

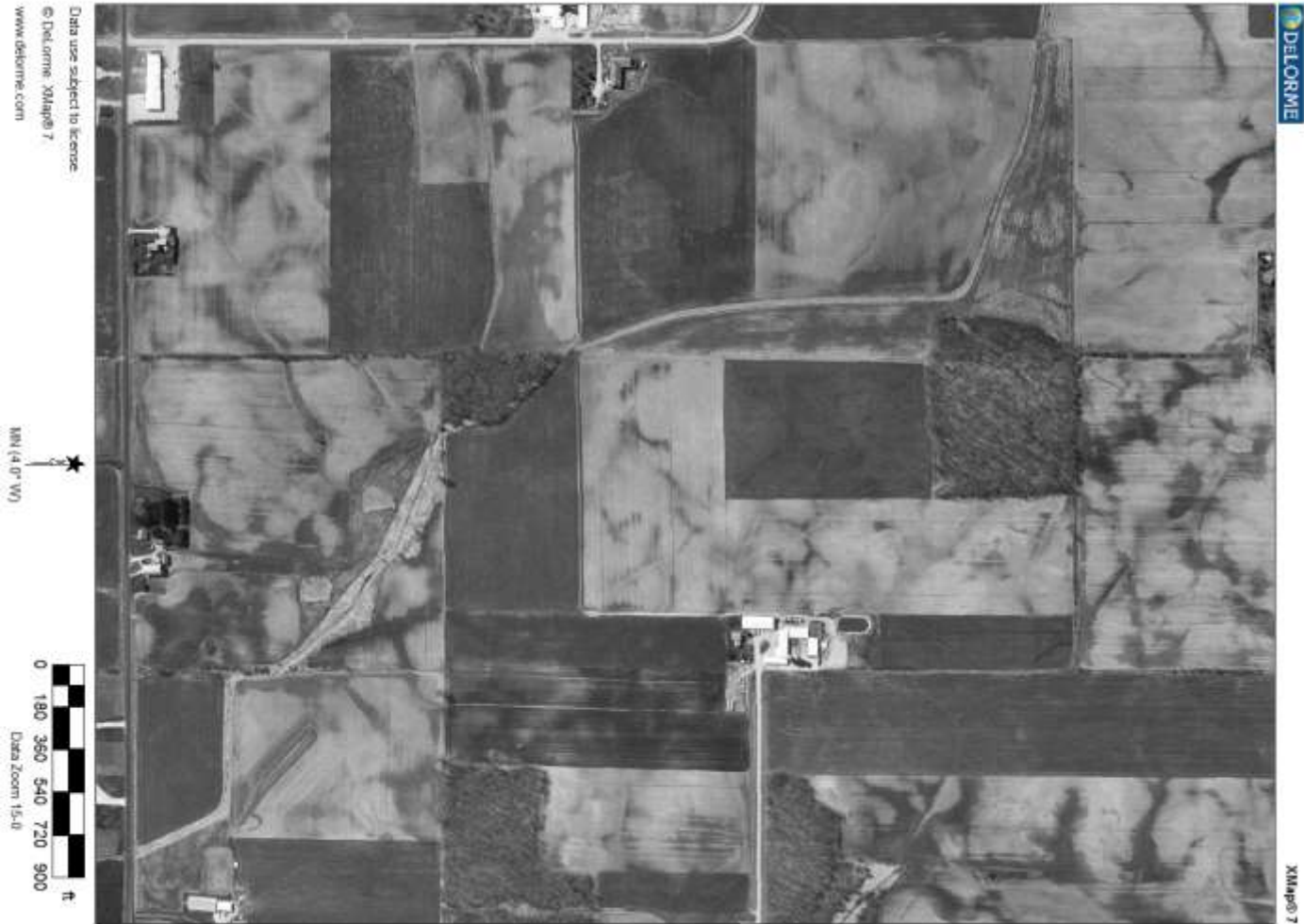
MAPPING TILE DRAINAGE SYSTEMS



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Kevin Erb UW Extension

March 22 and 23, 2016 – Tile Drainage on Agricultural Lands , UW Extension

