San Javier D.W.T.P
(Querétaro, México)

Name: Drinking Water Treatment Plant San Javier
Client: Comisión Estatal de Aguas de Querétaro
Situation: Querétaro (México)
Start-up date: 2011

FLOW

Design flow: 129.600 m^3/d
Peak flow: 155.520 m^3/d

WATER LINE

Flow rate of raw water

1 Throttle valve servomotor-driven
1 Electromagnetic flowmeter, Ø 1.200 mm

CO_2 Dosing

Nº lines of supply: 2
Application chamber: 2 uds of 6,00 x 5,00 x 6,47 m, Vu = 54,91 m^3
Carbon dioxide: liquid supply in pressure vessel
Stockage: 2 metallic basin Vu = 27 m^3 GL
Inlet chamberIsolation system : manual gate
Inlet chamber system: submerged weir
Outlet chamber system: lower deflector

Fast mixing chamber

Nº of lines: 2 uds
Nº panels per line: 1 ud, of 5,00 x 5,00 x 6,40 m, Vu = 160 m^3
Agitation: 2 agitators (1 per chamber) of 7,50 kW

Flocculation

Nº lines: 2 uds,
Nº chambers per line: 1 ud, of 11,50 x 11,50 x 4,07 m
Nº panels per chamber: 2 uds
Total volume adopted: 2.153 m^3
Agitation: 4 agitators (one per panel), of 0,75 kW

Reagent installation

Aluminium sulphate

Supply: liquid
Stockage: 2 reservoirs PRFV, Vu = 30.000 l
Backing-up basin: 2 uds
Decanting: 2 (1+1) horizontal centrifugal pumps, Qu = 25 m^3/h
Dosing: 3 (2+1) dosing pumps, Qu = 125 l/h

Poly electrolyte anionic

Supply: liquid emulsion
Stockage:12 drums, Vu = 200 l
Setting: 2 (1+1) setting facilities, Vu = 1.700 l
Decanting: 2 (1+1) pumps, Qu = 14 l/h
Dosing: 3 (2+1) helicoidal screw pumps, Qu = 350 ÷ 700 l/h

Potassium permanganate

Stockage: scale solid
Stockage: 72 drums of 50 kg of unitary capacity
Dosing: 2 (1+1) volumetric dosing, of 10 kg/h per unity
Setting and dilution: 2 tanks of PRFV, Vu = 5.000 l, 2 agitators of 0,37 kW
Backing-up basin: 2 uds, Vu = 5.000 l
Dosing: 3 (2+1) pumps, Qu = 236 l/h

Pre oxidation and disinfection with gas chlorine

Supply: container
Stockage: 10 containers with a unitary capacity 9 kg
Chlorometers: 3 (2+1) en prechlorination, 1 in postchlorination
Ejector pumps: 3 (2+1) in prechlorination and 1 in postchlorination, Qu = 5 m^3/h

Sodium hydroxide

Supply: liquid
Stockage: 2 Reservoirs of PRFV, Vu = 40.000l
Decanting: 3 (2+1) horizontal pumps, Qu = 25 m^3/h
Backing-up basin: 2 uds
Dosing: 3 (2+1) pumps, Qu = 236 l/h

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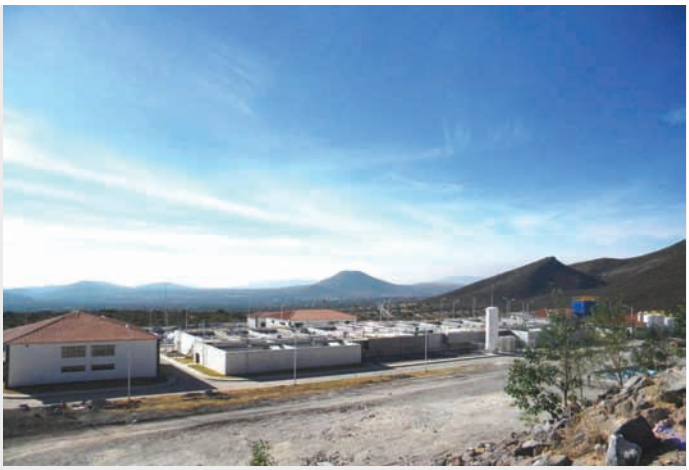

