

## **Enquiry for FSC Lautoka Raw Water Treatment Plant Upgrade**

Raw water is taken from a nearby dam several kilometers away from the FSC sugar factory in Lautoka and passed through an existing Water Treatment Plant to supply the Factory and domestic housing estate with treated water. This WTP is now run down and in need of an upgrade with appropriate technology to provide a safe and secure source of Potable Water to FSC employees

### **Present Treatment System**

1. Consists of an Alum Mixing Tank (existing one not Automated).
2. A holding tank after Alum Treatment.
3. A pair of large sand filters that are presently backwashed manually.
4. A filtered water holding tank and a series of purges, on manual control.
5. Various untreated and treated water pipes and Valves (cross contamination occurs).
6. A chlorine gas / liquid chlorine dosing station

### **Tender Requirements**

1. To supply rehabilitate the existing WTP to produce POTABLE WATER that is to a quality as per the details provided in Annexure -1.

### **Scope of Work - To Be Carried Out By Tender Company/Bidder.**

1. Review existing Water Treatment Plant Operations.
2. Thorough cleaning and painting of all existing Tanks, connecting Pipes and Valves.
3. Repairing of all leaks and servicing of all valves and rotary equipment
4. Tidying up of all electrical racking and cables
5. Repair servicing of all required control and instruments equipment
6. Removal of all redundant mechanical, electrical and instrumentation equipment
7. Supply and change Sand in the Sand Filters, clean the internals of the sand filter vessels.
8. Paint Internals of all Tanks with suitable Paints that are safe/hygienic for Portable Water use.
9. Propose optional final stage Chemical Free method for manufacture of Potable water for FSC to consider
10. Paint all externals of piping, mark directions of flow and Water Quality in such pipes.
11. Install a PLC Automated Control System for presently installed Pumps, manpower requirement should be nil for operating the system. One person will be made available for toping up the Alum as and when required.
12. All pump drives need to be controlled by VF drives.
13. Sand Filter vessel need to be fitted with Automated Backwash System that also helps agitate the sand for improved Back washing (electrically operated valves).
14. Successful Tender Contractor/Bidder has to carry out prior Pathogen Water Analysis and also Pathogen Water Analysis after the system upgrade. These test results are to be presented to FSC.

15. Tender to Commission the new Water Treatment Systems to include training FSC's selected operators.
16. Supply new system flow Process and Instrumentation diagram, and system description manual.
17. Supply all new equipment manuals and O&M Manual for the new Water Treatment Plant in hard and soft copy , 2 set each
18. Provide training for FSC personnel for carrying out required periodic tests for water quality.
19. Carry out weekly water samples for 3 months after Plant Commissioning, Present Findings Report to FSC on a weekly Basis.

## ANNEXURE -1

### Parameters for drinking water :

#### 1. Bacteriological quality :

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Parameters	Maximum value
Thermotolerant ( Fecal) coliforms	0 per 100 ml.
E coli	0 per 100 ml.
Total coliforms	0 per 100 ml.

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#### 2. Chemical constituents of health significance in drinking water:

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Parameter	Maximum value mg/L( ppm)
Antimony	0.02
Arsenic	0.01
Barium	0.7
Boron	0.5
Cadmium	0.003
Chromium	0.05
Cyanide	0.07
Fluoride	1
Lead	0.01
Mercury	0.001

Molybdenum	0.07
Nickel	0.02
Nitrate as NO <sub>3</sub> <sup>-</sup>	50
Nitrate as NO <sub>2</sub> <sup>-</sup>	3
Selenium	0.01

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3. Organic constituents of health significance to drinking water:

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Parameter <sup>a</sup>	Maximum value <sup>b</sup> ( mg/L) ppm
Benzene	0.01
<b>Disinfection by-products</b>	
Total Trihalomethanes	0.25
<b>Pesticides</b>	
2,4,D <sup>+</sup>	0.03
Chlorpyrifos	0.03
Dicamba	0.1
Diuron	0.1
Glyphosate	0.5
MCPA <sup>++</sup>	0.002
Malathion	0.3
Paraquat	0.03

<sup>a</sup> Routine monitoring for organic constituents is not required unless there is a potential for contamination of water supplies .

<sup>b</sup> For very low concentration, laboratory results are reported in ppb or µg/L.

<sup>+</sup> 2,4 -dichlorophenoxyacetic acid.

<sup>++</sup> 4-( 2- Methyl-4-chlorophenoxy) acetic acid.