SCADA MASTERS

CASE STUDY



FULLY DIGITAL, ENCRYPTABLE, NORTH AMERICAN MANUFACTURED, SCADA SOLUTION



A SCADAMAASTERS SHOWCASE CLIENT:

This small Village in Ohio, has about 450 subscribers. The system includes 2 WELLS / pumps at same location, water is pumped to a central PLANT where it is chlorinated and stored in a 20,000 gallon underground tank until the single GROUND STORAGE TANK (GST) (330,000 gallons) calls for water. Two pumps at the PLANT are alternated and supply about 250 gallons per minute to the GST, then GRAVITY feeds it to the users.

At onset, all operations were manually controlled by water department personnel due to fact that their antiquated system had failed. At the GST the underground utility power had been cut, with an estimate of over $8,000 to replace the line.

BACKGROUND

Bainbridge, Ohio is a small village is Ross County, and the proud home of the first Dental College in the US.

The underground piping is being replaced, however, the first water lines were installed in Bainbridge in 1903! No lines were mapped.

By 1948, they led the world by having their own water and electrical generation plant. Underground wiring went from the plant to the wells, and "modern" equipment read the tank level with a float switch to start the well pump.

A "meter" in the office was connected to a "float" on a cable, and sitting over the underground tank.

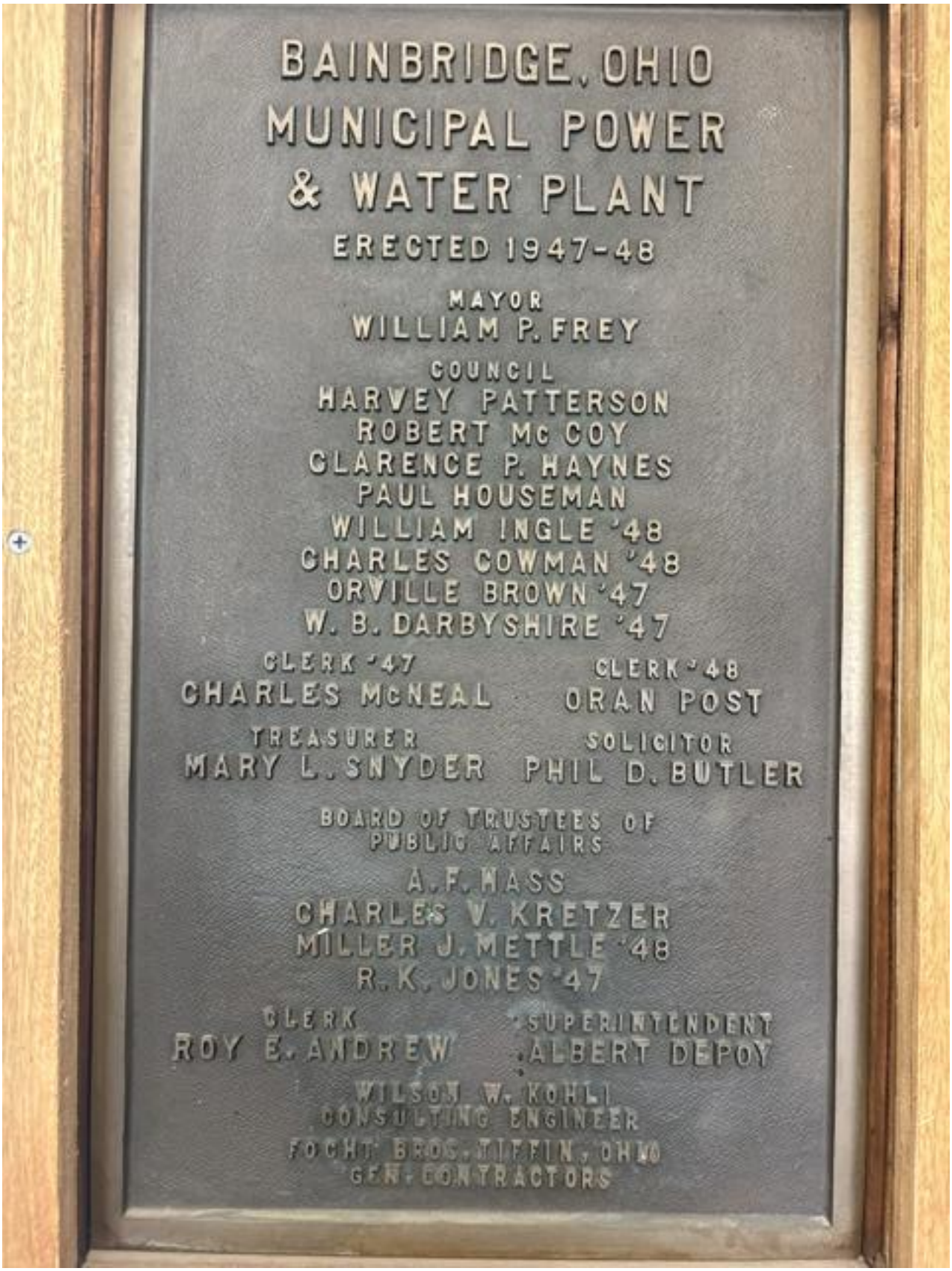
1903



The float showed the water height and also rang a bell if the level got too low.

It also activated the well and turned it off when the tank was full.

In 1948, a major expansion was completed which included a modernized complete water treatment plant and a power generation plant.


BAINBRIDGE, OHIO
MUNICIPAL POWER
& WATER PLANT
ERECTED 1947-48
MAYOR
WILLIAM P. FREY
COUNCIL
HARVEY PATTERSON
ROBERT Mc COY
CLARENCE P. HAYNES
PAUL HOUSEMAN
WILLIAM INGLE '48
CHARLES COWMAN '48
ORVILLE BROWN '47
W. B. DARBYSHIRE '47
CLERK '47
CHARLES McNEAL
CLERK '48
ORAN POST
TREASURER
MARY L. SNYDER
SOLICITOR
PHIL D. BUTLER
BOARD OF TRUSTEES OF
PUBLIC AFFAIRS
A. F. MASS
CHARLES V. KRETZER
MILLER J. METTLE '48