START WITH MULTIPLE LAYERS OF AERIAL IMAGERY AND A GIS PROGRAM



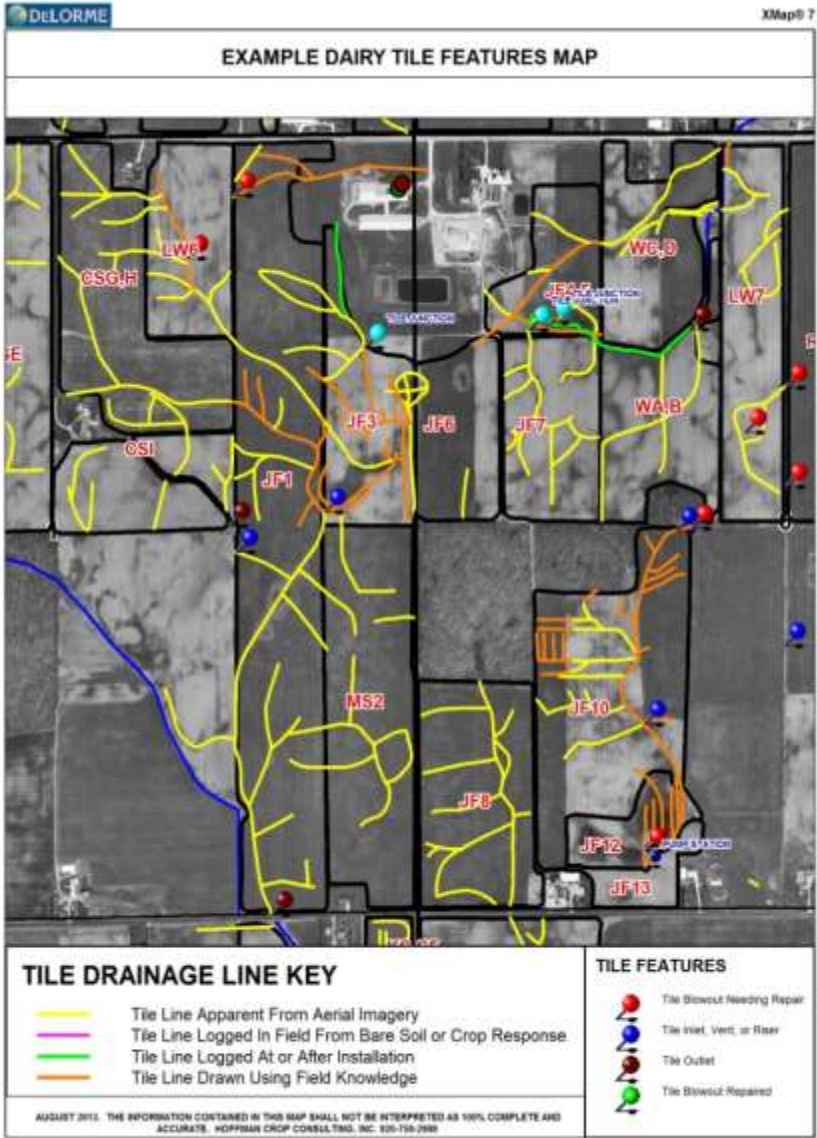
SAME AREA - DIFFERENT YEAR



IMAGERY IS BECOMING WIDELY AVAILABLE TO THE PUBLIC - GOOGLE EARTH 2015



EXAMPLE TILE FEATURES MAP



Data use subject to license.

