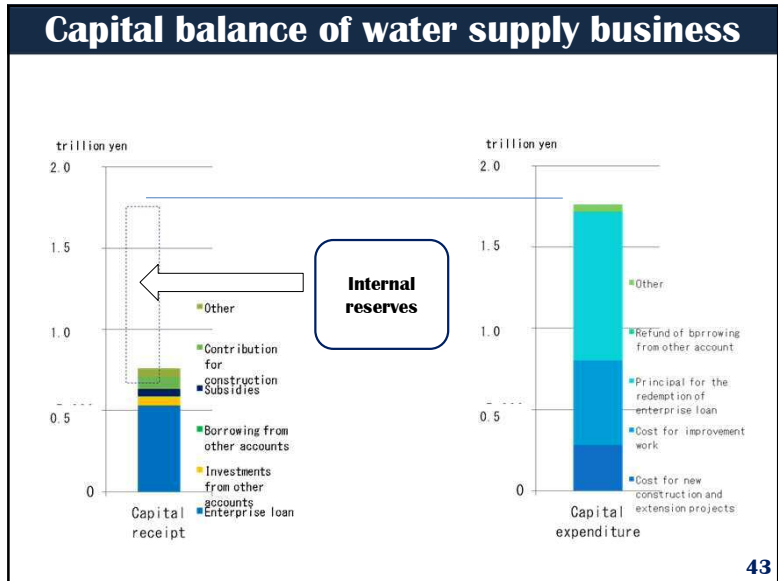
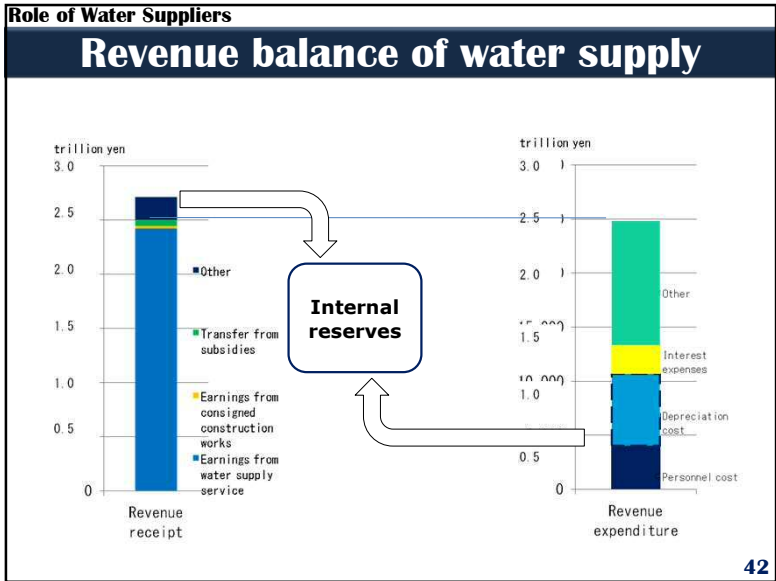
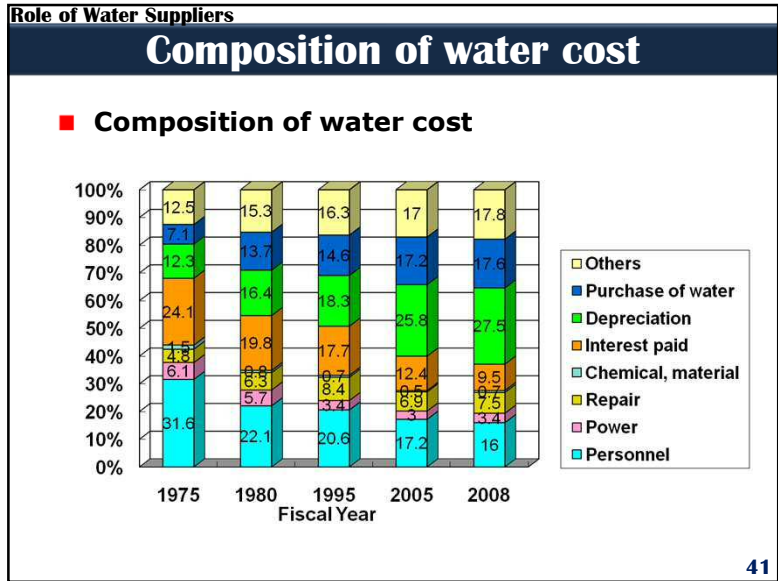
Independent accounting system (self-sustaining operation)

- Beneficiary charge

Appropriate and fair tariff system

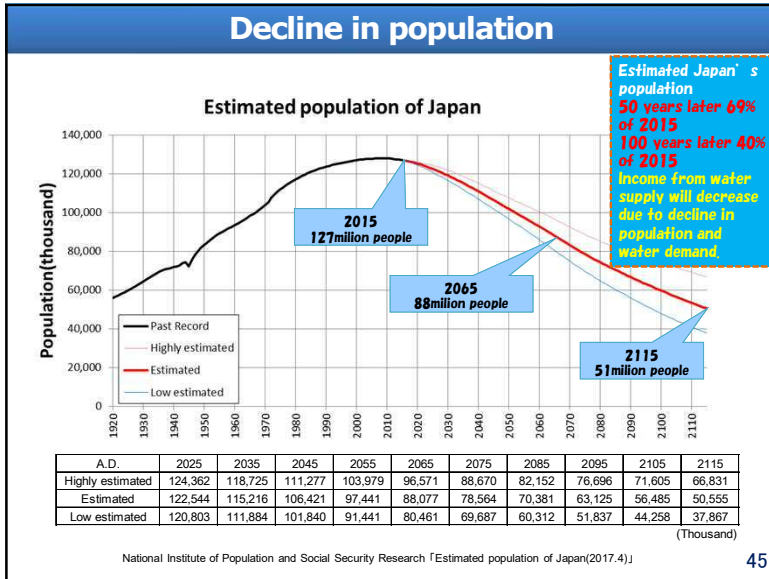
- Progressive water rate system by meter size or customer type, etc.
- Water tariff is less than 0.7% of domestic expenditure

40



2. Major current issues of water supply in Japan

44



45

Issues related to the Great East Japan Earthquake

[Overall]

- Widespread damage and Long term water failure
- Damage by Tsunami, Well water salt pollution
- Effect of Radioactive material (water quality, discharged soil)
- Electricity failure (necessity for non-utility generation facility, difficulty to procure fuel)

[Pipe line]

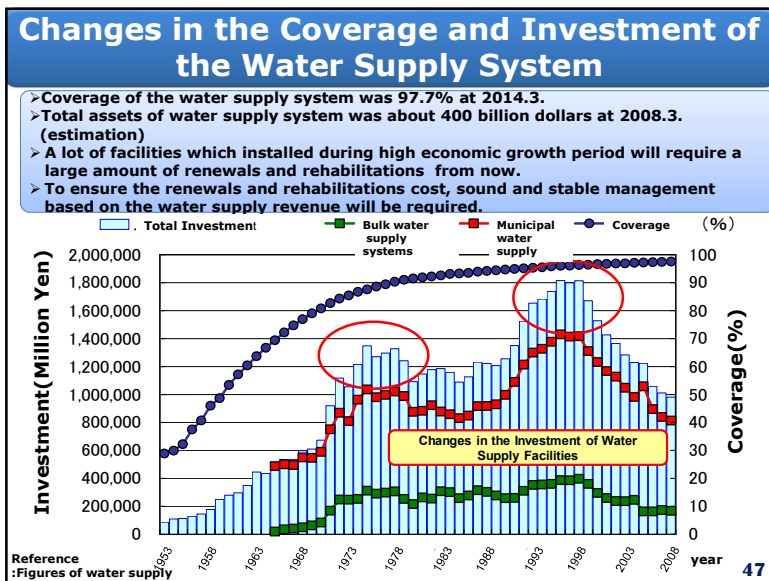
- Damage of large size pipe line caused long term water failure.
- Pipe lines were broken with a focus on point where had large ground strain.

[Facility and Equipment]

- Damage caused by Tsunami at coast area (Breakup and Flowing out of facilities, Equipment failure, Well water salt pollution)
- Flowing out water pipe bridge at coast area
- Breakup of Towering structure which is sensitive to earthquake motion
- Damage caused by liquefaction

A pipe line broken by the Great East Japan Earthquake

46



47

The present conditions and problem of the aging of pipe line

> The pipe line aging ratio is expected to be increase rapidly, because the replacement of old pipe line which installed during high economic growth period is slow (Legal durable year is 40 years in Japan).

Pipe line aging ratio (%)

$$\frac{\text{Pipe extension beyond 40 years}}{\text{Pipe line total extension}} \times 100$$

pipe replacement rate (%)

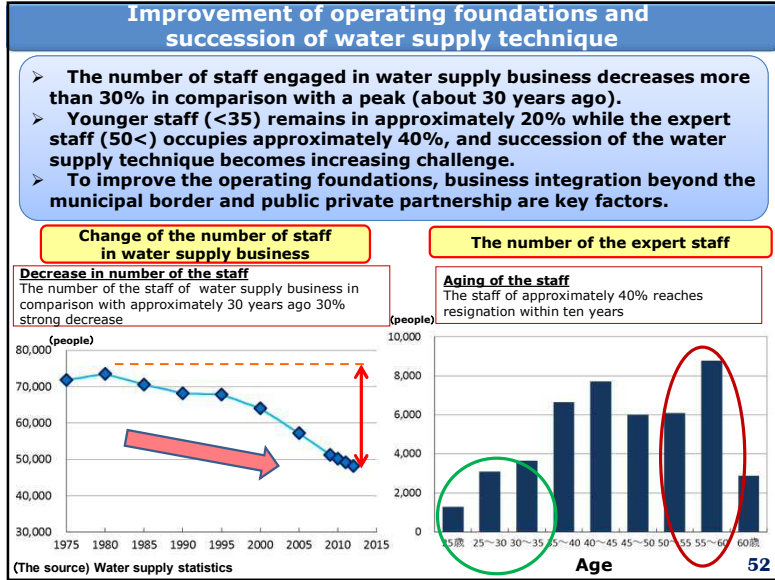
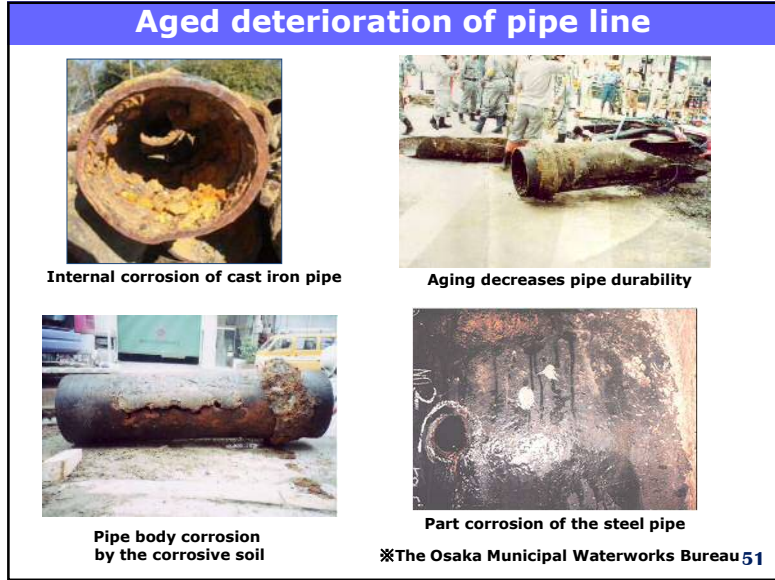
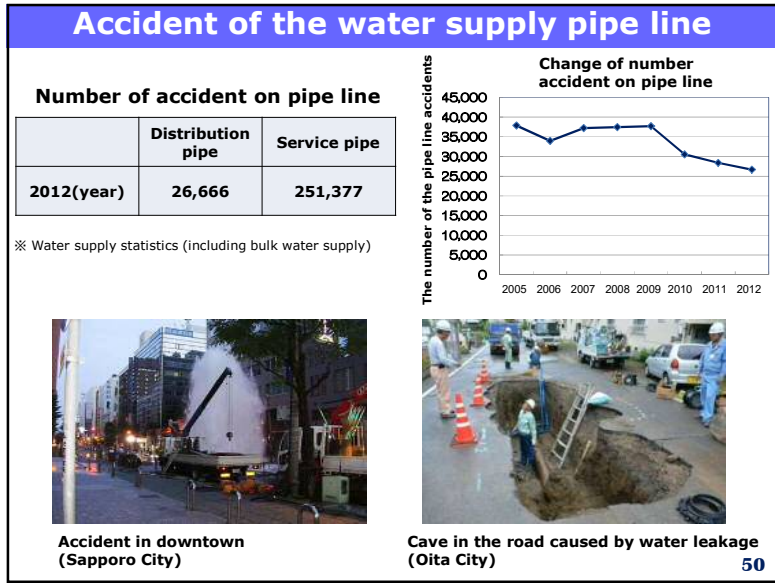
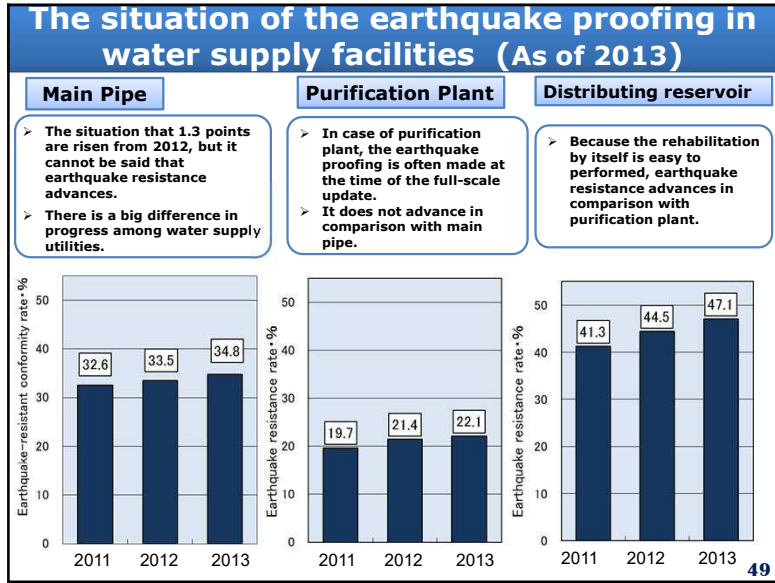
$$\frac{\text{Total extension of an updated pipe line}}{\text{Pipe total extension}} \times 100$$

The aging ratio has increased year by year
 → Aging of pipe line surely progresses.