R. K. JONES '47
CLERK
ROY E. ANDREW
SUPERINTENDENT
ALBERT DEPOY
WILSON W. KOHLI
CONSULTING ENGINEER
FOCHT BROS. TIFFIN, OHIO
GEN. CONTRACTORS

1948



More modern equipment was Utilized, and the plant was thoroughly wired with 14 gauge RED wire with 110 VAC control Wiring (still in use today).

Upgrades over each 20-30 years brought new equipment and overlays of the same wiring panels with 100 RED wires. With growth, a new well

was added with underground control wires managing the pump.



Over time, the second well was added, and a 330,000 gallon ground tank (reservoir) was installed on Trester Hill. The underground tank became the “Clear Well” and chlorinated before transfer.

The Clear Well utilized 3 floats for pump control and chlorination.

The Reservoir had 3 floats installed and low power unlicensed radio was used to control the system. Ice forming in the tank, then falling was a constant maintenance item (only in the winter) in really cold water.

In January 2026, the electrical line to the Reservoir were accidently cut, with high estimates to re-install.

Johnny Evans, Superintendent kept the Village's water running by manually climbing the tank to see the level, going to the wells to activate, and turning on the transfer pumps, then reverse and repeat, until a meeting in June 2026 with Scada Masters changed the situation.

Transducers were installed at the Clear Well and a transducer and a pressure gauge were installed at the Reservoir.

The Village had a flow meter connected to the output of the two transfer pumps, which had to be manually consulted for reading.

SCADA MASTERS SOLUTION was to install an SM-NEURO at the Reservoir with a SOLAR PANEL and modern LiFeP04 battery to keep the system in operation for up to 10 days without sunshine.

The transducer was calibrated to the proper tank levels.

DIGITAL, two way radio modems brings the data back to the plant.

At the WELLS, the SCADA MASTERS SOLUTION was to install an SM-NEURO with relays to:

Control the PUMPS in alternating order. (In the PAST, personnel had to go to the wells and choose which pump they wanted to use.)

