CASE STUDY #1

MERIDEN'S AGRICULTURAL PRACTICES

COMMERCIAL HORSE FARM

PROPERTY HISTORY

- PROPERTY IS LOCATED IN THE TOWN OF WALLINGFORD WITHIN THE BROAD BROOK RESERVOIR WATERSHED, 800 FT FROM THE RESERVOIR
- PROPERTY WAS USED RECREATIONALLY BY THE OWNER TO OPERATE ALL TERRAIN VEHICLES AND MOTORCYCLES CAUSING SOIL EROSION AND SEDIMENTATION ISSUES
- PROPERTY OWNER WAS NOT ACCOMODATING OF MERIDEN WATERSHED INSPECTORS DURING SITE VISITS DURING ANNUAL WATERSHED SANITARY SURVEYS
- PROPERTY OWNER DECIDED TO OPEN A COMMERCIAL HORSE FARM AND HAD SUBMITTED AN APPLICATION WITH WALLINGFORD INLAND WETLANDS AND WATERCOURSE AGENCY

CITY OF MERIDEN CONCERNS

- LOCATION OF HORSE FARM WITHIN 800 FT OF A PUBLIC WATER SUPPLY
- PERMITTING OPERATION OF A HORSE FARM THAT COULD ACCOMMODATE UP TO 40 HORSES
- ALLOWING CONSTRUCTION AND OPERATION OF A HORSE FARM WHERE EXCREMENT FROM THE ANIMALS WOULD ACCUMULATE WITHOUT PROVIDING DETAILS AS TO THE REQUIRED PROVISIONS TO PREVENT MANURE OR OTHER POLLUTING MATERIALS FROM BEING WASHED INTO THE RESERVOIR
- MERIDEN OFFICIALS WOULD NOT CONSIDER APPROVAL OF THE APPLICATION UNTIL FURTHER INFORMATION WAS PROVIDED DETAILING A MANURE MANAGEMENT PLAN AS WELL AS A SOIL EROSION PLAN

APPLICANTS NEXT STEPS

- THE APPLICATION WAS SUBMITTED TO THE STATE DEPARTMENT OF HEALTH FOR REVIEW BY THE WALLINGFORD IWWA
- DWS REVIEWED BOTH THE APPLICATION WITH COMMENTS FROM WALLINGFORD / MERIDEN AND PROVIDED COMMENTS FOR BOTH AGENCIES
- IN THEIR COMMENTS, DPH RECOMMENDED TO BOTH AGENCIES THAT THE APPLICANT CONSULT WITH THE USDA NRCS TO DEVELOP A MANURE MANAGEMENT PLAN AS A CONDITION OF APPROVAL
- WALLINGFORD IWWA IMPLEMENTED DPH'S COMMENTS IN THEIR RESPONSE TO THE HORSE FARM APPLICATION REQUIRING THE APPLICANT TO CONTACT USDA TO FORMULATE A PLAN TO ADDRESS

- THE APPLICANT CONSULTED WITH THE USDA NRCS AND SUBSEQUENTLY PROVIDED A MANURE MANAGEMENT PLAN AN WELL AS A SOIL EROSION AND SEDIMENTATION CONTROL PLAN TO DWS FOR REVIEW AND ACCEPTANCE

- MERIDEN WATER DIVISION WAS CONTACTED BY DWS AND REQUESTED TO INSPECT THE SITE AND MONITOR WATER QUALITY, WHICH WAS A CONDITION OF THE PERMIT.

- SOME OF THE CONDITIONS OF THE PERMIT INCLUDED: THE MANURE COMPOSTING AND STORM WATER SYSTEM SHALL BE INSPECTED AND PROPERLY MAINTAINED BY THE APPLICANT PURSUANT TO THE SPECIFICATIONS SET FORTH BY THE O2 COMPOST TRAINING PROGRAM. THE CITY OF MERIDEN WAS ALLOWED SITE ACCESS DURING CONSTRUCTION. STOCK PILING OF MANURE WAS PROHIBITED. APPLICANT WAS TO INFORM AND EXPLAIN THE COMPOSTING OPERATION TO MERIDEN STAFF.

OVERVIEW OF COMPOSTING SYSTEM

JIM HYDE, UNITED STATES DEPARTMENT OF AGRICULTURE NCRS

OVERVIEW OF COMPOSTING SYSTEM

The farm independently hired
O2 Compost: Compost Systems & Training

O2Compost believes in keeping it simple. We have developed compost systems for every scale of operation, for every feedstock, and for every budget. We specialize in designing aerated compost systems and teaching the owners of these systems the Science and Art of Composting.