The replacement ratio has decreased year by year
 → Pipe line replacement has not been progressed.

It requires 130 years for completion of all pipe line replacement.
 [Simple calculation setting the pipe line replacement ratio as 0.79% (in 2013).]

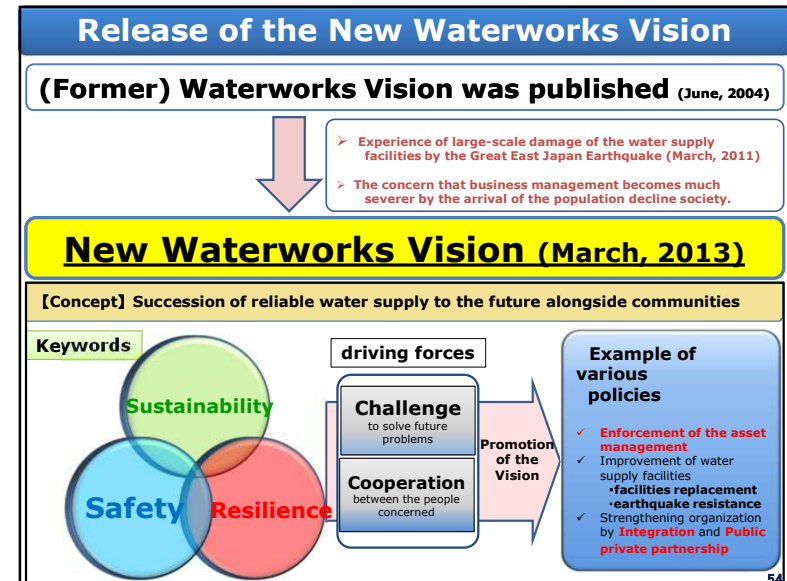
48



3. Promotion of New Waterworks Vision of Japan

53

53



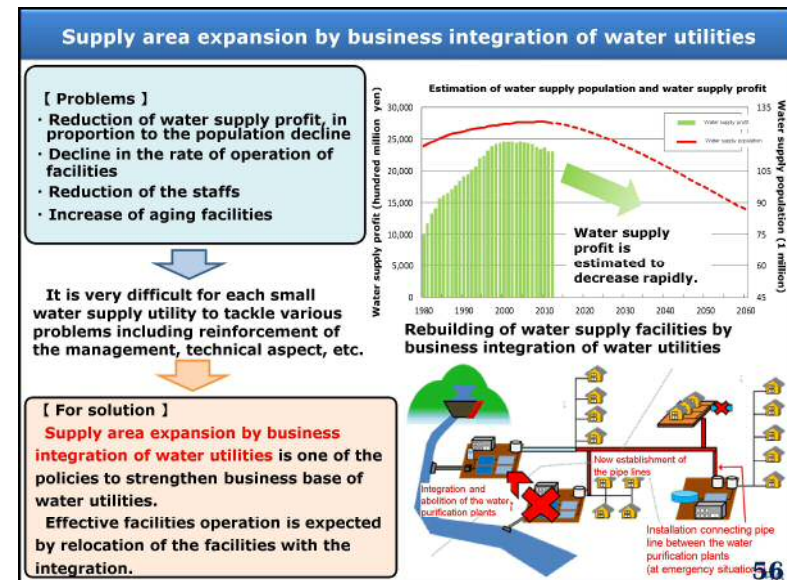
54

Promotion of the New Waterworks Vision

	Safety	Resilience	Sustainability
Idealized image of water supply	<ul style="list-style-type: none"> • Water supply to be able to drink in peace • Appropriate water quality management system • Measures by integrated approaches 	<ul style="list-style-type: none"> • Crisis management • Appropriate facilities replacement, earthquake resistance • Flexibility against disaster 	<ul style="list-style-type: none"> • Trust by the nation • Stability of business base for the long-term future • Measures based on population decline society
Immediate goals	Maintaining continuous safe water supply of all water supply system in collaboration with stakeholders	All water utilities complete earthquake resistance of pipelines, distributing reservoirs and water purification plants, concerned with the prime water supply bases	All water utilities carry out the asset management
Direction of the action	<ul style="list-style-type: none"> ○ Preserving and securing good water source ○ Maintenance of the water supply facilities according to water source ○ Water quality management in the clean water processing ○ Establishment of public information, well-known system to distribute the information of water quality 	<ul style="list-style-type: none"> ○ Carrying out earthquake resistance of all the water supply facilities stepwisely ○ Reinforcement of the facilities which become the water supply base to enable essential water supply at the time of disaster ○ Securing of water supply means that emergency restoration activity and emergency water supply can be carried out by cooperation with the person concerned at the time of disaster 	<ul style="list-style-type: none"> ○ Careful management and operation of all the water supply facilities ○ Replacement of aging facilities ○ Reinforcement of the financial base for sustainable management ○ Securing the staffs having specialty to be engaged in essential duties

55

55



56



Thank you for your kind attention.

http://www.mhlw.go.jp/english/policy/health/water_supply/menu.html

57

Contribution to More Efficient Water Supply System in Japan

Yuto NIWA
Supervisor of International Division
Japan Water Works Association (JWWA)

1

Contents

- 1 . Waterworks in Japan
- 2 . What's JWWA?
- 3 . Contribution to Japan's Water Supply by JWWA's Activities

1

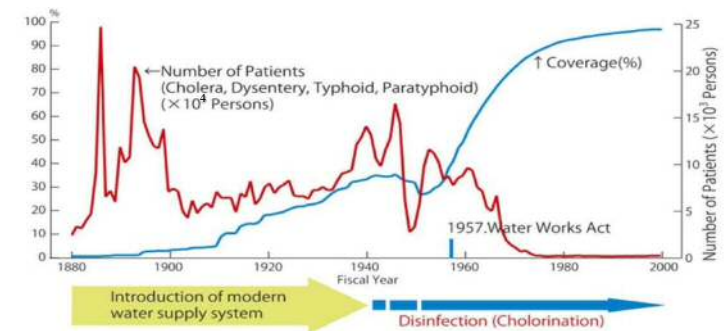
2

1 . Water Supply in Japan

2

3

1-1. Basic Information with Statistics



3

4

1-2. Governance of Water Supply



4

5

6



Comprehensive Operating and Maintenance Contract for Water Supply at HAKONE Area



September, 2017
HAKONE Water Partners Corporation

Photo: Midano water source

2



【 Contents 】

1. Business outline & Feature of HAKONE area
2. Facilities
3. Business particular/ SPC outline
4. Reference

箱根水道パートナーズ株式会社

3



1 . Business outline & Feature of HAKONE area

箱根水道パートナーズ株式会社

4

Business outline



Contract	Comprehensive Operating and Maintenance Contract for Water Supply at HAKONE Area
Client	Corporate Agency, Kanagawa Prefectural Government
Contractor	HAKONE Water Partners Corporation *SPC: Specific Purpose Company established for the purposes of the contract
Period	April 2014 to March 2019 (5 years) *Preparation period Jan. to Mar. 2014
Contract sum	3.89 billion yen (approx. 31.4 million USD @ 124/USD) *Including variable cost items
Scope of works	Taking over almost all works operated by Kanagawa Pref. Government at HAKONE *operating and maintenance of facilities *water quality control *replacement of facilities *water leakage *water supply equipment inspection *meter reading *fee collection *customer services *natural disaster countermeasure *etc.

箱根水道パートナーズ株式会社

5 Water Supply Area

【Area】 North part of Hakone town
 【Facilities】 3 water sources, 2 purification plants,
 16 service reservoirs, 8 pumping stations

【Number of water distributed residents】
 4,353 as of 1st April 2015

【Number of beneficiary】
 6,185 as of 1st April 2015

※Approx.52%of
 total population of Hakone town

【Daily water supply volume *2014】
 Average supply 7,378 m³/day
 Maximum supply 10,132 m³/day



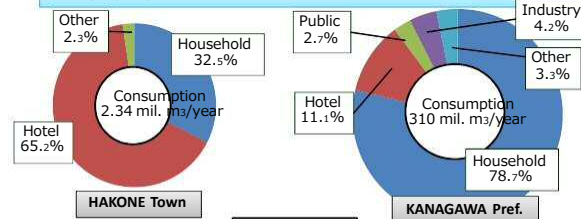
6 Features of Hakone Waterworks #1

1. Water Quality

- All water source is spring water (MIDONO, ITARI and SHINANOKI)
- Naturally no turbidity *except rain water inflow
 ⇒ Low risk to water quality

2. Breakdown of beneficiary

- High proportion of Hotel demand



※2014 record

箱根水道パートナーズ株式会社

7 Feature of Hakone Waterworks #2

3. Terrene

- Mountain area: various elevation (Gap of elevation within the area is 500m)
- Interspersion of supply point
- Small size water reservoirs (average 740m³)
- ⇒ Required to take into account distribution control



4. Industry

- Well-known tourism site → Plenty of large hotels
- ⇒ Daily and seasonal fluctuation of water demand

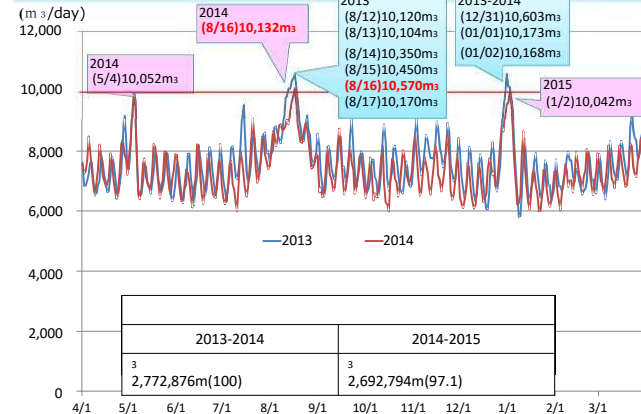
High demand on Holiday and at high seasons

【Daily supply at major peak seasons → 10,000m³/day】

- ① Summer Holiday (around 15 August) Gora Daimonjiyaki
- ② New year (around 1 January) Hakone road relay

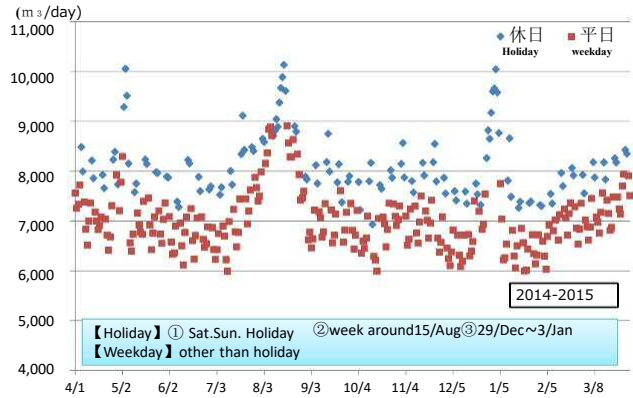
箱根水道パートナーズ株式会社

8 Annual fluctuation of water supply



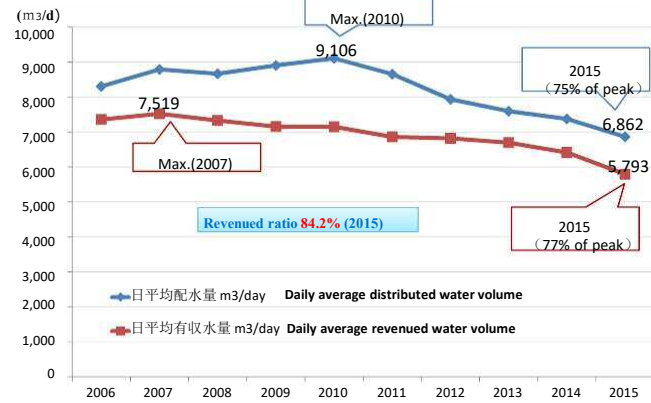
箱根水道パートナーズ株式会社

9 Water supply fluctuation Holiday vs. weekday



箱根水道パートナーズ株式会社

10 Changes in water consumption



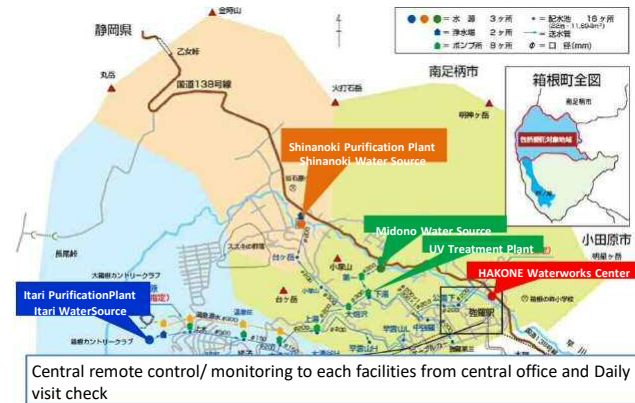
箱根水道パートナーズ株式会社

11

2. Facilities

箱根水道パートナーズ株式会社

Location Map of HAKONE Waterworks Center

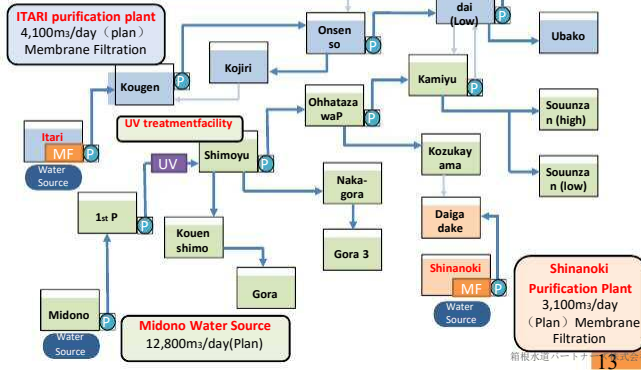


Central remote control/ monitoring to each facilities from central office and Daily visit check