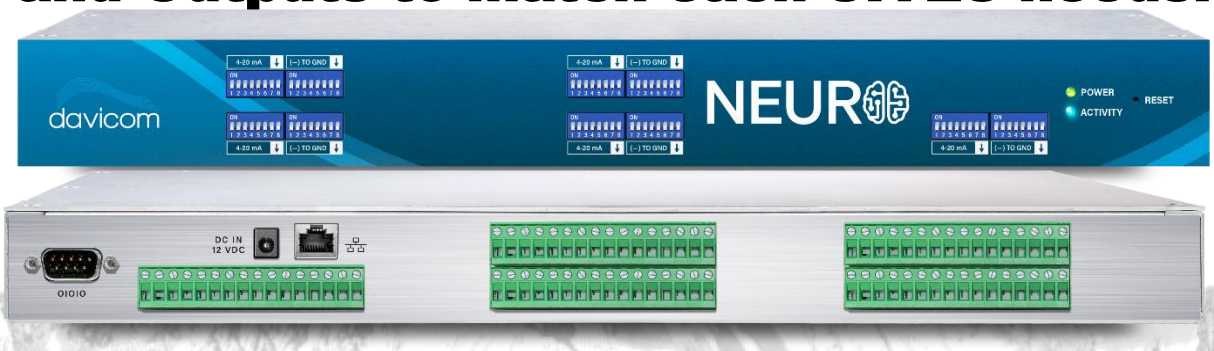
Measure AC power loss.

SECURITY input alarm and an EMERGENCY CALL alarm were installed with a LiFeP04 battery to keep the system in operation during AC 110 Power Outages..

DIGITAL SM 2-Way Radio Modems handle the communications SECURELY!

SM-NEURO

The SM-NEURO is basically MULTIPLE Programmable INTELLIGENT RTUs in a single package that has already been 90% programmed ... just simply adjust Inputs and Outputs to match each SITES needs.



CUSTOM CONTROL IN ONE SMALL PACKAGE

LOCAL SITE MANAGEMENT provides operation without a MASTER controlling it! The SM-NEURO will be the only required component at a co-located Pump/Valve/Tank site !

VERSION 2 SM-NEUROs can be equipped with up to three (3) “boards” providing up to 5 Relays, and 8 Analog or 8 Digital inputs per board! This will be in a REDUCED FOOTPRINT (12”) vs 17 and....

MANUFACTURED IN THE USA!!

THE PLANT

The SCADA MASTERS CORTEX 320 was installed along with an SM-DIGITAL RADIO MODEM to provide SECURITY and reliability whether receiving reports and statuses from the WELLS or RESERVOIR, or POLLING particular settings to provide REAL-TIME or NEARLY-REAL-TIME tank levels, pump status, and a plethora of basic and SECURITY events. The SM-CORTEX 320 has the graphics BUILT IN so no external software licenses were required.

Since the SCADA MASTERS solution is browser-based, a PC was installed to allow management and annunciation of all system parameters.

The SM-CORTEX also handles local level, flow, and pump control. The FLOW METER was integrated.

