The low-lift pumps consist of one direct connected, motor-driven, centrifugal pump and one direct connected, steam-turbine-driven pump, each having a capacity of 700 U.S. gallons per minute. These pumps are designed to lift against a head of 30 ft. The motor-driven pump will serve as the regular pumping unit, the steam turbine pump to be used as stand-by in case of electric power failure at any time. The existing intake from the river, widened at this point to Lake Deschenes, is utilized by the low-lift pumping units, the suctions being so connected to this intake that the raw water may be pumped directly to the coagulating basin. Or at any time, should the need arise, the same intake may be used by the highlift pumping units.

The Chemical Feed

It is desirable to maintain a constant level in the coagulating basin. This is accomplished by placing on the discharge line of the low-lift pumps a hydraulic valve operated by a pilot valve and float placed in a chamber at the high-water line of the coagulating basin. It is possible, by the adjustment of the float, to vary the elevation of the water in the coagulating basin about 6 inches. The function of the hydraulic valve is to throttle, when necessary, the discharge from the pump, which operates at constant speed; or in case of the water lowering, to open and allow more water to pass, thus maintaining the constant level desired in the basin.

The plant is designed to use sulphate of alumina as a coagulant. The tanks for the preparation and storage of this solution are located on the filter operating floor level, the solution being fed by gravity to the raw water. The solution tanks are two in number and have a capacity of 500 U.S. gallons each. Each solution tank is provided with a dissolving tray, water-motor-driven agitating devices and alum solution filters. The tanks are of concrete, the inside surface having been specially treated with creosote oil and Barrett Specification pitch to prevent the action of the sulphate of alumina. All of the piping and fittings in connection with the solution tanks are either of acid bronze or lead. Proper drain outlets are provided and there are also provided depth gauges carefully calibrated to record the quantity of solution passing from the tanks.

Three orifice boxes are provided for measuring the sulphate of alumina solution which passes to the water to be treated. These boxes are located just north of the amount of coagulant. The second and third orifice boxes are used for the secondary application of coagulant to the already treated water, at points directly opposite the outlet of each basin. These boxes are provided with float valves,



calibrated hard rubber orifices and gates. By manipulation of the gates, a known quantity of solution can be fed, the solution passing to receiving boxes below the orifice, from which point it flows by gravity. The lining of the solution tanks and the filtering of the solution are refinements not found in many previous installations.

The Coagulating Basin

The coagulating basin is divided into two parts, each part being practically 40 ft. long by 18 ft. wide, $16\frac{1}{2}$ ft. deep. The time period in the coagulating basin is four hours, when the plant is operating at its designed capacity of 1,000,000 U.S. gallons per day, and the velocity through the basin under that condition is about $\frac{1}{6}$ ft. per minute. The basin is provided with an inlet chamber and inlet flume, the water flowing into the basin at the highwater level. By a baffle at the inlet end, the water is immediately directed to the bottom of the basin, and from this point moves longitudinally and upward to the outlet

end. The outlet of each solution tanks, on the operating side of the basin consists of floor level. The alum solution two 12-in. x 12-in. sluice passing from one orifice box is Each half of the gates. used for the primary treatment basin is provided with a of the raw water, and the dis-charge from this box flows by sump and a 6-in. drain, the control valve on the drain gravity to the discharge line from being placed in a dry, or the low-lift pumps, thereby addoverflow, chamber. From ing to the raw water, as it enters ROOM OPERAT the overflow chamber an 8-ALUM the coagulating basin, a definite ELEV 212-837 FILTER Nº3 FILTER Nº2 FILTER NOI ACHINERY EARTH FILL AL CARDO STATE OF THE PARTY STORAGE ROOM PASSAGEWAY ELEY 203 00 ORIGINAL GROUND SURFACES Steve Room FLOOR ELEV 20000 CLEAR WATER BASIN ELEV 195007 12" CLEAR WATER SUCTIO Section on Line C-C of Plan