箱根水道パートナーズ株式会社

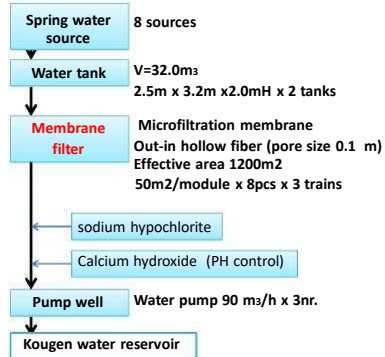
13 Water distribution network

- 3 water resources ● 2 Purification Plant
- 16 distribution water reservoirs, total aprx. 12,000m³
- 8 pumping stations



14 Facilities #1

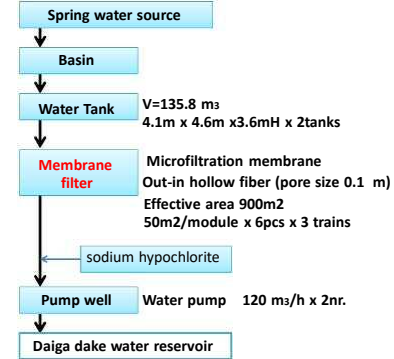
Itari purification plant Treatment capacity 4,100m³/day
 Membrane filtration water started supplying in 2006.



箱根水道パートナーズ株式会社

15 Facilities #2

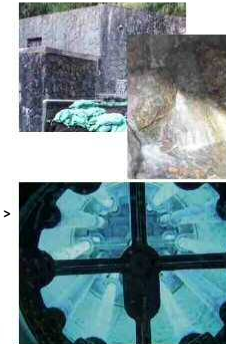
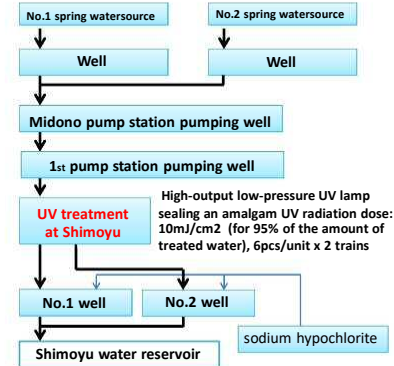
Shinanoki purification plant Treatment capacity 3,100 m³/day
 Membrane filtration water started supplying in 2008.



箱根水道パートナーズ株式会社

16 Facilities #3

Midono water source, UV treatment facility Capacity 12,800 m³/day
 UV treated water was started supplying in 2010.



箱根水道パートナーズ株式会社

17



3. Business particular/ SPC outline

箱根水道パートナーズ株式会社

18

Feature of HAKONE SUIDO Business



First comprehensive undertaking contract for water supply in Japan

- Operating and maintenance
- Water quality control
- Design, procurement, testing**
- Customer service, collecting fee
- Meter reading, unpaid fee
- Water leakage inspection, repairing

First attempt in Japan

Operated by Private

Corporate Agency, Kanagawa's Objective

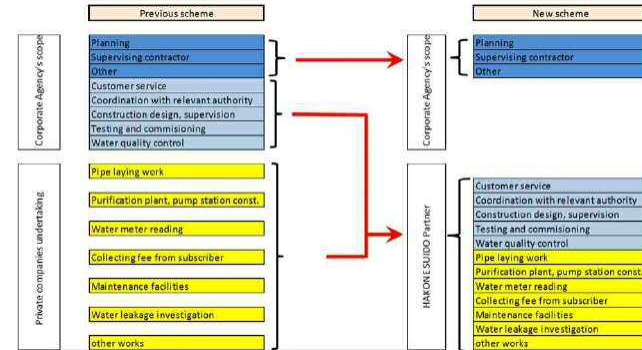
Pursuing growth of private sector in Kanagawa

➔ Expand over Japan market, overseas market

箱根水道パートナーズ株式会社

19

Comparison between previous and new scheme



箱根水道パートナーズ株式会社

20

Revenue structure



【Procure the services】 Revenue from local government as service fee instead of sales of water

Operating expenditure	Fixed	Staff,consumption,insuranceetc.	Monthlyfixedfee
	Measurement	Electricity,chemicals	Unitrateperm3
	Emergency Repairing	Waterleakage,emergencyrepairing	Eventmorethan2.5milJPY hasneededpriorapproval
Capital expenditure	Periodical Repairing	Inspection,facilityrepairing, maintenance	Actualcostunderannual maintenanceschedule
	Replace, improve facility	Replacepiping Electricandcontrolssystemupgrade Otherfacilityupgrade	Actualcostunderannual investmentplan

箱根水道パートナーズ株式会社

21 About Us

Hakone Water Partners Corporation

Logo



● Concept of design

Three lines mean water flow from mountain as well as closer relation of Kanagawa gov., Residence (customer) and Our company

SPC: Special Purpose Company is established only for the specific purpose.

Capital	50millionJPY	
Shareholders	JFEEngineeringCo.	50.1%
	DekCo.,Ltd.	24.9%
	NishiharaEnvironmentCo.,Ltd.	10.0%
	VeoliaJenetsK.K.	10.0%
	KanagawaPlumbingHeatingandAir-conditioning Contractor'sCooperativeAssociation	5.0%

22 Management Principle and Policy

Management Principle

- Establishment of successful business model cooperating by local government and local private sector for local public interest.

Management Policy

- Transferring of comprehensive management know-how of water supply from local government to private sector to contribute high quality service and secure the water supply.
- Compiling all expertise/ solution provided by local companies into the operation to contribute stable and efficient business model.

箱根水道パートナーズ株式会社

23 About Shareholders



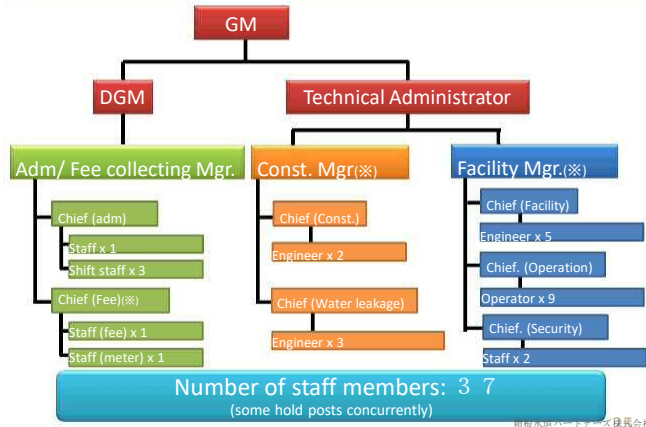
24 Demarcation of roles

◆ Most of water supply works undertaken by our company



箱根水道パートナーズ株式会社

25 Organization



26

4. Reference

箱根水道パートナーズ株式会社

27 (reference) office

central control panel



office



箱根水道パートナーズ株式会社

28 (reference) public relation

◆ Public Relation activity



Contract including PR activity. Photo: Dispatching leaflet, green bag, drinking water and towel at summer festival venue

◆ CSR activity: Participating clean up activity around area



'My name is Kappy!' (Kanagawa's water supply PR mascot character)

箱根水道パートナーズ株式会社

29 (reference) 2013-2014 handling water volume

Intakevol.		Conveyancevol.		Distributionvol.	
8,006mperday		7,785mperday		7,378mperday	
Effective water as percent of total : 91.2%					
Accounted-for water as percent of total: 87.0%					
Availablevol.6,724mperday				Unavailable653mperday	
Notforsale309m					
Forsale	For operation	Watermeter tolerance	Others	Adjustment	leakage
6,415m	55m	251m	3m	75m	578m
household	Hoteletc	public	industry	pool	Tempora l use
2,085m	4,180m	143m	0m	1m	7m
division					
0m					

30 (reference) Water network

管種別延長 ※data 2013-2014 ※all asbestos pipe removed

conveyance				
Diameter (mm)	Length (m)	steel	casting steel	Stainless steel
400	141	141	0	0
350	876	876	0	0
300	5,908	2,228	3,210	470
250	763	763	0	0
200以下	9,088	-	-	-
total	15,760	4,009	3,210	470
(200mm以下を録<)				
distribution				
Diameter (mm)	Length (m)	steel	casting steel	Stainless steel
300	1,680	798	882	0
250	1,299	1,299	0	0
200	15,044	1,494	13,455	96
150	9,982	133	9,793	55
125	54	54	0	0
100以下	42,260	-	-	-
total	70,319	3,778	24,130	151
(100mm以下を録<)				

31 (reference) number of water leakage

Account Year	Number of leakage	Conveyance & distribution pipe	Water supply pipe
2009(H21)年度	72	27	45
2010(H22)年度	132	37	95
2011(H23)年度	103	38	65
2012(H24)年度	81	19	62
2013(H25)年度	78	19	59
2014(H26)年度	55	18	37
Average	87	26	61

箱根水道パートナーズ株式会社

Sound Management of Waterworks

Tadashi Yamamoto(Mr.)

7th September 2017
Business Planning Division
Yokohama Waterworks Bureau

1

Lecture Contents

1. Outline of Water Supply Condition in Japan/Yokohama
2. Management in Founding Period
3. Earthquake Disaster and War
4. After World War II and Reconstruction
5. Period of Stable Growth
6. New Method (PFI : Private Finance Initiative)
7. Summary

2

1.Outline of Water Supply Condition in Japan

Water is the most important lifeline.

- The Waterworks Act was enacted to supply safety water all over Japan.
(Old law: 1890, New law: 1957)
- Municipality must manage the water supply business in the region.
- Every waterworks adopt self-supporting account system.

Number of water utilities in Japan:
1,401 (2015)

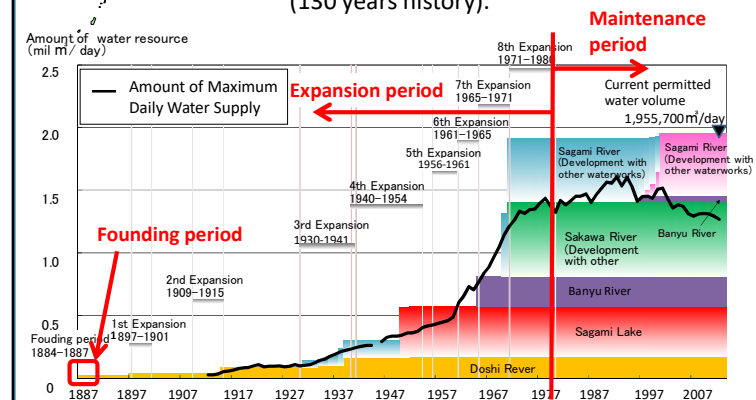
We can drink tap water anywhere in Japan.

3

1.Outline of Water Supply Condition in Yokohama

Yokohama city

- One of the largest cities in Japan (3.73 mil).
- The first modern waterworks in Japan (130 years history).



4

2. Management in Founding Period

5

1) Beginning of waterworks in Yokohama

1859 Japanese government opened Yokohama port

1872 Start of water supply by **wood pipes**1882 **Cholera** was prevalent

1885 Start of construction by H. S. Palmer, UK

1887 Start of water supply business using iron pipes
as the **first modern waterworks in Japan**(Daily max. 5,720m³ and 106,200 pop.)

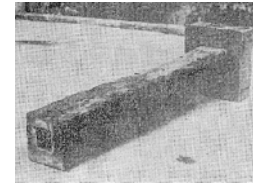
5

2. Management in Founding Period

6

2) Private water company by wood pipes (1872)

Features



- Exemption from taxes
- No governmental grants for establishing water facilities. Accumulated loan from banks.

▪ Water supply business was transferred from a private company to the prefecture (1874).

▪ National government granted funds and the prefecture could repay all debts.



6

2. Management in Founding Period

7

3) The 1st modern waterworks (1887)



- Modern waterworks system -

- Strong iron pipe with water pressure
- Treatment by settlement, sand filtration, disinfection
- No contamination from outside
- Water distribution to wider area, 24/7



➔ National government granted all funds of initial construction.

7

2. Management in Founding Period

8

4) Yokohama city started to manage the waterworks (1890)

Water is essential

the Government has to guarantee the quality

Municipalities understand water supply area and customers well

- Management by municipalities was stipulated in the Waterworks Act.
- Yokohama City Council decided to carry out independent accounting system by collecting water consumption fee from customers.

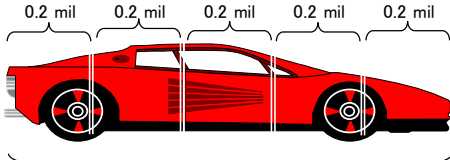
8

2.Management in Founding Period 9

5) Utilization of bond

Construction cost of the 1st expansion (1898-1901)

→ National government subsidy (1/3)
+
Yokohama city bond (2/3).