Agricultural Composting

Commercial Composting

Institutional Composting

Municipal Composting

O2Compost can help resolve your waste management needs. Please contact us if you have any questions. We look forward to working with you.

http://www.o2compost.com/

OVERVIEW OF COMPOSTING SYSTEM

One Notable service of O2 is their training and feedback: **Communication**

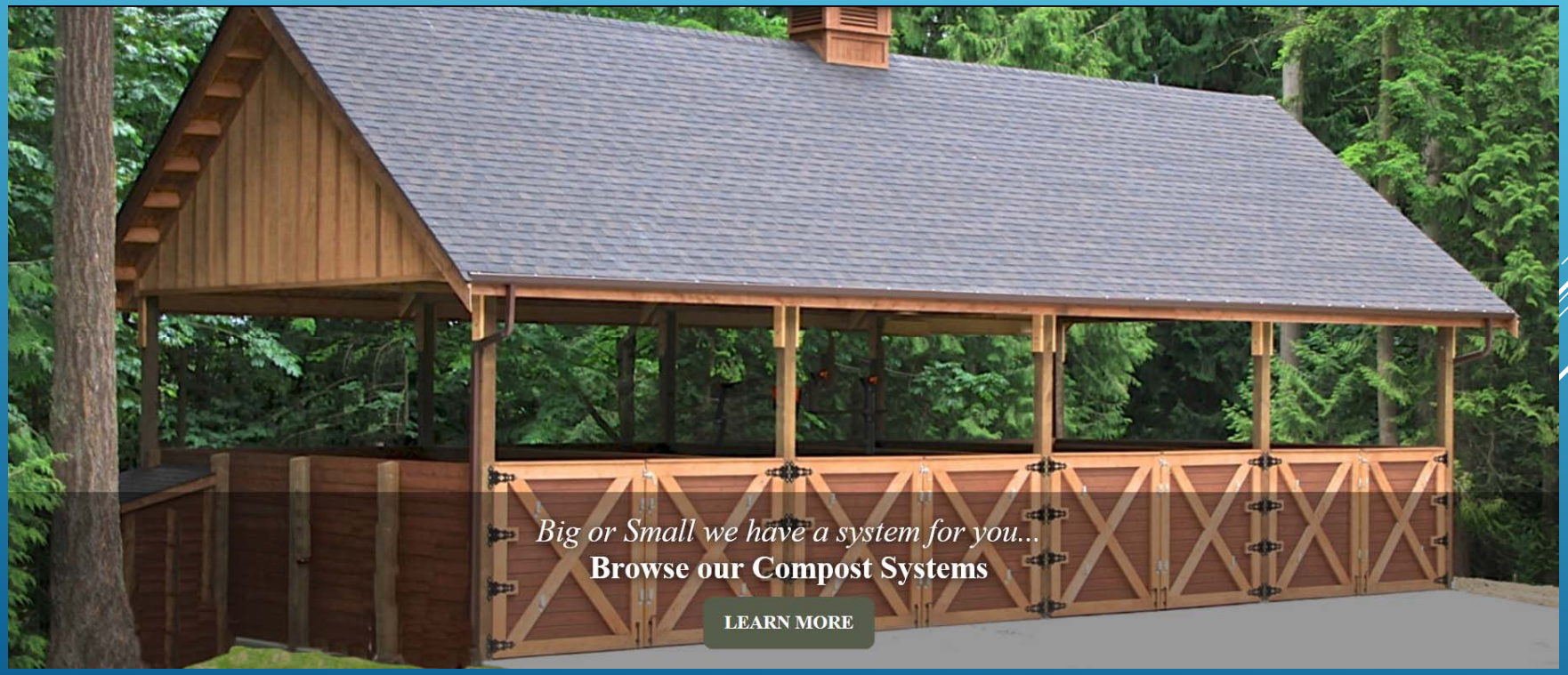
Each of our Training Programs include four component parts:

1. A detailed design for a system that best fits your needs;
2. An aeration equipment package, including an electric blower, timer and valves to control airflow to one or multiple bins;
3. A complete training manual that provides background information on aerated composting and prescriptive step-by-step procedures to follow; and
4. Most importantly, we offer unlimited technical support. We will guide you through the learning process and never leave you stranded.

All four components are included with payment of our Training Program. We will never charge you more than that amount, no matter when you call us for technical support.