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THERE ARE SEVERAL GOOD REASONS TO DEVELOP A MAP OF DRAINAGE TILE FEATURES



**THERE ARE A LOT OF CONCRETE AND CLAY
TILE SYSTEMS THAT ARE 30 TO 60+ YEARS
OLD THAT NEED MAINTENANCE**



BLOW-OUT MARKED BY THE GROWER



THE GROWER MIGHT NOT KNOW ABOUT ALL OF THE BLOWOUTS



**MORE FARMERS RELY ON CUSTOM HARVEST.
MORE MANURE IS SPREAD ON ALFALFA
BETWEEN HARVESTS.**



INITIAL SPRING GREEN-UP OF ALFALFA AND WHEAT IS A GREAT TIME TO CHECK FOR TILE BLOW-OUTS



VENTS AND INLETS NEED TO BE MAPPED ALSO



MAINTENANCE ISSUES



OUTLET LOCATIONS NEED TO BE MAPPED SO THEY CAN BE MONITORED



OUTLETS ARE HARD TO FIND WITHOUT A MAP



THE GROWING CROP CAN SHOW US WHERE TILE LINES ARE



TILE LOCATION CLUES CAN COME FROM YIELD MONITOR MAPS

Example: Tile Lines



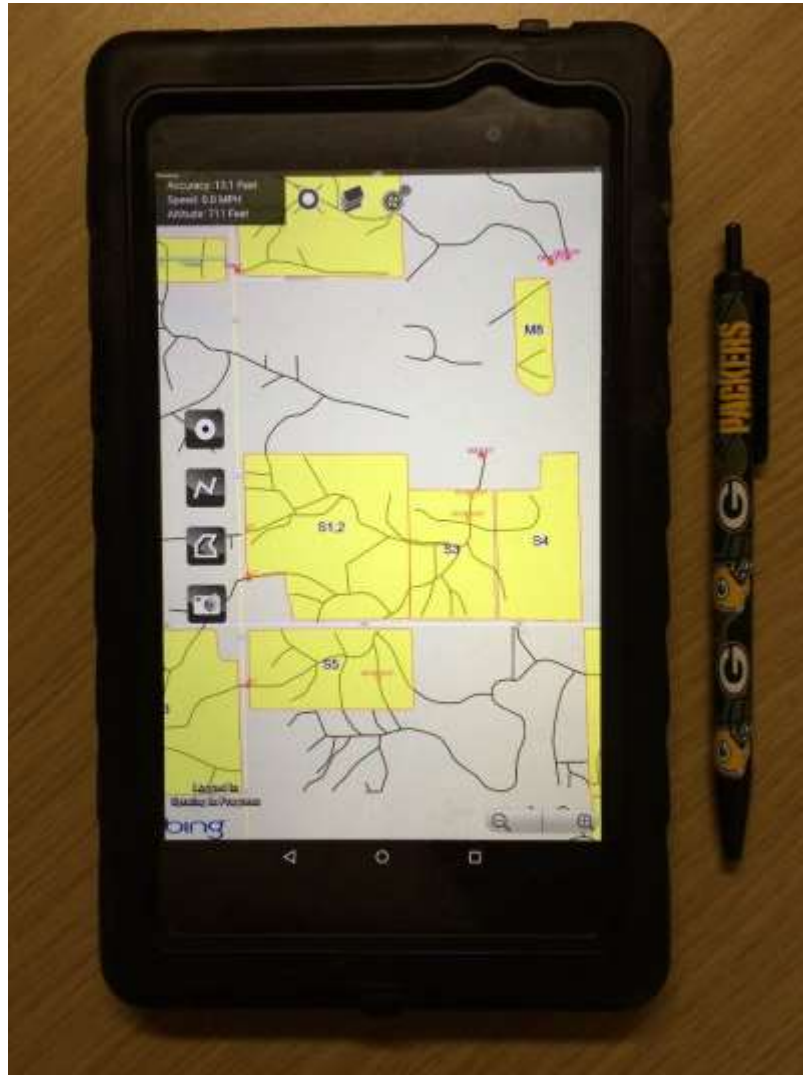
TILE LINE LOCATION CLUES IN THE FIELD



SOME OF THE TOOLS YOU CAN USE TO RECORD TILE DRAINAGE FEATURES



THIS IS THE CURRENT TOOL THAT WE USE TO RECORD AND NAVIGATE MAPPED TILE FEATURES



THIS SYSTEM CAN BE USED BY THE CONSULTANT, FARMER, AND CUSTOM HAULER

- ▶ THE USE OF A CLOUD BASED GIS THAT RUNS ON SMART PHONES OR TABLETS IS NECESSARY TO STREAMLINE THE SYSTEM.
 - ▶ FARMERS, SCOUTS AND CUSTOM WORKERS HAVE ACCESS TO THE SAME DATA. WHEN A CHANGE IS MADE, ALL PARTIES WILL HAVE THE UPDATED DATA.
 - ▶ THIS REQUIRES A TIME COMMITMENT ON BEHALF OF THE CONSULTANT TO UPDATE AND LOAD NEW FEATURES ONTO THE CLOUD.
 - ▶ EACH TABLET HAS A MONTHLY SUBSCRIPTION FEE TO MapItFast.

THE SYSTEM IS READY TO GO FOR ANDROID DEVICES

- ▶ TILE DRAINAGE SYSTEM MAINTENANCE BECOMES MUCH EASIER WITH THIS SYSTEM.
- ▶ ENVIRONMENTAL RISK IS REDUCED WITH THIS SYSTEM.