0.2 mil 0.2 mil 0.2 mil 0.2 mil 0.2 mil

Merits
Equitable burden-sharing among generations

Demerits
Have to pay the interest

assumption • A car for a million dollars by loan
• use it for 5 years



9

2.Management in Founding Period 10

6) Structure of water supply charges

(-1900) (1920)

- Free-hand common tap: 85% → 52%
- Free-hand dedicated tap: 10% → 37%
- Water meter: 5% → 11%

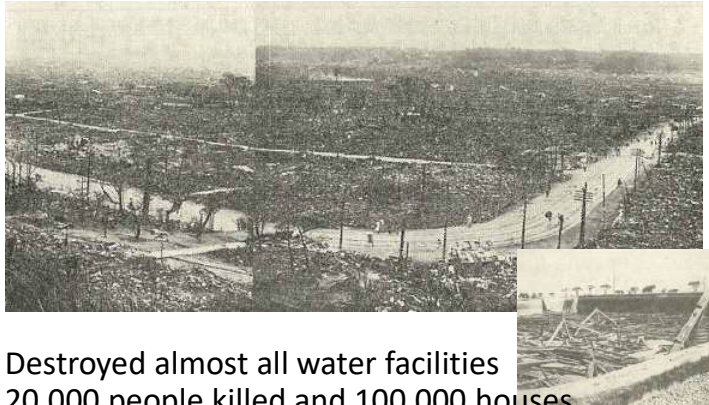



Improvement of public health > Profitability

10

3. Earthquake Disaster and War 11

1) Great Kanto Earthquake Disaster (1923)



- Destroyed almost all water facilities
- 20,000 people killed and 100,000 houses damaged

11


3. Earthquake Disaster and War 12

1) Great Kanto Earthquake Disaster (1923)

- Government granted 85% of subsidy needed for quick repair work.
- Government also granted 25% of the subsidy for recovery work.

Accelerate the introduction of water meters

- All households in the city had installed water meters in 1927.
- Cumulative deficit was eliminated in 1929.



Construction cost of the 3rd expansion (1930-1941)
→ Yokohama city debenture (95%)

12

3. Earthquake Disaster and War

13

2) World War II (Pacific War, 1941-45)



- Almost all water supply facilities were damaged.
- Water leakage rate was assumed to be 80%.
- Had to issue bond for most money needed for recovery and restoration.

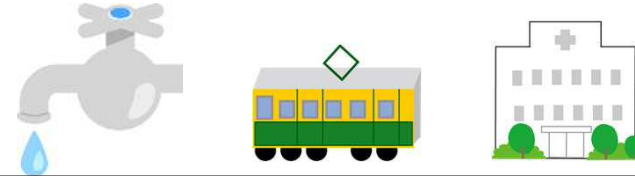
13

4. After World War II and Reconstruction

14

Enactment of Local Public Enterprise Act (1952)

- Self-Support Accounting System
The revenue of water services should cover not only past capital outlay, but also daily costs.
- Sharing of Expense by Beneficiaries
The people receiving services should pay the price of those services.



14

4. After World War II and Reconstruction

15

High economic growth(1960-)

- 8 expansion work projects up to 1980s, all in tandem with the growing population.
- Water supply rate reached 80% in 1960s, and almost 100% in 1980s.

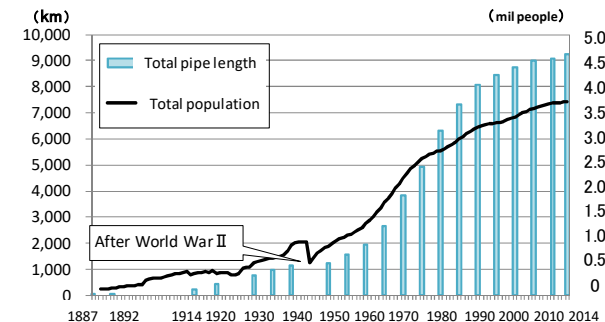


15

5. Period of Stable Growth

16

Coping with a period of mass renewal(2010-)



- There are many facilities that need to replace or rehabilitate their function.
- The new functions such as energy efficiency, disaster prevention measures are needed.

16

5. Period of Stable Growth 17

Importance of planning

The large amount of renewal cost

- Long-term and Mid-term Plan (Fiscal Balance Plan)
- Creating steady budget and settlement of accounts

17

6. New Method (PFI : Private Finance Initiative) 18

External conditions surrounding waterworks in Japan

- future population estimates -

- Water demand prediction -

Have to manage water service business sustainably under severe economic conditions

18

6. New Method (PFI : Private Finance Initiative) 19

Inner conditions surrounding waterworks in Japan

Human resource

- Decreasing the number of staff
- Adaptation to new technology and high technology of private companies

Financial resource

- Decreasing water-demand and revenue
- Difficulty in managing water supply business by only public sector

Improve Efficiency of Business

Outsourcing

Reemployment of Retiree

19

6. New Method (PFI : Private Finance Initiative) 20

Applying PFI method for new WTP

Abolishment

Construction

O&M

Tsurugamine WTP (1964)

(Old) Kawai WTP (1901)

}

(New) Kawai WTP

by PFI (**Private Finance Initiative**)

(Construction: 2009-2013)

(Operation & Maintenance: 2014-2039)

Ceramic Membrane

Membrane Filtration Facility

20

6. New Method (PFI : Private Finance Initiative)

21

Merit of PFI

VFM (Value For Money)

- Blanket order (efficient construction work)
- Assuredly and efficiently operating high-caliber, leading-edge technologies
- No need to raise initial fund by waterworks authority

BTO (Built Transfer Operate)

Build → Transfer → Operate



No tax if the administration (City Government, etc.) is the owner

21

7. Summary (1)

22

- Water supply is a key social infrastructure that is essential for improving public welfare and providing national prosperity.
- Under growing population and economy, social infrastructures should be energetically invested in.
- In such situation, loans are extremely useful way of raising construction fund, with great investment value.

22

7. Summary (2)

23

3 Targets

- The full use of meters to measure water usage and appropriate collection of supply charges.
- Facilities must be thoroughly and systematically repaired or improved to ensure that water is not wasted.
- A safe water must be constantly supplied.

23

7. Summary (3)

24

- Yokohama Waterworks has 130 years history and keeps supplying safe water to customers.
- Yokohama Waterworks has cooperated with private companies with their advancing knowledge and know-how.
- It must be the most effective and economical in the end to adopt managerial know-how, reliable and qualified technology of Japanese style for the sake of securing sustainable social infrastructure, which is crucial for the nation.

24

7. Summary (4)

25

Our sincere hope is...

Your country will choose and learn Japanese ways of water supply management and technology to produce good-quality water, and introduce those know-how and technologies of Japanese water supply business to neighboring nations and area.

Towards... co-existence and co-prosperity!

25

 横浜市水道局

*Thank you for your
attention!*

Yokohama Waterworks Bureau

26

Management Plan

7th September 2017
Business Planning Division
Yokohama Waterworks Bureau
(YWWB)
Ms. Sakiko Yoda

1

1

Content

- I Significance of Planning
- II New Water Supply Vision (Ministry)
- III Long-term Vision of YWWB
- IV Mid-term Management Plan of YWWB
- Formulation of fiscal balance plan

2

2

I. Significance of Planning

3

3

Why do we need plans?

4

4

Why do we need plans?

- **Imagine...**

If you have lots of necessary constructions/projects despite the limited budget, and/or



If you need for funding,

And/or

If you want to develop human resource,



We need a Management plan!!

5

5

Why do we need plans?

Making a management plan enable you..



To clarify organizational vision and goal



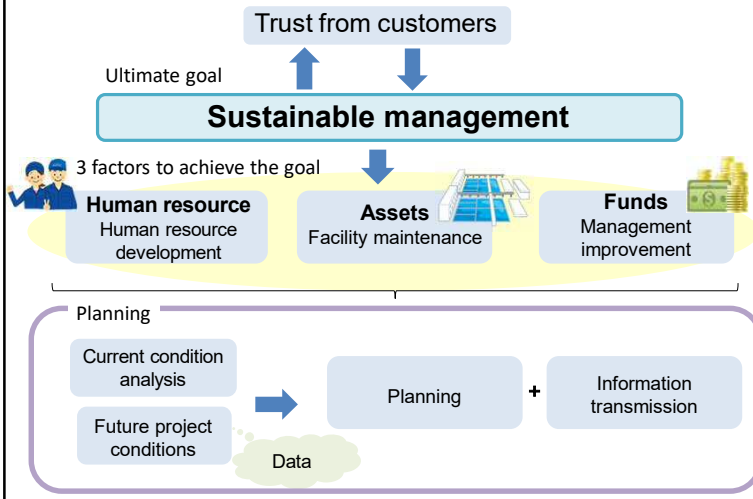
To keep transparency of corporate information

6

6

I. Significance of Planning

Summary



7

7

II. New Water Supply Vision (Ministry)

8

8

II. New Water Supply Vision

Formulation of Water Supply Vision

Water supply vision
(formulated in June 2004, revised in July 2008 by the Ministry of Health, Labour and Welfare)

↓ [Basic Principles] Keep challenging to be the world leader of waterworks
 ↓ [Major policy target] Safety, stability, sustainability, environment, internationalism

The condition surrounding waterworks has changed
 → The new issue

- Population decrease
- The Great East Japan Earthquake

↓

New Water Supply Vision (formulated in March 2013)

9

II. New Water Supply Vision

Outline of new water supply Vision

[Basic principle] Succession of reliable water supply to the future alongside communities

Three Viewpoints

- Safety**
Everyone is served with water of good quality anywhere and anytime.
- Sustainability**
Sound and stable financial management is maintained despite decline in population and water demand.
- Resilience**
Damage by natural and other disasters is minimized and quickly recovered.

To realize these goals... **Challenge** and **collaboration** is necessary

10

II. New Water Supply Vision

Long-term Vision by each waterworks

Guideline for setting long-term vision by each waterworks

[Target] Waterworks authorities, bulk water suppliers
 [Content] -Requirement and discussion method
 (To reflect the concept of the New Water Supply Vision)

Requirement

- The current condition and issue
- Future's conditions surrounding waterworks
- The target and vision
- Method that you need to achieve the goal
- How to proceed and follow-up

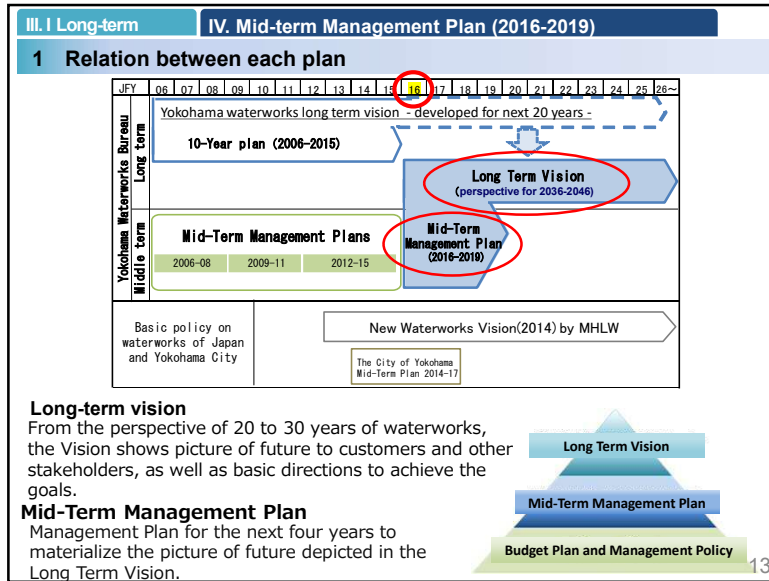
Period

Goal → Approx. 10 years later

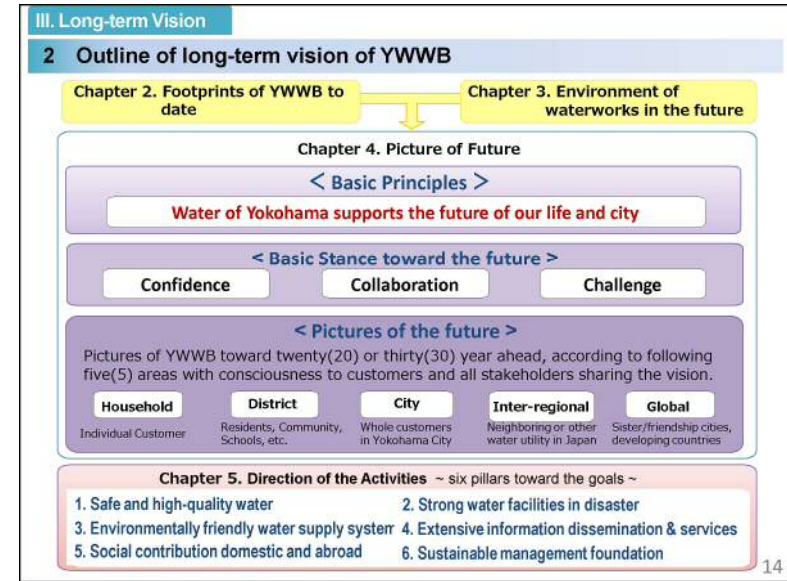
11

III. Long-term Vision of YWWB

12



13



14

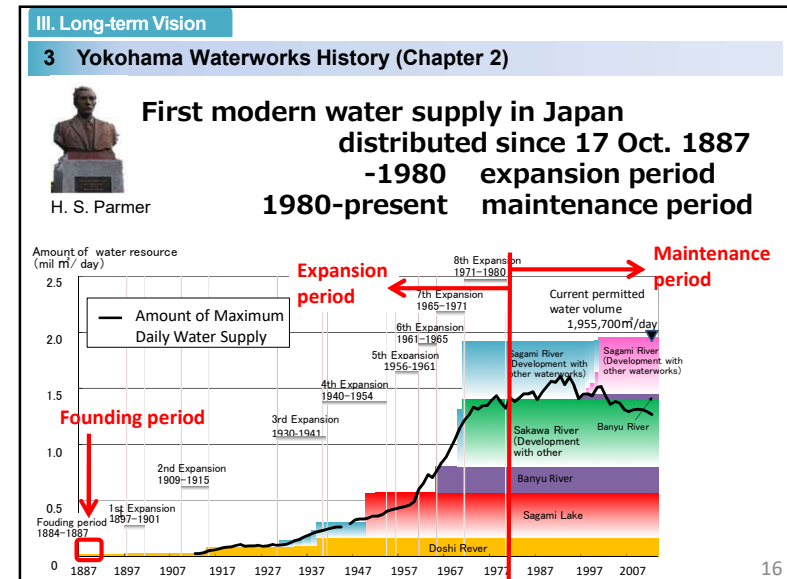
How to make a plan(e.g. long-term vision)

