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### UTILIZING A VAST AND COMPLEX WIRELESS COMMUNICATION NETWORK IN A SUSTAINABLE “BIOSYSTEM” FOR THE PRODUCTION OF FIBER FOR USE IN BIOENERGY, PAPER AND SOLID WOOD PRODUCTION

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**ABSTRACT** The GreenWood Resources Boardman Tree Farm (GWR BTF), located in Eastern Oregon US, covers 104 km<sup>2</sup> within which a wireless network of 134 radio modems communicate to irrigate and chemigate 10,360 hectares planted with more than 10,000,000 very-fast growing Pacific Albus trees. Additionally this wireless network supports irrigation and chemigation on 1,930 hectares of very high-value agriculture crops, including organic crops. This huge network consists of two totally independent licensed wireless networks using a combination of Standard and High-Power industrial strength radio modems. One of the most advanced and sophisticated Irrigation Supervisory Control and Data Acquisition (I-SCADA) systems in the world utilizes this dual wireless network to operate the worlds largest contiguous drip irrigated farm and also the largest Tree Farm in US. This I-SCADA system, via the wireless network, uses more than 2,800 sensors to remotely monitor a massive irrigation system of 19 individual pump stations with 100 pumps, 46 center pivots, 369 individual blocks of fields (16 to 28 hectares each), 850 kilometers of buried pipe and 31,000 kilometres of drip line. The I-SCADA system with its reliable wireless network has enabled BTF to sustain its position for the past decade, as the world’s leader in large scale drip irrigation efficiency. It has also allowed BTF to maintain a high level of efficiency in its endeavors to sustainably produce the most efficient and cost-competitive, high-quality “green” fiber; for biomass production for cellulosic ethanol, wood chips for paper production and solid wood for lumber products.

**Keywords:** Radio communication, Scada, drip irrigation, tree farm