Laminated clarifier
Feeding: standard channel
Nº of lines: 2
Nº clarifiers: 6, 3 x line
Flow to treat per clarifier: 945 $m^{3/}$/h
Nº total lamellas module: 80 uds, per clarifier
Shape and material: sergeant braid, PPTV
Total volume lamella per clarifier: 170,94 m^3

Sludge blowdown
Collection system: cowcatchers
Nº blowoff pipe: 6 uds, Ø 150 mm
Drained sludge flow: 639,70 m^3/d

Filtration on grit bed
Type of filters: closed
Operating control: semiautomatic
Nº lines: 2 ud.
Nº service filters: 12 x line, 24 total
Dimensioning: 3,50 Ø x 11,40 x 13,20 l total
Filtration surface: 42 m^2
Draining bed: glassmaking sand
Bed thickness: 1,20 m
Filter volume: 56,608 m^3
False head construction: polypropylene punched plate
collection system of filtered water: by nozzles
Nº nozzle per filter: 2.075
Nozzle total amount: 49.800
Regulation system: level variation in feeding chest

Washing-filter blowers
Type: rotational pistons
Nº machines: 3 (2+1) , Qu = 2.520 Nm^3/h

Washing-filter pumps
Type: Submersible centrifuges
Nº machines: 3 (2+1), Qu = 1.050 m^3/h

Filter wash water recovery
Nº tanks: 1, de 20,00 l x 6,65 a x 4,60 h, meters
Volume: 525 m^3

Pumping Equipment
Type of pumps: submersible centrifuges
Nº pumps: 3 (2+1), Qu = 135 m^3/h

Treated water tank
Nº tanks: 1 de 20 l x 6,65 a, x 5,40 h, meters
Useful volume: 630,42 m^3

Flow rate
1 magnetic flowmeter in pipe, Ø 1.200 mm

SLUDGE TREATMENT

Sludge pumping to clarifiers
3 (2+1) submersibles centrifuges , Qu = 35 m^3/h

Sludge thickener
2 thickeners of 7,2 l x 2,33 a x 2,03 h, meters
Drain system: superficial cowcatcher
Pressurized water pumping : 2 horizontal pumps
centrifuges, Qu = 10 m^3/h
pressurized air: 2 compressors, Qu = 260 l/min
Flocculation: 2 flocculators, coil type
Sludge conditioning
Type and supply: solid poly electrolyte
Stockage: 10 sacks (250 kg unity)
Dilution: constantly automatic preparation system, 2 (1+1)
de 1.700 l/h
Dosing: 2 (1+1) helicoidal screw pumps, Qu = 300 l/h

Thickener sludge stockage - homogenization
1 tank, 9,80 l x 9,60 a, x 2,70 h, meters, V = 216,38 m^3
2 submersible agitators, Pu = 1,70 kW

Sludge dewatering
Centrifuges feeding: 2 (1+1) progressive cavity pumps
Qu = 8 ÷ 15 m^3/h
Sludge conditioning
Type and supply: solid polyelectrolyte
Stockage: 10 bags (250 kg unity)
Dilution: constantly automatic preparation system, 2 (1+1)
de 1.700 l/h
Dosing: 2 (1+1) progressive cavity pumps, Qu = 400 l/h
Centrifuges: 2 unities, Qu = 10 m^3/h

Pumping and sludge dewatering stockage
Pumping: 2 progressive cavity pumps, Qu = 2,50 m^3/h
Stockage: 2 hopper, de 60 m^3 of unitary capacity

Casting and drain pumping
Physical - chemical casting
Type of pumps: Horizontal centrifuges
Nº pumps: 2 (1+1), Qu = 50 m^3/h
Sludge treatment drainage
Type of pumps: submersible centrifuges
Nº pumps: 2 (1+1), Qu = 75 m^3/h

Service water and Irrigation
1 pressure system, Q = 50 m^3/h