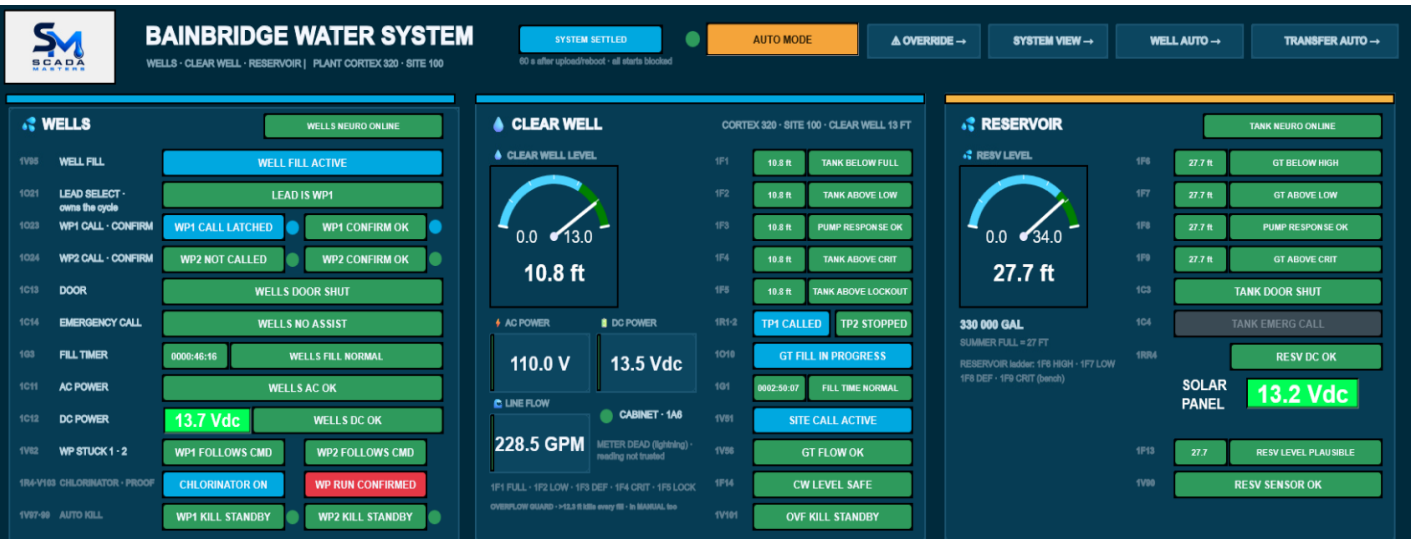
SM-CORTEX 320

Complete MASTER Remote Site Management Solution With POLLING, Customizable GUI, EMAIL, VOICE ANNOUNCEMENTS, SNMP Manager