- ▶ NOT ALL FARMERS WELCOME THE IDEA OF SHARING A MAP THAT SHOWS THE LOCATION OF THEIR TILE LINES.
- ▶ A CONSULTANT CAN CONTROL WHO HAS ACCESS TO EACH SET OF TILE MAPS.

WHAT THE FUTURE HOLDS

- ◉ MapItFast DOES NOT CURRENTLY RUN ON APPLE.
- ◉ AS AERIAL IMAGERY BECOMES MORE SOPHISTICATED AND MORE AFFORDABLE, TILE FEATURE MAPPING WILL IMPROVE.
 - ▶ IMPROVEMENTS IN SENSOR TECHNOLOGY SUCH AS THERMAL IMAGES ON BARE SOIL WILL LIKELY BE USEFUL.
 - ▶ HYPERSPECTRAL IMAGING HAS POTENTIAL.
 - ▶ TILE SYSTEM MAPS ARE LIKELY TO BE A REQUIRED COMPONENT OF FUTURE 590 NUTRIENT MANAGEMENT PLANS.

FUTURE IMPROVEMENTS

- ▶ WHEN THE USE OF UAV'S FOR AGRICULTURE IS APPROVED, TILE FEATURE DISCOVERY AND MONITORING WILL BE GREATLY IMPROVED.
 - ▶ UAV'S CAN BE FLOWN ON VERY SHORT NOTICE. THE FLIGHT PATH OF UAV'S CAN BE PRE-PROGRAMMED.
 - ▶ MULTI-ROTOR UAV'S CAN HOVER OVER FEATURES FOR REMOTE INSPECTION.



eBee
senseFly

COMMERCIAL USE OF UAVs COULD BE LEGAL AND COMMON IN 2017



CARSTENS LAKE TILE BLOWOUT WORKING GROUP

- ▶ ERIC COOLEY - DISCOVERY FARMS
- ▶ MATT RATA CZAK - NRCS - MANITOWOC COUNTY
- ▶ JERRY HALVERSON - MANITOWOC COUNTY SOIL AND WATER DEPT.
- ▶ SCOTT GUNDERSON - UWEX MANITOWOC COUNTY
- ▶ GENE WEYER - MANITOWOC COUNTY LAKES ASSOCIATION

KEY FINDINGS OF THE WORKING GROUP

- ▶ Improper venting is a primary reason for tile-blowouts.
- ▶ No-till scenarios favor the development of blow-outs.
- ▶ Some farmers assumed that permission is required to fix a blow-out. The issue was clarified by agencies stating that permission is not needed to fix a blow-out.
- ▶ The cost to fix a blow-out can vary significantly. Contractors might be willing to fix a batch of blow-outs in a neighborhood for a reduced price.

THANK YOU

- QUESTIONS?



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