OVERVIEW OF COMPOSTING SYSTEM

Stand Alone Four-Bin Roofed Building



OVERVIEW OF COMPOSTING SYSTEM

Stand Alone Four-Bin Roofed Building

Components that make it successful:

Isolation & Containment – Keeping the rain out while keeping the manure in

- Roof
- Gutters
- Impervious Floor
- Walls/Sides

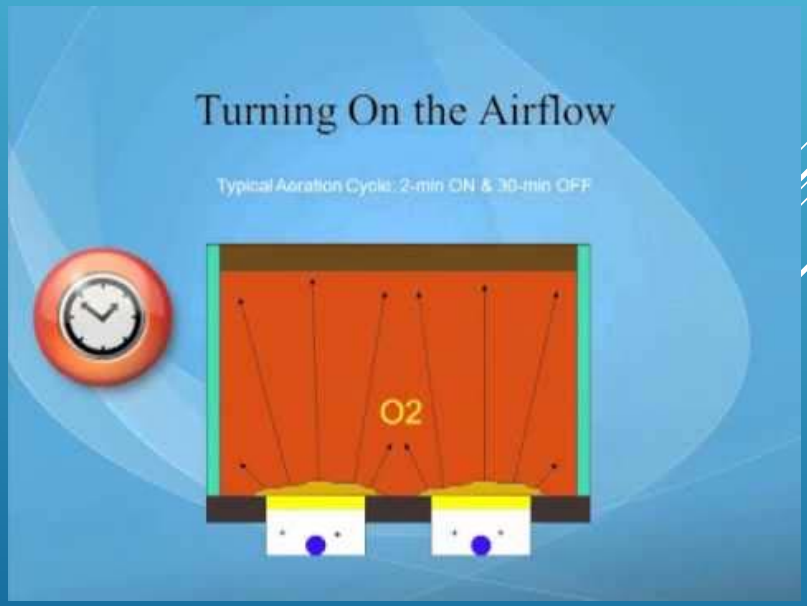
Helpful Additions:

- In-ground, drive-over air channels
- Automated fan/aeration
- Concrete workspace for tractors/equipment
- Curtains on sides (blowing snow/rain)

OVERVIEW OF COMPOSTING SYSTEM

Stand Alone Four-Bin Roofed Building

A fan, pipe, and air-channels are the lungs of the system: Breathes a puff of air every few minutes (~30 seconds on low velocity every 20 minutes)



OVERVIEW OF COMPOSTING SYSTEM

Stand Alone Four-Bin Roofed Building

The farm made some advanced management decisions in their barn:

- Installed rubberized floor mats (animal comfort)
- Wood Pellet bedding for animals (manure management)
  - Reduced bedding volume ***significantly*** (2 lbs pellets vs 20 lbs shavings)
  - Changed the carbon and nitrogen values (C:N)
    - of the manure product to vastly increase the rate
    - and the nutrient value of the compost

OVERVIEW OF COMPOSTING SYSTEM

Stand Alone Four-Bin Roofed Building

The farm had an outlet for the manure:

- Local Farm for crop fields (102 ton of 126 generated), and
- Wanted to look into compost retail sales on the farm, and
- Was planning to re-use some (18%) compost as bedding

The farm planned for six months of manure accumulation and storage
Worked closely (daily/weekly) with O2 to monitor the composting process

- Moisture (~50% moisture ideal)
- Temperature (~140 – 160 F ideal)
- Carbon:Nitrogen (~ 25:1 ideal

OVERVIEW OF COMPOSTING SYSTEM

Stand Alone Four-Bin Roofed Building

On the farm, Stormwater Management was also addressed with
- soil nutrient management and
- soil erosion, both sheet:rill and gulley.

The three pastures (3 ac) can receive manure (up to 15 ton/ac), but regular soil testing is part of the management – to allow for management changes as needed

The Pastures are intended to be managed for growing grass as opposed to managed for animal exercise
Intention: if grass is not growing well – animals don't go there
Alternate: use stabilized areas for animal exercise
Riding Arena: sand – no exposed soil