- Involving all the departments
- Grasping the current condition and estimating the future condition
- Discussing the goal in the future
- Discussing the details of each project
- Get approval from the top management



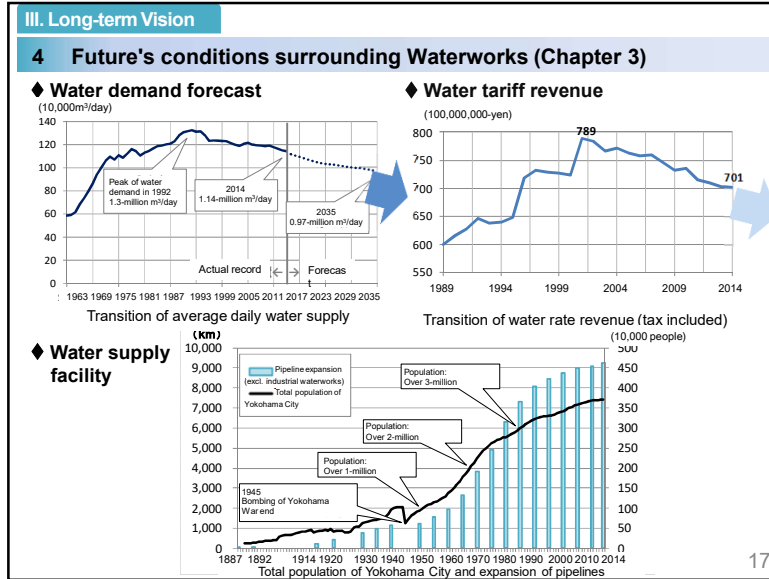
15

15



16

16



III. Long-term Vision

5 Basic Principle and Basic Stance (Chapter 4)

< Basic Principle >
“Water of Yokohama supports the future of our life and the city”

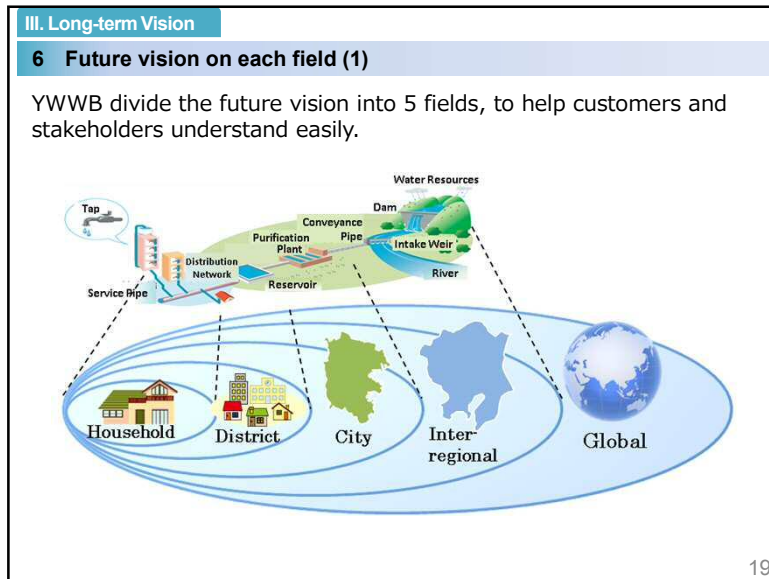
<Basic stance>

[Confidence] We make every effort to meet the requirements as a waterworks authority, in order to build up higher **confidence** with our customers and stakeholders.

[Collaboration] We **collaborate** with private sectors and other various partners, in order to provide higher quality services.

[Challenge] We flexibly adapt to changes without stopping, and make a **challenge** even under difficult circumstances, in order to solve issue of internal and external waterworks projects.





18



- ### III. Long-term Vision
- #### 6 Future vision on each field (2)
- Household:**
- Safe, high-quality water is supplied un-interruptedly.
 - Extensive information and customer service by way of ICT is provided.
- District:**
- YWWB is close to inhabitant and roots in the community.
 - The structure of mutual assistance is established and view on public help is prevailed.
- City:**
- Facilities are reviewed, replaced and improved to earthquake resistant equipment suitably.
 - Environmental friendly and energy conservative measures are conducted.
- Inter-regional:**
- Prefectural scale alignment including riverhead is established to preserve water resources.
 - Accumulated technologies are utilized in the field of maintenance, improvement of waterworks for preventing and recovering from damages of disasters.
- Global:**
- Appropriate relations with sister cities, friendship cities, home-grown companies and collaboration with Yokohama Water Company (YWC) is established.
- 20

III. Long-term Vision

7 Direction of Activities

- 1 Safe and high-quality water 
- 2 Strong water facilities in disaster 
- 3 Environmentally friendly water supply system 
- 4 Extensive information dissemination and service 
- 5 Social contribution both domestic and abroad 
- 6 Sustainable management foundation 

21

21

IV. Mid-term Management Plan of YWWB

22

22

IV. Mid-term Management Plan (2016-2019)

1 Contents of the mid-term management plan

1 Safe and high-quality water	9 projects
2 Strong water facilities in disaster	10 projects
3 Environmentally friendly water supply system	7 projects
4 Extensive information dissemination and service	9 projects
5 Social contribution both domestic and abroad	8 projects
6 Sustainable management foundation	8 projects

Totally 51 projects (47 projects in waterworks, and 4 projects in industrial waterworks)

Fiscal balance plan

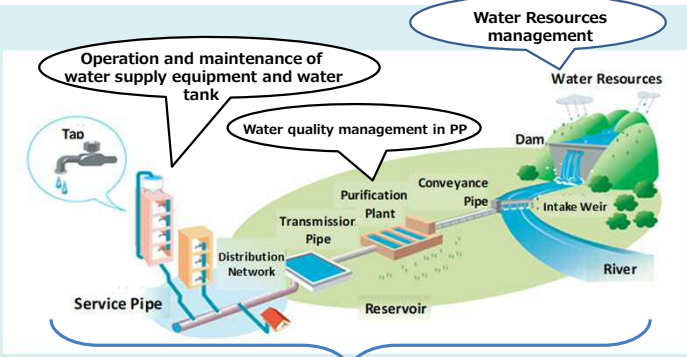
23

23

IV. Mid-term Management Plan (2016-2019) **Example**

Section 1 Safe and high-quality water 9 projects

Waterworks is important infrastructure that support civil lives and social activities, so waterworks is obligated to supply safe, high-quality water uninterruptedly.



The diagram illustrates the water supply process: River → Intake Weir → Dam → Conveyance Pipe → Purification Plant → Transmissior Pipe → Reservoir → Distribution Network → Service Pipe → Tap. Callouts highlight: 'Water Resources management' at the river, 'Water quality management in PP' at the purification plant, and 'Operation and maintenance of water supply equipment and water tank' at the reservoir.

Total management from water resources to taps

24

24

Example of major projects

Rehabilitation of Nishiya PP

Estimated project cost: 4.3billion yen
Capacity : 356 thousand m³/d

- Installing granular activated carbon treatment facility to adjust quality of raw water, along with quake-resistant reinforcement.

Treatment by activated carbon on a steady basis

Receiving pond Sedimentation basin Granular activated carbon Filtration basin Reservoir
Image of rehabilitation of Nishiya PP Rehabilitation area

[Index] Implementation status regarding progress of rehabilitation of purification facilities

- Current status: planning basic implementation plan
- Target: Quake-resistant construction of filtration basin is underway

25

25

IV. Mid-term Management Plan (2016-2019) **Example**

Section 4 Extensive information dissemination and service

9 projects

- Acquiring customer's understanding and trust is very important to operate sustainable waterworks.
- Disseminating adequate information in plain view, and providing services according to the needs by way of collaboration with local residents, community groups, utilizing ICT technologies and so forth are needed.

Information for customers
Providing information at community events, delivery workshop of waterworks

Customer services
Improving convenience by way of ICT technology.

26

26

Example of major projects

Quality improvement of bill collection

Estimated project cost: Nil

- Workshops for meter reading companies
- Promoting "Demonstration experiment of automated meter reading system on water and gas by radio transmission" collaborating with private companies

[Index] The number of workshops on meter reading

- Current status: 4 times/year
- Target: more than 4 times/year

Study tour for meter reading companies at a purification plant

27

27

IV. Mid-term Management Plan (2016-2019)

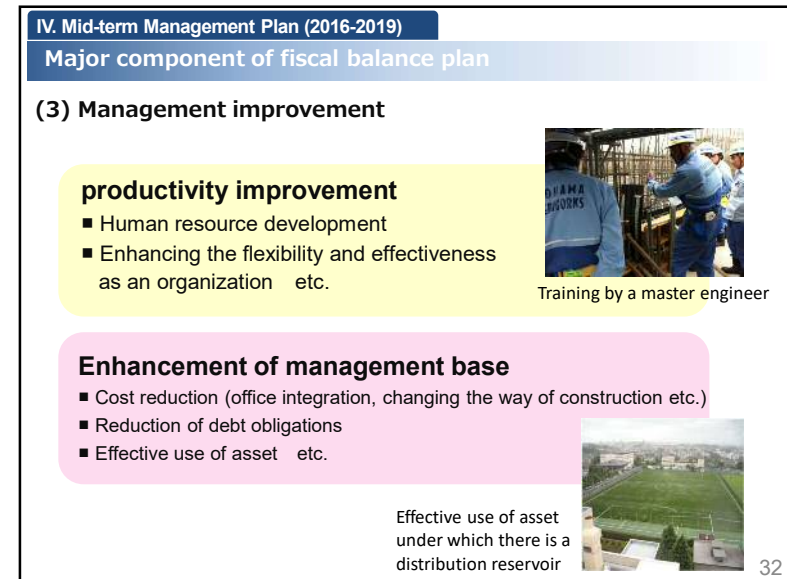
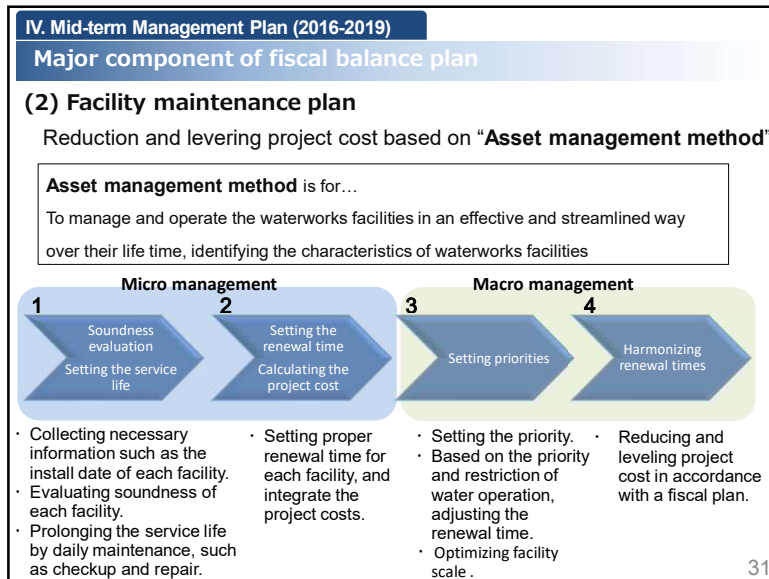
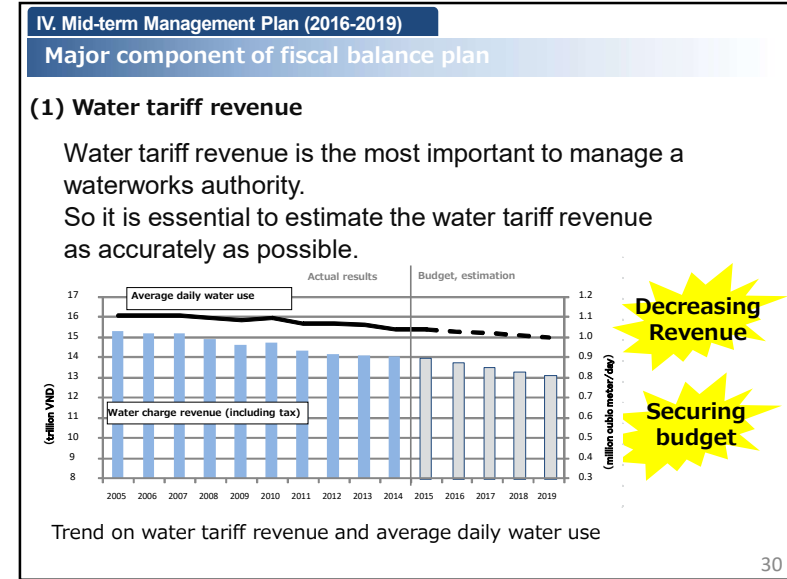
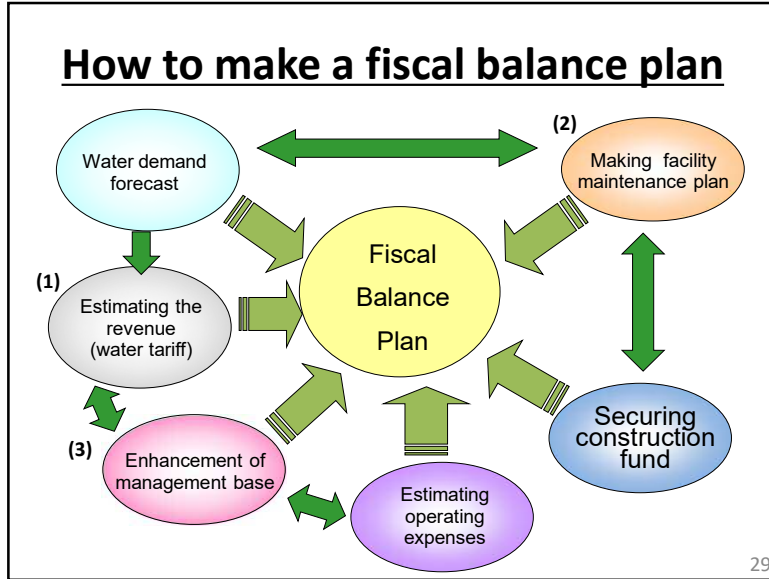
Fiscal Balance Plan

