



PHASE 1 STUDIES UPDATE EROSION WORKING GROUP

Presented By
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NYSERDA

**Citizen Task Force
Meeting October 26, 2016**



OUTLINE

- ***Study 1 – Terrain Analysis, Age Dating, and Paleoclimate***
- ***Study 2 – Recent Erosion and Deposition Processes***
- ***Study 3 – Preliminary Erosion Modeling***
- ***Next Steps***
- ***Questions***



Study 1 – Terrain Analysis, Age Dating, and Paleoclimate



TASK STATUS:

- **Task 1.1:** Mapping - **completed**
- **Task 1.2:** Field Reconnaissance - **completed**
- **Task 1.3:** Site Prioritization - **completed**
- **Task 1.4:** Site Walkover - **completed**
- **Task 1.5:** Site Sampling - **completed**
- **Task 1.6:** Sample Preparation and Selection for Dating - **completed**
- **Task 1.7:** Sample Age Analysis, Geologic Interpretation - **in progress**
- **Task 1.8:** Report - **start August 2016**

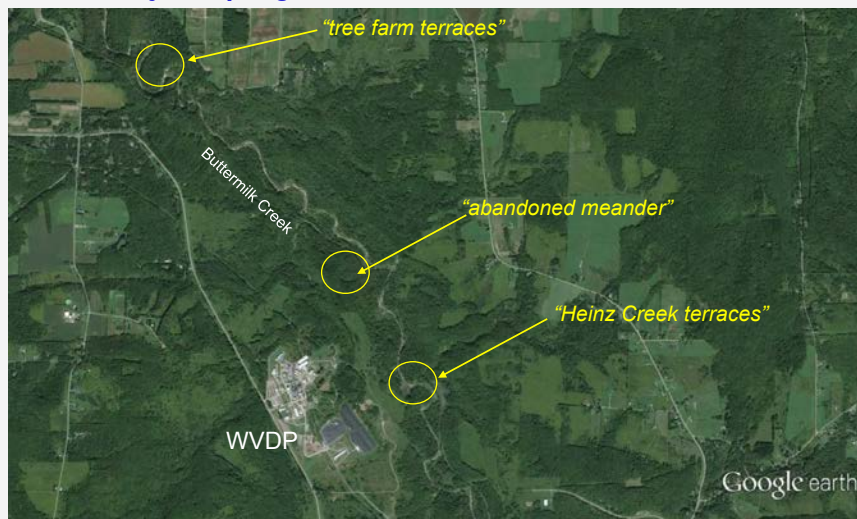
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STUDY 1 - Terrain Analysis, Age Dating, and Paleoclimate



Task 1.5: Key Sampling Locations



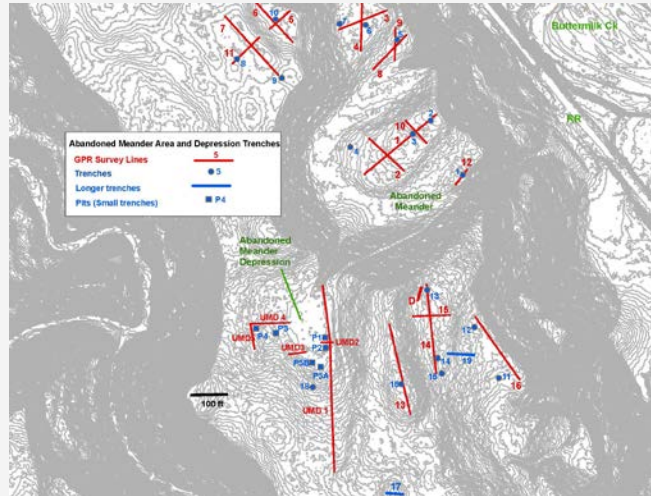
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STUDY 1 - Terrain Analysis, Age Dating, and Paleoclimate



Task 1.5: Example – Abandoned Meander Area



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STUDY 1 - Terrain Analysis, Age Dating, and Paleoclimate



Task 1.5: Example – Sampling at Abandoned Meander

Trench MT-38 (location shown on Slide 6)



Wood sample collected for C14 dating

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STUDY 2 - Recent Erosion and Deposition Processes



TASKS:

- **Task 2.1:** Quantify Rainfall Rates and Snow Depth – may use existing data from SDA
- **Task 2.2:** Quantify Infiltration Capacity - in progress
- **Task 2.3:** Quantify Flow Rates and Total Suspended Solids in Select Gullies – see added task
- **Task 2.4:** Quantify Flow Rates and Total Suspended Solids at Select Stream Locations – see added task
- **Task 2.5:** Quantify Erodibility of Cohesive Sediment - completed
- **Task 2.6:** Quantify Erodibility of Clastic Sediment – completed
- **Task 2.7:** Quantify Topographic Characteristics of Select Gullies - completed
- **Task 2.8:** Reports – in progress

Added task: Dr. Bennett recommended digital comparison of 2010 and 2015 LiDAR using change detection modeling owing to difficulty of installing instrumentation in steep and active gullies; this also provides a 5-year timeframe instead of one season.

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STUDY 3 – Preliminary Erosion Modeling



TASKS:

- **Task 3.1:** New Data–Collection Support and Evaluation – in progress
- **Task 3.2:** Preparatory Work for Model Selection and Component Testing – in progress
- **Task 3.3:** Design Model Calibration and Testing Strategy - in progress
- **Task 3.4:** Select, Extract, and Analyze Topographic Metrics – in progress
- **Task 3.5:** Generate Model Grids – in progress
- **Task 3.6:** Design Strategy and Select Site for Model Validation – in progress
- **Task 3.7:** Report Progress to Agencies and Stakeholders – in progress
- **Task 3.8:** Identify, Obtain, and Become Familiar with Computing Resources – in progress
- **Task 3.9:** Create Preliminary Design for Future–Erosion Projection
- **Task 3.10:** Compile and Analyze New Available Climate/Hydrology Data and Define Parameter Ranges

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STUDY 3 – Preliminary Erosion Modeling



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Modeling Activities Completed Include:

- Assessed modeling improvements published since FEIS modeling (8-10 years ago)
- Completed preliminary review and evaluation of
 - Geomorphic processes
 - Mathematical methods for simulating the processes
 - Methods for evaluating uncertainty
- Developed a code structure that can readily incorporate external data such as digital topography data, etc.
- Developed code to extract and statistically analyze data used in FEIS modeling to assist in benchmarking uncertainty
- Completed quality assurance assessment of the methodology
- Created model grids from LiDAR for two areas: (1) Buttermilk Creek watershed, and (2) Franks Creek watershed, at five resolutions: 3, 6, 12, 24, and 48 feet
- Completed quality control evaluation for input of grids into erosion-modeling software

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NEXT STEPS



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- ✓ **Study 1** – Additional data collection will be dependent on data gaps identified by modeling
- ✓ **Study 2** – Continue collection of field data as needed for modeling; use change detection models to extract key information from comparison of the 2015 with earlier LiDAR data
- ✓ **Study 3**
 - Continue building and testing model(s),
 - Calibrate to past history
 - Test on analogue watershed
 - Run forward projections
 - Evaluate uncertainty

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