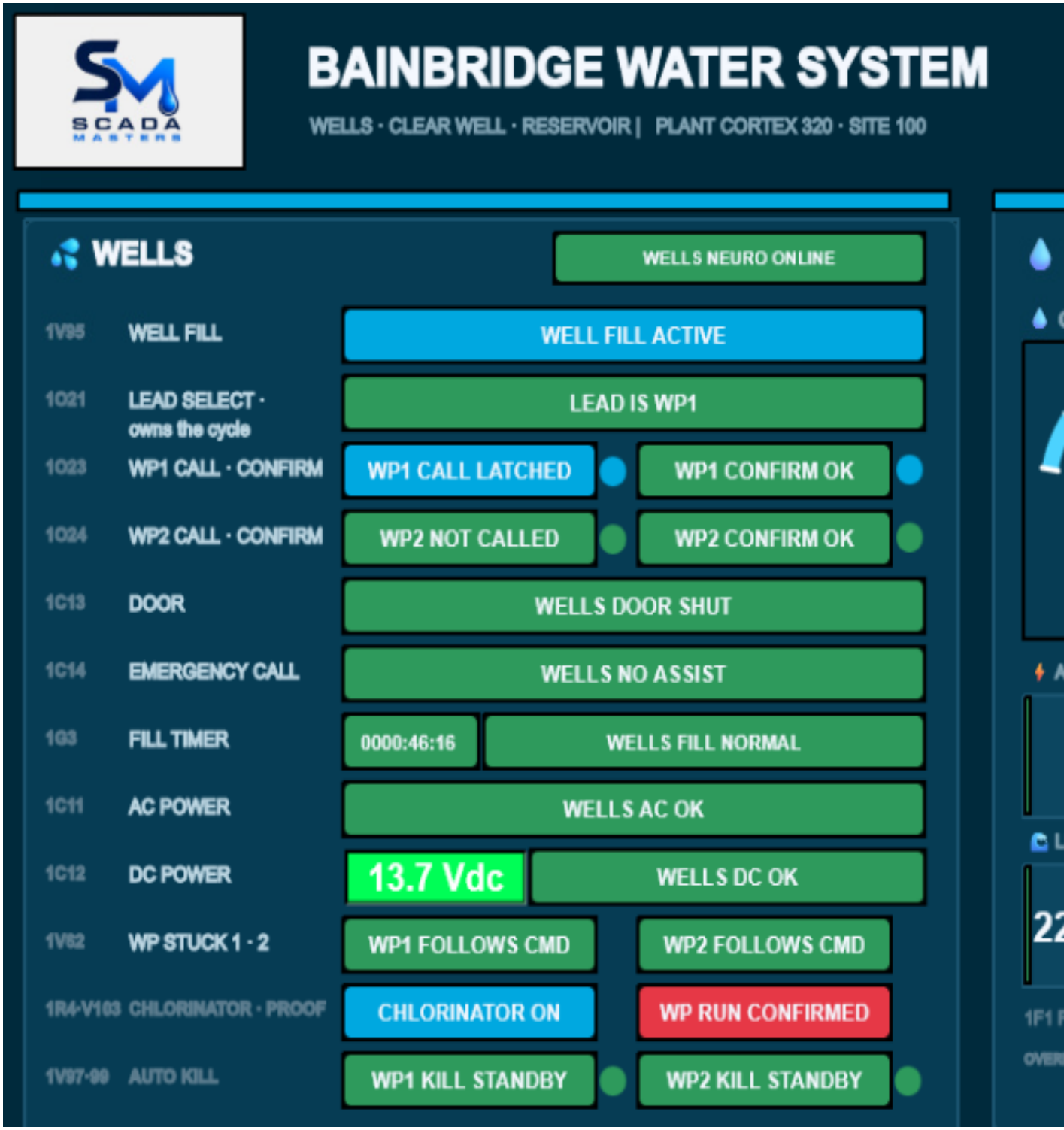


CENTRAL MONITORING, **POLLING**, REMOTE WEB ACCESS

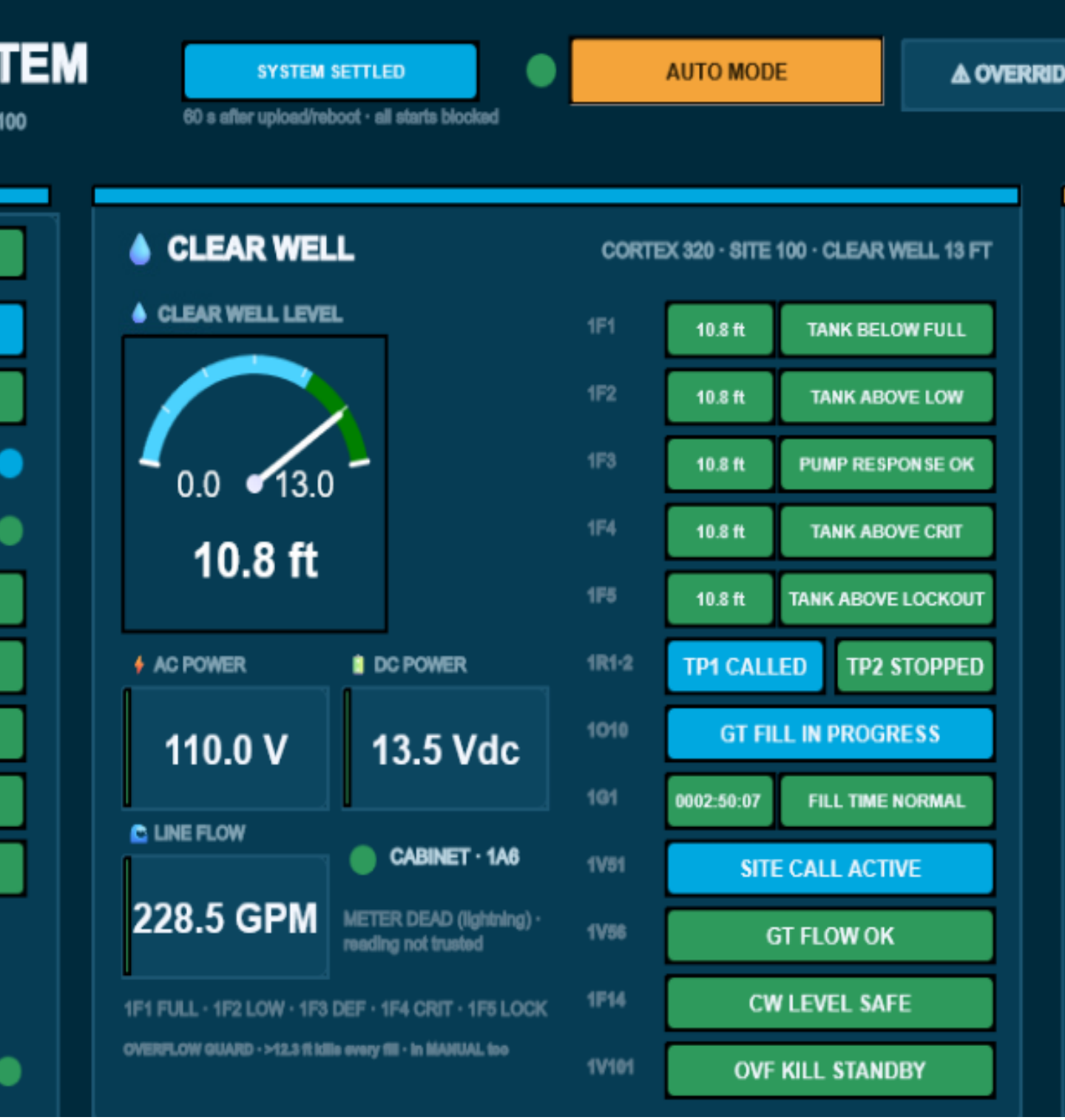
- **VOICE ANNOUNCEMENTS over RADIO or PA.**
- **EMAIL / TEXT alarms to multiple users.**
- **LOGGING to easily recall events.**
- **REMOTE ACCESS via INTERNET with built-in GRAPHICS display, customizable.**
- **From SIMPLE “METER or BAR” style graphics to industry related graphics of Water Tanks, Pumps, Valves and Flow Metering.**



