

Prysby, Mike (DEQ)

From: Green, Warren <jwgreen@lan-inc.com>
Sent: Wednesday, October 23, 2013 3:41 PM
To: Prysby, Mike (DEQ)
Cc: 'Brent Wright'
Subject: City of Flint

Mike

As you know, the Flint Water Plant (FWP) currently uses 2400V as primary power throughout the facility. All of the power feeders in the plant site are 5kV rated and it appears the existing switchgear is also rated at 5kV. Most of the major electrical improvements installed during Phase I were dual voltage (2400/4160) equipment in anticipation of the plant power being changed to 4160V in the future. However, this voltage conversion is not needed for the phase of work.

The current sub-station has two 2.5 MVA transformers running in parallel for a total capacity 5 MVA. These old transformers are not equipped with cooling fans. Based on the evaluation performed during the Phase II study, which was completed in 2003, the full connected load to these transformers is estimated to be 6.97 MVA while the estimated power load at 36-mgd is 4.22 MVA. Based on these estimates there is sufficient power for the plant with both sub-station transformers in service. Even though the transformers are owned by Consumers Energy, it could take weeks to replace one of these main transformers in the event of a unit failure, which will result in reduced treatment and pumping capacity. The sub-station switchgear was installed in 1960 and is antiquated and difficult to maintain.

Since the 2003 study, Flint's maximum day water demand has decreased to approximately 20-mgd, which has correspondingly reduced the estimated power load. At this time it is believed that two 2.0 to 2.5 MW transformers will be required to power the FWP to meet maximum day demand and one transformer will meet average day demand under emergency conditions. We are proposing to construct a new substation with two – 2.0 to 2.5 MW pad mounted transformers, along with substation switch gear, interconnected with one 2.0 to 2.5 MW intermittent duty diesel generator as shown below. This arrangement will allow the generator to backup either transformer to cover maximum day demands should one of the transformers or transformer feeds drop off line and to provide sufficient generation capacity to meet average day demands.



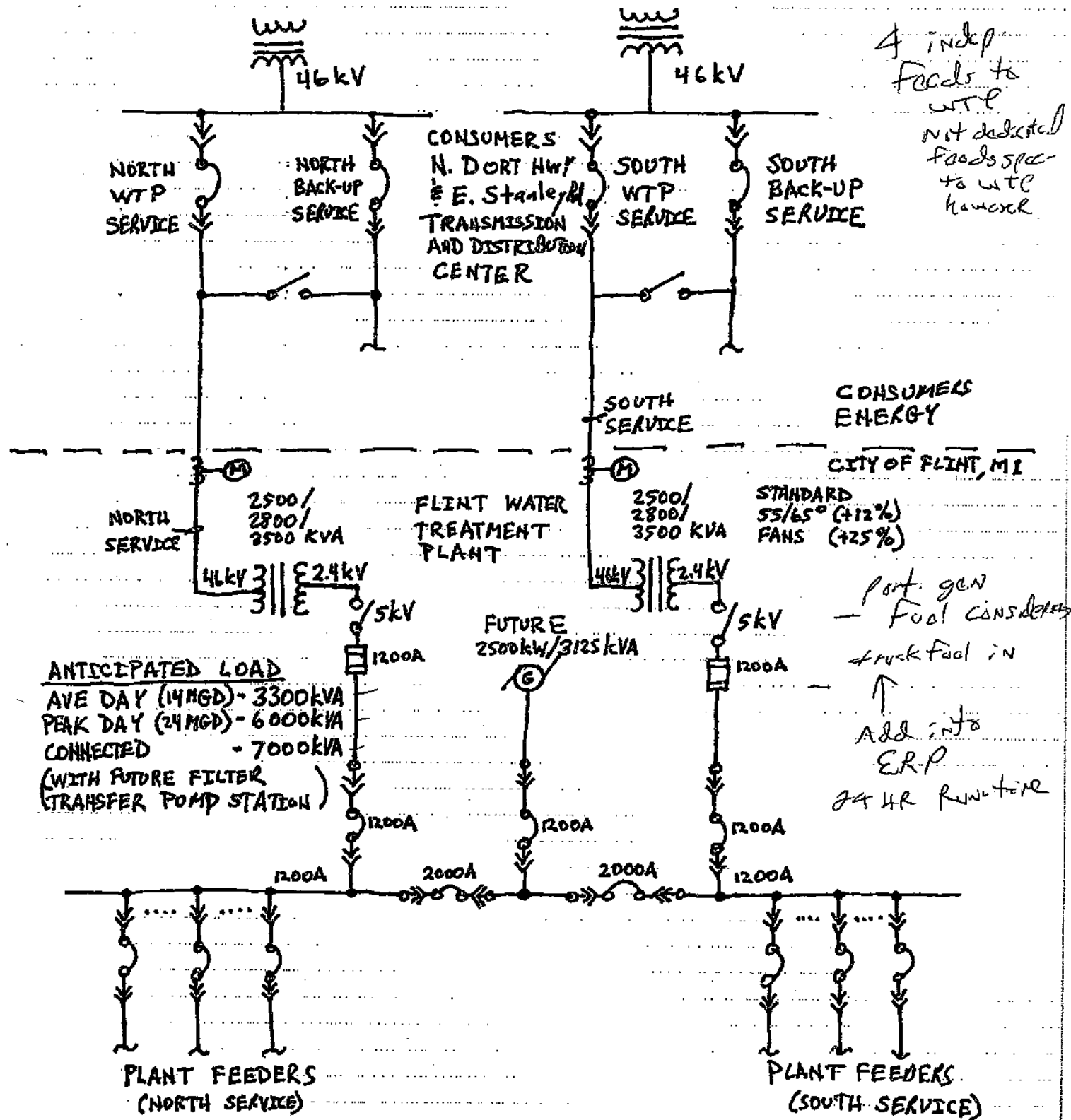
Lockwood, Andrews
& Newnam, Inc.

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DESIGN NOTES AND COMPUTATIONS

SUBJECT: **FLINT WATER TREATMENT
ELECTRICAL SERVICE IMPROVEMENTS**

SHEET NO. 1 OF 1



PREPARED BY Denney Howard DATE 11/4/2013

CHECKED BY Don Richards DATE 11/4/2013

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