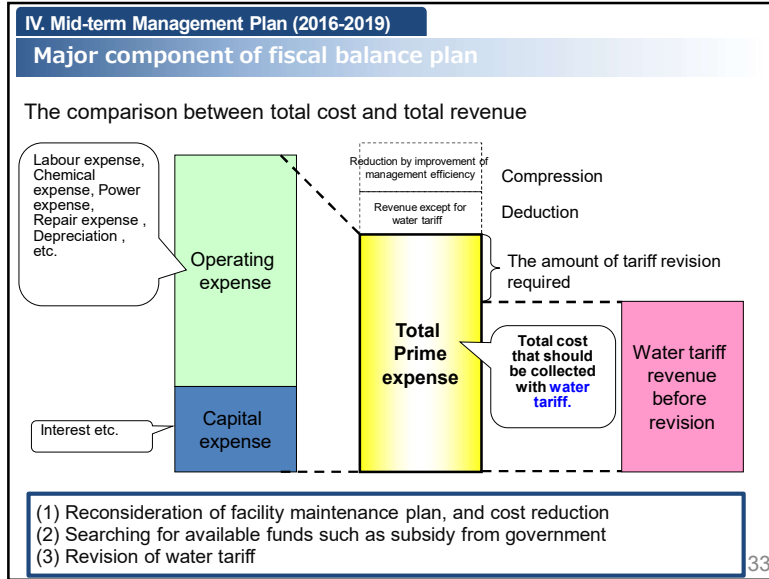
To make the plan feasible, fiscal balance plan is essential.

Classification of Budget	(Billion Yen ≒ Million Dollar)					
	Fiscal Year	2015 Budget	2016 Budget	2017 Plan	2018 Plan	2019 Plan
Profit and Loss						
Operating Revenue		87.6	86.4	85.2	83.8	82.7
Water Charge Revenue		69.8	68.8	67.7	66.5	65.6
Others		17.8	17.7	17.5	17.4	17.2
Operating Expense		77.6	77.4	77.1	77.3	76.3
Maintenance expense		53.3	53.0	52.7	53.1	52.0
Depreciation		20.7	21.0	21.1	21.2	21.4
Interest Expense		3.6	3.4	3.2	3.1	2.9
Net Profit for the year (excluding tax)		8.2	7.3	6.3	4.8	4.6
Balance of Capital						
Capital Revenue		10.3	9.6	10.8	9.9	10.3
Enterprise Bond		8.0	7.4	8.9	8.7	9.2
Others		2.3	2.1	1.8	1.2	1.1
Capital Expenditure		38.2	35.4	37.6	36.6	37.5
Expenditure for Construction		27.7	26.7	27.0	26.9	27.8
Redemption Cost on Enterprise Bond		9.9	8.2	10.3	9.5	9.6
Others		0.6	0.4	0.3	0.2	0.1
Balance of Capital		-27.8	-25.8	-26.8	-26.7	-27.2
Cash Flow						
Cash Retained from PL Account		15.6	16.7	16.8	16.9	17.1
Others		8.5	7.8	7.0	5.6	5.4
Cash Flow on Current Year		-3.8	-1.2	-2.9	-4.2	-4.7
Accumulated Fund Balance		16.2	15.0	12.1	7.8	3.2
Outstanding Amount of Enterprise Bond		167.3	166.5	165.2	164.3	163.8

28

28





33

What is the merits of loan?

◆ If you don't use loan for construction expenditure, you have to cover it only by water tariff instead.

Current customers: I can't understand why we have to pay all of it.

Future customers: No payment for it.

Statutory durable years : 40 years

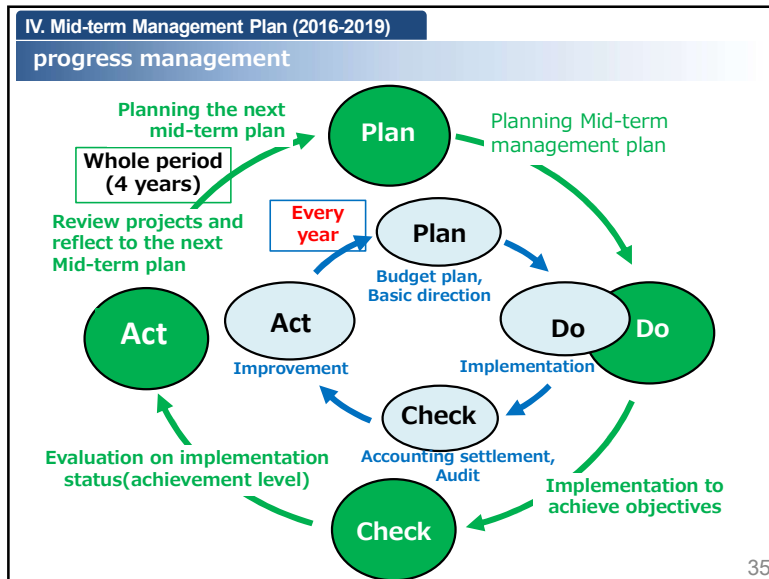
◆ therefore, we utilize loan so that the burden can be shared by each generation.

Current customers: Good!

Future customers: OK!

34

34



35

■ Compiling Process for Mid Term Plan

- To pick up important issues to be considered and have cross-sectoral discussion
e.g. : Determining the direction of major projects
Management improvement (Cost reduction, Staff allocation and so on)
The necessity of water tariff revision
- To scrutinize major projects in terms of their necessity, cost-performance and publicity
- To accumulate various opinions from inside/outside our authority and reflect them to the plan
e.g. : Questionnaire to customer
- To make it easier for customers to read and understand
e.g. : with well-designed photos and letters

36

36



**Yokohama Waterworks Bureau
Staffing Initiatives**

Establishing Engineers Specializing in Waterworks

September 7, 2017

**Personnel Affairs Division
Yokohama Waterworks Bureau**

0

1 Background to Establishing “Engineers Specializing in Waterworks”

(1) There is no way of preventing public service workers (who have been employed by the any bureau in Yokohama City Hall, including Waterworks Bureau) from transferring to other bureaus, which leaves the issue of how to maintain technology succession.

↓

Necessity for staffing that encourages workers to stay at Waterworks Bureau to enable technology succession over prolonged periods

(2) Veteran technicians and skilled workers, who underpin the distinctive portfolio of our water business, retire as their time comes.

↓

Essential to maintain/improve technical prowess of young staff cored around the engineering field that run the distinctive portfolio of our water business

1

2 Establishment of Engineers Specializing in Waterworks

The following are needed.

(1) Starting in FY2016, we have newly established the “Engineers Specializing in Waterworks”. This is a job category for employing people, who will be screened in the job candidate process of Yokohama City employment exams run by the personnel committee. However, successful candidates will be adopted by the Waterworks Bureau.

(2) With the “Engineers Specializing in Waterworks”, employees will build up their careers mainly in the distinctive portfolio of our water business (without having to leave the Waterworks Bureau), thoroughly learning the skill and knowledge needed to support on-site work, and taking the role of provider for technology succession.

2

3 Career Format of “Engineers Specializing in Waterworks”

After being employed, engineers specializing in waterworks will mainly work for about ten years on site, engaging in the three types of work of “Occupational Field A”, to build up knowledge and experience in the distinctive portfolio of our water business.

Occupational Field A:

- (1) Facility maintenance management at waterworks office
- (2) Facility maintenance management at distribution management section (water operation)
- (3) Operation management (operator) at purification plant

After working for ten years, engineers specializing in waterworks will, in accordance with suitability, engage in work in occupational field A, B or C.

Occupational Field B: Supervisory work in sections such as technical general affairs

Occupational Field C: Work such as design or construction overseer

3

4 Initiatives to encourage People to sit Job Exams

Due to competition from neighboring cities and private firms, getting people to sit exams for technical jobs (a difficult staffing category) is an issue faced across all job types at Yokohama City.

(1) Initiatives Across All Work Areas at Yokohama City (Personnel Committee)

- Brochure production and e-zine distribution
- Hold employment seminars and career counselor workshops
- Advertise for internship trainees

(2) Waterworks Bureau Initiatives

Directly visit major technical high schools and technical junior colleges across the country, to explain our work to career counselors and students interested in becoming local government workers, encouraging the latter to sit the relevant exams (40 schools visited in FY2017).

4

4

5 Employment Exam Implementation Status (FY2016)

Engineers Specializing in Waterworks Employment Exams
(For senior high school graduates and equivalents: 18 to 21 years of age)

(1) Primary Exam

- 50 education-related questions
(testing general knowledge/intelligence of senior high school graduates)
- 40 specialty questions
(to be selected from civil, mechanical or electrical subject)

(2) Secondary Exam Individual interview


Exam Classification (Senior High School Graduate or Equivalent)	Applicants (people)	Primary Passes (people)	Final Passes (people)	Ratio of Applicants (fold)
Waterworks Technology	21	16	10	2.1
[Reference]				
Civil	5	3	1	5.0
Mechanical	3	1	1	3.0
Electrical	4	4	3	1.3

5

5

Yokohama Waterworks Bureau Vision for the Development of Human Resources

Waterworks professionals with the ability to think and act on their own initiative



September 7, 2017
Human Resources Development Division
Yokohama Waterworks Bureau

Mascot of Yokohama City Waterworks Bureau "Hama-pyon"

1

1

Introduction

1887: Japan's first modern water supply system

"To contribute to the improvement of public health and the betterment of the living environment through the provision of a supply of clean, ample and inexpensive water"
(Waterworks Act, Article 1)

Outlook for the future
Declining water demand due to a decrease in population and the spread of new water-saving equipment
↓
Declining income from water tariff

The need to secure financing
The updating and earthquake-proofing of aging facilities

2

2

Introduction

- The stable supply of safe, good-quality water 24 hours a day, 365 days a year
- High-profit, efficient management

"Mission awareness"
"Pride and a sense of responsibility"
"A sense of speed and a desire for innovation"

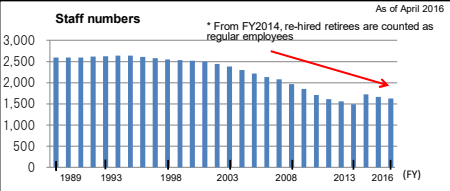
Every member of staff doing his/her best makes the whole organization stronger

3

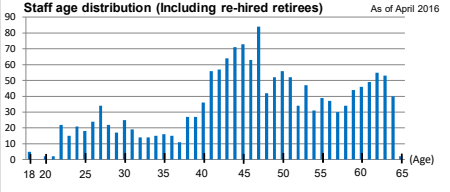
3

The Environment Surrounding the Waterworks Bureau, and Challenges for the Future

Staff numbers As of April 2016
* From FY2014, re-hired retirees are counted as regular employees.



Staff age distribution (including re-hired retirees) As of April 2016



4

4

What We Want in Our Staff

What is required of Yokohama City personnel

Personnel who love Yokohama, is trusted by the people and can think and act on their own initiative

+

The image of the ideal personnel that we in the waterworks business strive towards

Waterworks professionals with the ability to think and act on their own initiative

- Personnel who feel pride, responsibility and a sense of mission as personnel in charge of the water supply business
- Personnel with the sensitivity to pick up on customer needs and the know-how and skills to meet those needs
- Personnel with a **sense of speed** and a **desire for innovation**: with the ability to think for themselves, take stock and act: always ready to take on a new challenge

5

5

【Basic Approach to Human Resource Development】 Personnel Training that Matches the Abilities of the Individual Member of Staff

The diagram illustrates a continuous cycle for human resource development. It starts with 'Staff reassignment based on evaluation and career path' leading to 'Setting of training targets according to personnel performance evaluation'. This leads to a 'Diagram of an upward spiral' which includes 'Performance of duties', 'Setting of more ambitious targets', and 'Evaluation, staff reassignment'. The spiral is supported by 'Improvement/development of competence to reach the target (OJT/Off-JT (off-the-job training), Self-Development (SD))'. The cycle concludes with 'Demonstration of ability in the performance of duties', which is 'Reflected in promotion/pay rise', leading back to 'Review through career development consultation' and 'Review through personnel performance evaluation', which then feeds back into 'Setting of training targets'.

6

6

【Basic Approach to Human Resource Development】 Human Resource Development Management Cycle

This diagram provides a detailed view of the HRD management cycle. It features a central 'Diagram of an upward spiral' with 'Performance of duties' at its core. The spiral is driven by 'Growth through OJT, Off-JT and SD'. The cycle is supported by 'Improvement/development of competence to reach the target (OJT/Off-JT (off-the-job training), Self-Development (SD))'. The process begins with 'Staff reassignment based on evaluation and career path' leading to 'Setting of training targets according to personnel performance evaluation'. This leads to 'Review through career development consultation' and 'Review through personnel performance evaluation'. The cycle concludes with 'Demonstration of ability in the performance of duties', which is 'Reflected in promotion/pay rise', leading back to 'Setting of training targets'.