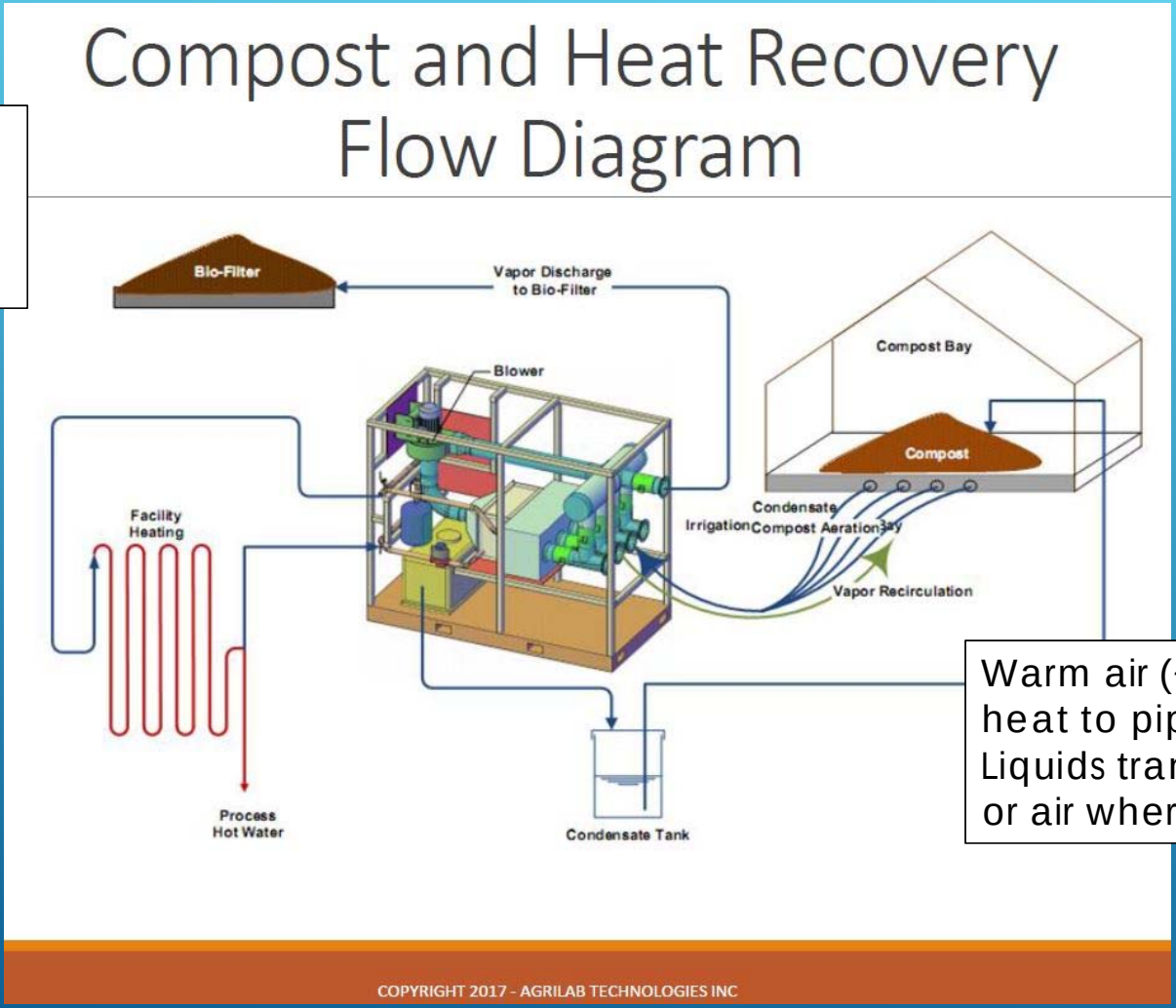
Just for Fun....

O_2 works with Positive air-pressure (blowing air out)
Agri-Lab Technologies works with Negative air-pressure (pulling air in)

Demonstration project with CT RC&D on CT Dairy Farm
- aerated composting process
  - *decrease the footprint of their existing composting operation,
  - * save fuel/time,
  - * capture the heat generated from the composting process for use in their production facilities (hot water, hot air in winter)

Just for Fun....

Agri-Lab Tachnologies works with Negative air-pressure (pulling air in)



Warm air (~150 F) transfers heat to piped liquids, Liquids transfer heat to water or air where needed.

CONCLUSION

A ONCE ADVERSARIAL RELATIONSHIP HAS BECOME AMICABLE

BEING COOPERATIVE WITH ONE ANOTHER CAN RESULT IN A SUCCESSFUL PROJECT

UTILIZIZING THE KNOWLEDGE AND RESOURCES OF THE REGULATORS WILL PRODUCE PROJECTS AND, IN SOME CASES, FUNDING FOR PROJECTS

QUESTIONS ?