SUMMARY VIEW showing most needed features on the same screen. Just a small sample of screens, logs, settings, readings, et al.



WELL PUMP 1 ACTIVE, WP2 ON STANDBY, CHLORINATOR ON, AC/DC Power OK, No SECURITY BREACH

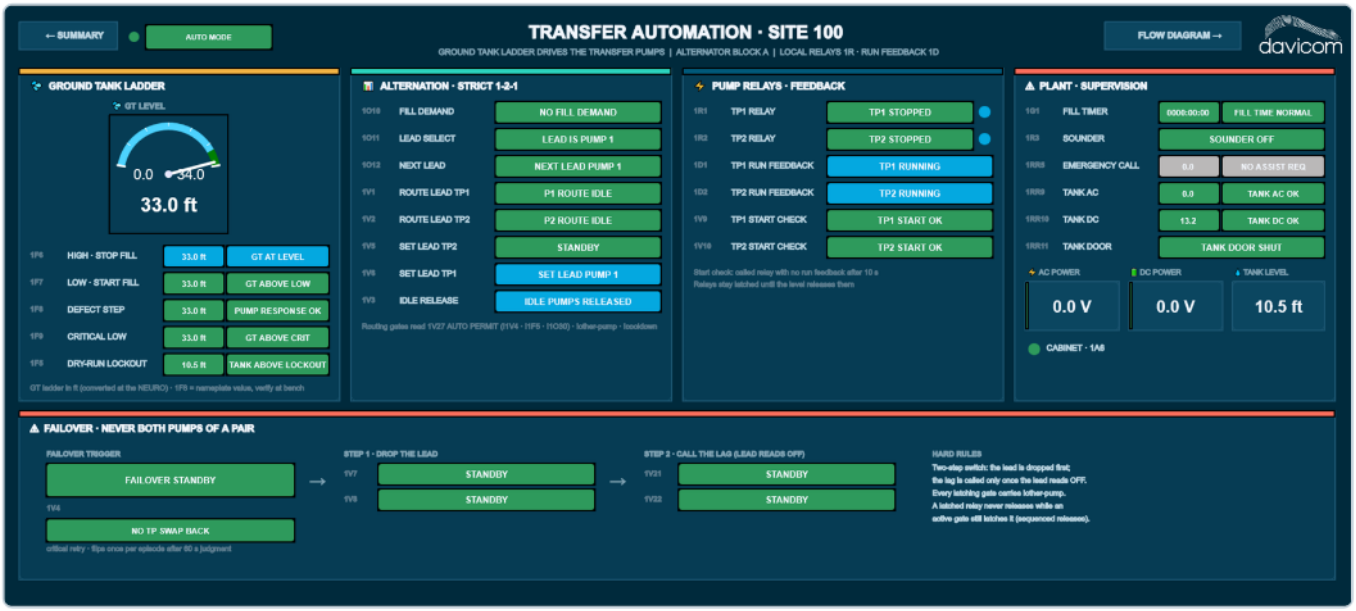


CLEAR WELL 10.8’ T PUMP 1 ACTIVE, FLOW 228.5 to RESV All ALERTS OK



RESERVOIR level 27.7’, Battery at 13.2VDC , No SECURITY or ALERTS active

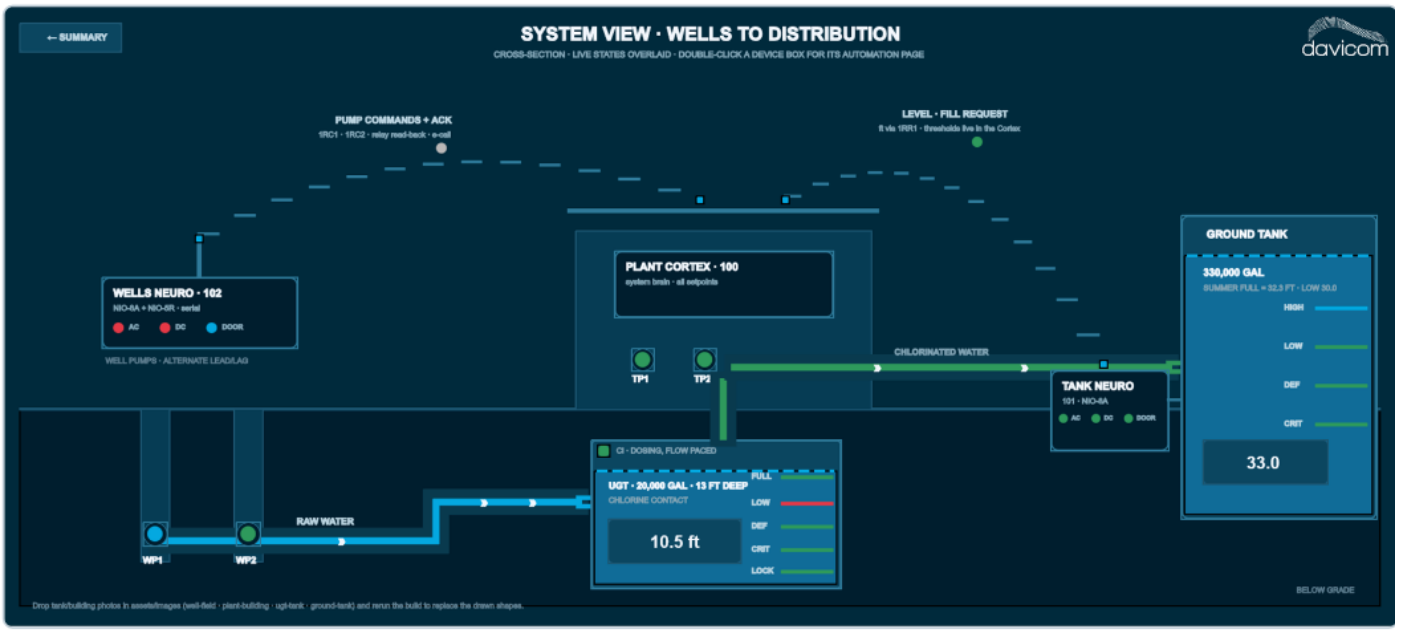
Every decision, visible and explained



TRANSFER AUTOMATION. The ground tank ladder, the alternation, the pump relays with run feedback and the failover sequence, each shown live. Matching pages cover the well site, and flow diagram pages draw the full signal path.



MANUAL OVERIDE allows the Operator to MANUALLY control or override selected items, LOCALLY at the PLANT or REMOTELY via PC or Cell Phone!



SYSTEM VIEW. The physical picture: wells, plant, ground tank and the piping between them, with live states overlaid. Double-clicking a device box opens its automation page.











VALUE ADDED FOR BAINBRIDGE with SCADA Masters™

- **TURNKEY SOLUTION – Design thru Implementation at a fixed, reasonable cost.**
- **RF Engineering Expertise, Designed and supported by experienced SCADA / radio engineers.**
- **FCC Licensing**
- **Fully Digital Radios, Proprietary FW**
- **SM- Antennas – rugged, dependable**
- **Easy-to-Program, Browser-Based Software (programmed by Davicom and Scada Masters).)**
- **Built-in configuration tools — no proprietary software required - Training**

DEPLOYABLE BACKUP SOLUTION !



NEURO, RADIO, PWS, BATTERY ready to connect to sensors and antenna at any site or powered by a vehicle. Just load the sites CONFIGURATION and go!

Waterproof case with wheels and pull handle.