7

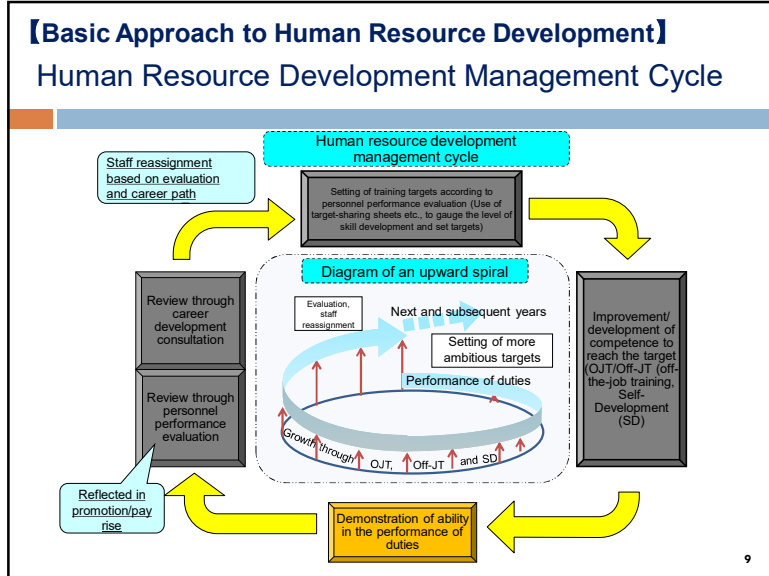
7

【Basic Approach to Human Resource Development】 Human Resource Development Management Cycle

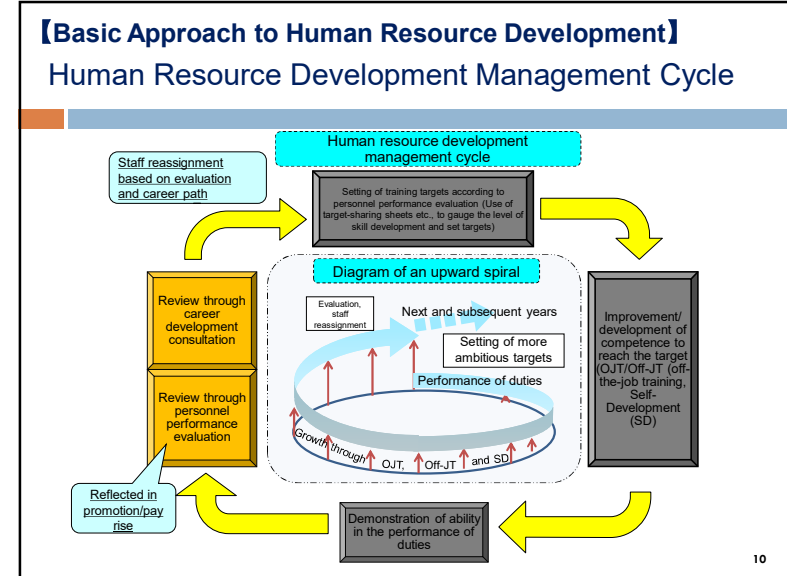
This diagram is another detailed view of the HRD management cycle, similar to slide 7. It features a central 'Diagram of an upward spiral' with 'Performance of duties' at its core. The spiral is driven by 'Growth through OJT, Off-JT and SD'. The cycle is supported by 'Improvement/development of competence to reach the target (OJT/Off-JT (off-the-job training), Self-Development (SD))'. The process begins with 'Staff reassignment based on evaluation and career path' leading to 'Setting of training targets according to personnel performance evaluation'. This leads to 'Review through career development consultation' and 'Review through personnel performance evaluation'. The cycle concludes with 'Demonstration of ability in the performance of duties', which is 'Reflected in promotion/pay rise', leading back to 'Setting of training targets'.

8

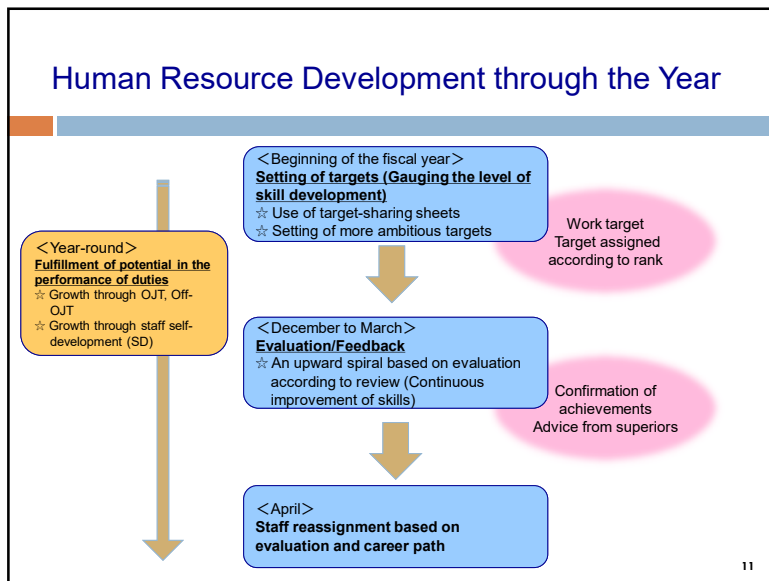
8



9



10



11

【By Rank】 Expectations and Career Development

	Level I staff (Recruitment – Junior staff)	Level II Staff (Mid-level staff)	Level III Staff (Veteran staff)
Role to be fulfilled by the employee	The staff member should master and build on the basics required of Waterworks Bureau personnel and at the same time work to invigorate the workplace from a fresh perspective	The staff member should support the workplace as a mid-level member of staff, providing assistance to the subsection chief and guidance to subordinates	The staff member should participate in the management of the section/subsection, demonstrating leadership and making efforts to guide and train subordinates in accordance with a high level of executive ability
Image of career development	The period for mastering the basics required of Waterworks Bureau personnel and discovering one's aptitude	The period for focusing hard on career development and working hard to further develop competence	The period for playing an active role as a central figure in the workplace, making the most of the know-how, experience and competence gained over the years
The role to be played by re-hired retirees			
The staff member should contribute to the smooth running of the workplace, making the most of his/her wealth of experience and working to train younger personnel and to pass on his/her know-how and skills			

12

12

【By Rank】 Expectations and Career Development

	Level I staff (Recruitment – Junior staff)	Level II Staff (Mid-level staff)	Level III Staff (Veteran staff)
Role to be fulfilled by the employee	The staff member should master and build on the basics required of Waterworks Bureau personnel and at the same time work to invigorate the workplace from a fresh perspective	The staff member should support the workplace as a mid-level member of staff, providing assistance to the subsection chief and guidance to subordinates	The staff member should participate in the management of the section/subsection, demonstrating leadership and making efforts to guide and train subordinates in accordance with a high level of executive ability
Image of career development	The period for mastering the basics required of Waterworks Bureau personnel and discovering one's aptitude	The period for focusing hard on career development and working hard to further develop competence	The period for playing an active role as a central figure in the workplace, making the most of the know-how, experience and competence gained over the years

The role to be played by re-hired retirees

The staff member should contribute to the smooth running of the workplace, making the most of his/her wealth of experience and working to train younger personnel and to pass on his/her know-how and skills

【By Rank】 Expectations and Career Development

	Level I staff (Recruitment – Junior staff)	Level II Staff (Mid-level staff)	Level III Staff (Veteran staff)
Role to be fulfilled by the employee	The staff member should master and build on the basics required of Waterworks Bureau personnel and at the same time work to invigorate the workplace from a fresh perspective	The staff member should support the workplace as a mid-level member of staff, providing assistance to the subsection chief and guidance to subordinates	The staff member should participate in the management of the section/subsection, demonstrating leadership and making efforts to guide and train subordinates in accordance with a high level of executive ability
Image of career development	The period for mastering the basics required of Waterworks Bureau personnel and discovering one's aptitude	The period for focusing hard on career development and working hard to further develop competence	The period for playing an active role as a central figure in the workplace, making the most of the know-how, experience and competence gained over the years

The role to be played by re-hired retirees

The staff member should contribute to the smooth running of the workplace, making the most of his/her wealth of experience and working to train younger personnel and to pass on his/her know-how and skills

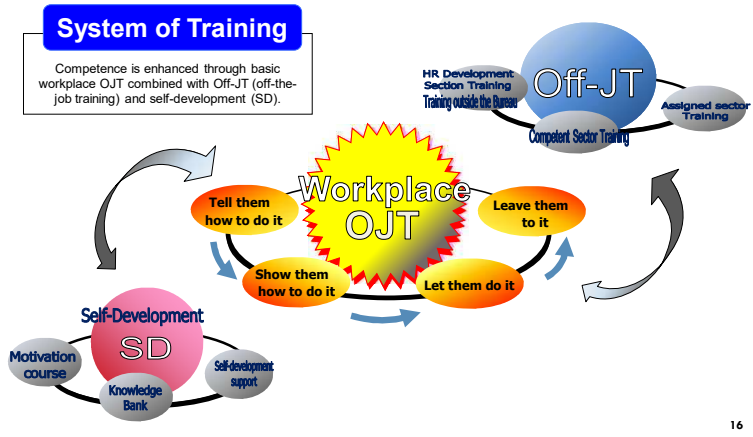
【By Rank】 Expectations and Career Development

	Level I staff (Recruitment – Junior staff)	Level II Staff (Mid-level staff)	Level III Staff (Veteran staff)
Role to be fulfilled by the employee	The staff member should master and build on the basics required of Waterworks Bureau personnel and at the same time work to invigorate the workplace from a fresh perspective	The staff member should support the workplace as a mid-level member of staff, providing assistance to the subsection chief and guidance to subordinates	The staff member should participate in the management of the section/subsection, demonstrating leadership and making efforts to guide and train subordinates in accordance with a high level of executive ability
Image of career development	The period for mastering the basics required of Waterworks Bureau personnel and discovering one's aptitude	The period for focusing hard on career development and working hard to further develop competence	The period for playing an active role as a central figure in the workplace, making the most of the know-how, experience and competence gained over the years

The role to be played by re-hired retirees

The staff member should contribute to the smooth running of the workplace, making the most of his/her wealth of experience and working to train younger personnel and to pass on his/her know-how and skills

【Basic Approach to Human Resource Development】 Working towards Improvement/Development of Staff Competence and the Fulfillment of Staff Potential



Orientation of Human Resource Development Efforts

HR development enabling staff to make the most of their potential



HR development based on staff views of career development

HR development in support of sustainable waterworks

HR development aiming to achieve 100% customer satisfaction

HR development able to render service both at home and abroad

17

Orientation of Human Resource Development Efforts

HR development enabling staff to make the most of their potential



HR development based on views of career development

HR development in support of sustainable waterworks

HR development aiming to achieve 100% customer satisfaction

HR development able to render service both at home and abroad

18

Orientation of Human Resource Development Efforts

HR development enabling staff to make the most of their potential

HR development based on staff views of career development

HR development in support of sustainable waterworks

HR development aiming to achieve 100% customer satisfaction

HR development able to render service both at home and abroad



19

Orientation of Human Resource Development Efforts

HR development enabling staff to make the most of their potential

HR development based on staff views of career development

HR development in support of sustainable waterworks

HR development aiming to achieve 100% customer satisfaction

HR development able to render service both at home and abroad



20

Orientation of Human Resource Development Efforts

HR development enabling staff to make the most of their potential

HR development based on staff views of career development

HR development in support of sustainable waterworks

HR development aiming to achieve 100% customer satisfaction

HR development able to render service in domestic and overseas



21

21

The Role to be Performed by the Supervisor

The attitude and behavior expected of a supervisor

The intent to nurture each and every staff member
Discussion and sharing of training policies

Seizing every opportunity to approach staff members



The role of the supervisor in the workplace

A full realization of the significance of human resource development
Taking full advantage of every opportunity, including OJT, Off-JT and SD, to improve/develop staff competence



Creating an environment that is conducive to human resource development

Promotion of OJT based on the PDCA cycle

22

22

In Closing...

Thank you very much for your attention.



23

23

Yokohama Waterworks Bureau (YWWB) Initiatives for Technology Succession

Master Engineer (ME) System

September 7, 2017

Yokohama Waterworks Bureau 1

1

Index

1. **Employment and Job Categories**
2. **Technology Succession**
 - (1) Background & Issues
 - (2) Outline of ME System
 - (3) Assistant ME Training
 - (4) Benefits
 - (5) Future Issues in ME System

Yokohama Waterworks Bureau 2

2

1. Employment and Job Categories

- * Job categories are separated at time of employment
- * Work to be handled divided according to job category

Categories are not just limited to Waterworks Bureau they are for all of sections of Yokohama City Hall (excluding the engineers specializing in waterworks)

Job Category	Work Handled	
Clerical work	General administrative work	
Engineer	Civil	Work with special techniques in civil engineering
	Electrical	Designing and managing electrical equipment, etc.
	Mechanical	Designing and managing mechanical equipment, etc.
	Environmental (Chemical, bio)	Proposing and planning environmental projects
Technician	Repairing and maintenance work	
Engineers specializing in Waterworks	Specializing in technologies related to waterworks	
Others	Firefighter, welfare officer, nursery teacher, etc.	

Yokohama Waterworks Bureau 3

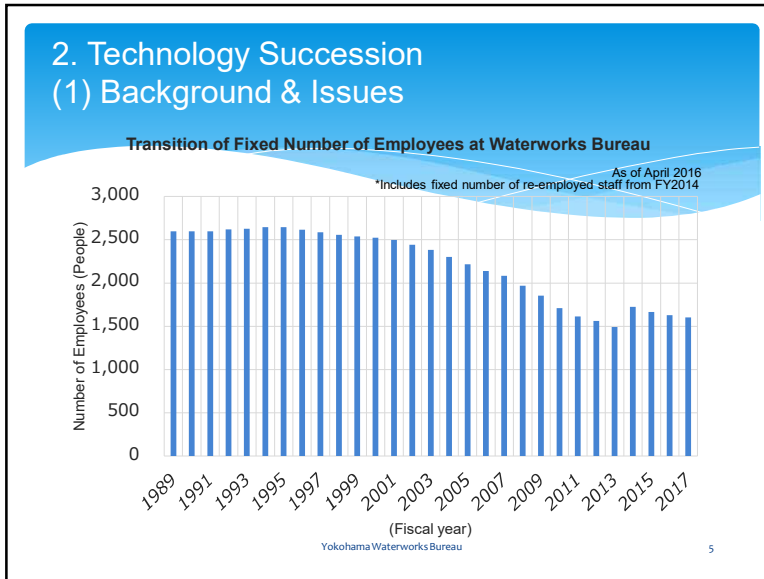
3

Index

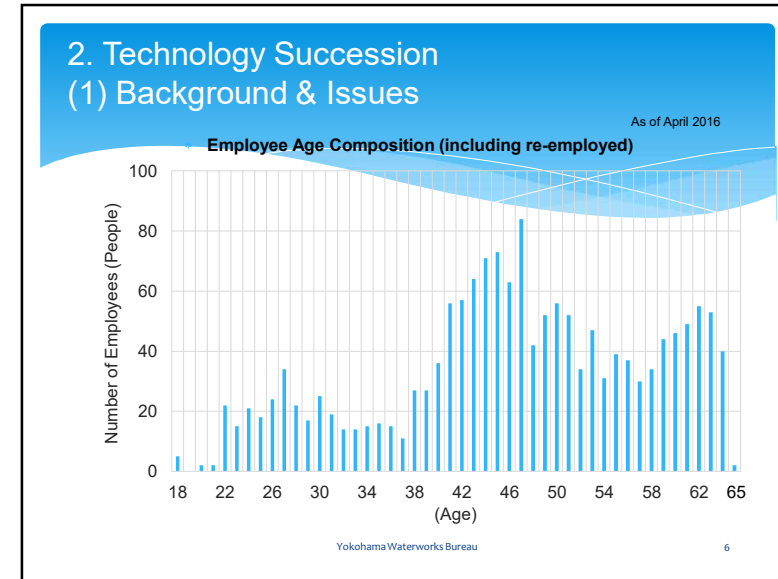
1. **Employment and Job Categories**
2. **Technology Succession**
 - (1) Background & Issues
 - (2) Outline of ME System
 - (3) Assistant ME Training
 - (4) Benefits
 - (5) Future Issues in ME System

Yokohama Waterworks Bureau 4

4



5



6

2. Technology Succession (1) Background & Issues

- * Background: Veteran employees from baby boom generation are retiring in large numbers.
- * Issues: Losing the skills veteran employees possess.

(1) Age composition of Japanese population has a bias as the baby boomers (born between late 40s and 50s) are comparatively numerous.

(2) Retirement age at YWWB is 60 (maximum of 65 for re-employed workers), so there is a fear that veterans' skills will be lost as the baby boomer generation have been retiring in large numbers in recent years.

Yokohama Waterworks Bureau

7

2. Technology Succession (2) Outline of ME System (aim)

ME: Master Engineer

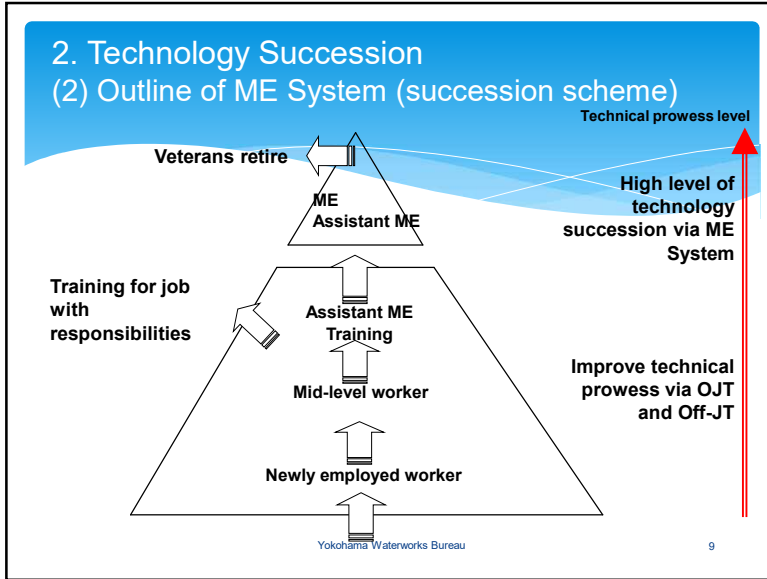
- * ME system started in FY2011.
- * Engineer with high levels of skill and knowledge certified as ME by Waterworks Bureau.
- * Technical role made clear.

(1) Strive to improve waterworks skills and knowledge of junior engineer.

(2) Strive to steadfastly maintain and develop engineering prowess in Waterworks Bureau.

Yokohama Waterworks Bureau

8



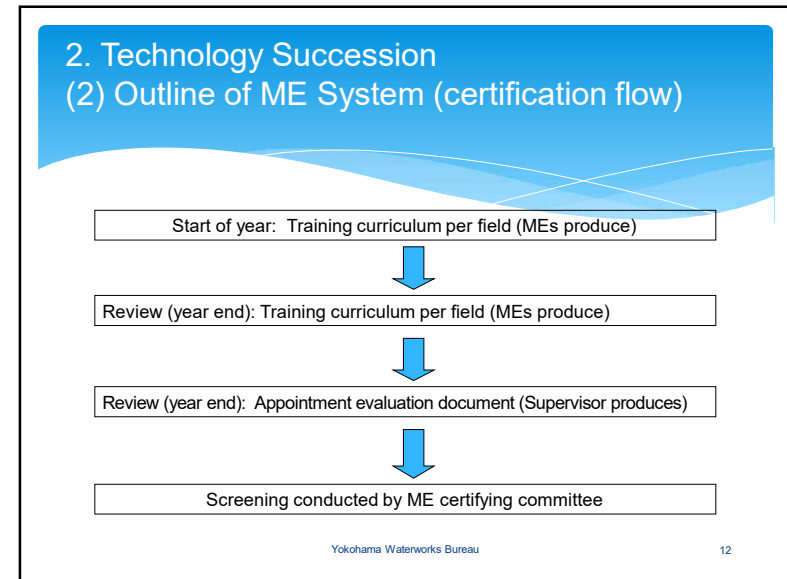
9

- ### 2. Technology Succession (2) Outline of ME System (succession fields)
- <Specialist Field>
- 1 Civil engineering design, overseeing (large diameter pipe laying, big-scale civil engineering jobs)
 - 2 Water operation (distribution)
 - 3 Supply water inspection
 - 4 Water operation (purification)
 - 5 Equipment
 - 6 Purification processing
 - 7 Water quality
- Yokohama Waterworks Bureau
- 10

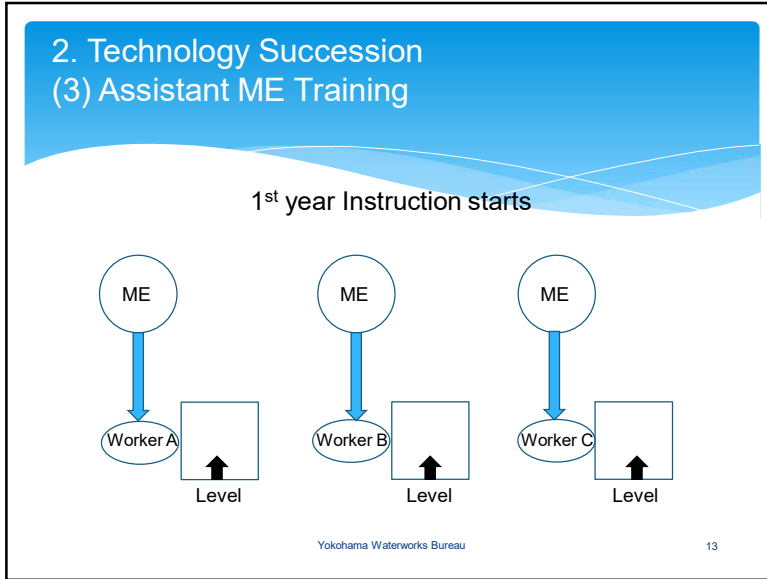
10

- ### 2. Technology Succession (2) Outline of ME System (training period and eligible people)
- * Some 100 vastly experienced veterans retired over four years (2012 to 2015), so training is underway to supplement them.
 - * Every year, training status is checked via the curriculum (preparation of technical items required per field).
- Yokohama Waterworks Bureau
- 11

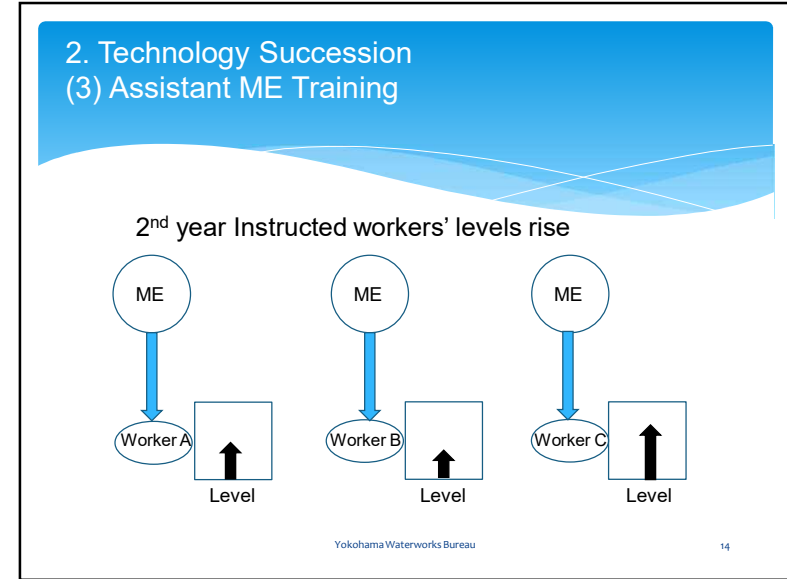
11



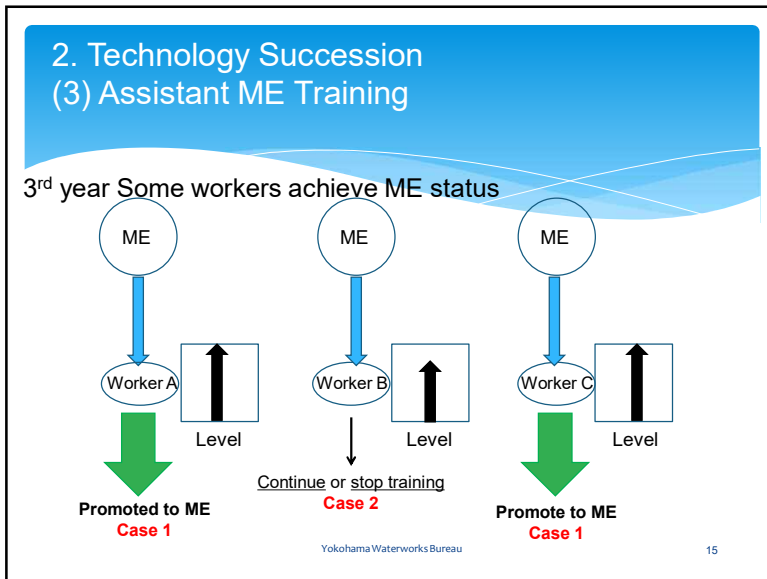
12



13



14



15



16

2. Technology Succession (4) Benefits

- * 111 MEs certified up to now.
- * Currently, 94 MEs are actively working.

1 Civil engineering design, overseeing (large diameter pipe laying, big-scale civil engineering jobs):	32 people
2 Water operation (distribution):	17 people
3 Supply water inspection:	15 people
4 Water operation (purification):	8 people
5 Equipment:	12 people
6 Purification processing:	7 people
7 Water quality:	3 people

Yokohama Waterworks Bureau 17

17

2. Technology Succession (5) Future Issues in ME System

- * The aim of the ME System is to promote technology succession in the Waterworks Bureau; however, some workers shift to other bureaus.
- * The Waterworks Bureau has introduced its own "Engineers specializing in Waterworks" employment system from FY2017. As a rule, the technical water-workers will be people who will not leave the Waterworks Bureau, and who will spend a long period gaining experience at the Waterworks Bureau, learning the necessary knowledge to become a skilled water-works engineer.

Yokohama Waterworks Bureau 18

18

2. Technology Succession (5) Future Issues in ME System

- * Senior high school graduates basically will be the people eligible for Engineers specializing in Waterworks positions, so, in most cases, there will be no need for an excess in technical qualifications from universities, etc., in areas requiring specialty knowledge about civil engineering, electrical and mechanical matters.
- * Once employed, workers will relatively swiftly (envisaged to be about three years) learn the basics in the their required specialist field(s), civil engineering, electrical and/or mechanical matters.

Yokohama Waterworks Bureau 19

19

2. Technology Succession (5) Future Issues in ME System

Current Status of System

(On-job Training 1:1~)

```

    graph TD
      A[Workplace A] --- ME1[ME]
      A --- AME1[Assistant ME]
      B[Workplace B] --- ME2[ME  
(Assistant ME not present)]
      C[Workplace C] --- AME2[Assistant ME  
(ME not present)]
      D[Workplace D] --- ME3[ME]
      D --- AME3_1[Assistant ME]
      D --- AME3_2[Assistant ME]
  
```

20

20

