PREPARED FOR:

CITY OF AUBURN

BUSINESS PLAN FOR WWTP BIO SOLIDS VERMICOMPOSTING FACILITY

CITY OF AUBURN, NEW YORK

JUNE 4, 2014

PREPARED BY:

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I. BACKGROUND

For the past 4 years the City of Auburn has been transporting an average of 12,000 tons/ Yr of dewatered wastewater treatment plant sludge to the Ontario County and City landfill. This disposal option has an average cost of $500,000 dollars annually for City taxpayers and leaves a significant carbon footprint in the region as a result of the routine truck transportation for landfill disposal.

In February of 2011 the City of Auburn in conjunction with Organix Green Industries and Larsen Engineers began the preparation of a permit application to the New York State Department of Environmental Conservation to conduct a research and demonstration to vermicompost the City's municipal's wastewater treatment plant sludge. The permit was approved in October 2011.

On January 9, 2012 about 30 tons of dewatered sludge was transported from the City of Auburn WWTP by New England Organixs to the Organix Green Composting Facility in Seneca Castle, Ontario County, New York. The sludge was placed and harvested in trenches mixed with lawn and yard debris.

In February the City transported another 30 tons WWTP sludge to the facility. This batch of sludge was placed and harvested in trenches and mixed with shredded newsprint and magazines collected from the City of Auburn Recycling program.

Between January and July of 2012 Organix Green Industries and Larsen Engineers successfully processed 60 tons of City of Auburn Wastewater Plant Sludge at the permitted Organix Green Industries Pilot Vermicomposting Facility. In October and November 2012 the end product was tested at Woods End Laboratory in Maine, and the results confirmed the product meets federal EPA and NYSDEC requirements for Class B compost.

The Report of Findings prepared by Larsen Engineers is attached in Appendix A and contains the details about operational and material processing protocol including results of trench monitoring in various weather conditions.

In March 2014 the Auburn City Council authorized the formation of the City of Auburn Vermicomposting Task Force to prepare a proposal to develop a full scale privately constructed and operated sludge management facility at the landfill property located within the City of Auburn and Cayuga County.

The task force evaluated various options for site location and supports the financing, construction and operation of a full scale Vermicompost facility at the landfill location to be developed in two phases over a 2-3 year period.

Phase 1 would encompass the processing of approximately 20 percent of the sludge generated at the City of Auburn WWTP. The City of Cortland also has a strong interest in utilizing the proposed Auburn Vermicompost facility to process its wastewater plant sludge and help develop a long term option to serve their needs. Phase 1 would also include pilot test processing a small portion of Cortland's sludge along with two or three other small municipalities in the Cortland and Auburn region such as Dryden, N.Y. This regional approach will provide additional financial benefits to the City of Auburn and add scoring strength to loan and grant applications through the Consolidated Funding Application Process (CFA).

Phase 2 would involve the construction of an additional 70-80 trenches to vermicompost the average of 12,000 tons of sludge generated annually at the Auburn WWTP, approximately 2400 tons annually from the City of Cortland and 500 tons small town and village plants in the region. In Phase 1, the process demonstration and compost quality testing will be completed. Economic feasibility of the full scale system at this location will be evaluated as compared to local permitted facility before phase 2 expansion is completed.

II. VERMICOMPOSTING SITE AND PRELIMINARY DESIGN

The City of Auburn Vermicomposting Task Force evaluated three potential sites as locations for a full scale facility:1) The City of Auburn Landfill, 2) The City of Auburn Industrial Park and 3) The Cayuga County Industrial Park. After considering a number of variables and site characteristics including existing environmental conditions, current permits in place, transportation, site development costs and infrastructure and public impact the task force unanimously agreed on 18 vacant acres at the City of Auburn landfill as shown on Exhibit A.

A start up for efficiency would require 20 trenches, 100'x4'x15', holding 60 tons each. Refilled and harvested every 6 months. Fifty percent of material waste, food waste, shredded paper, manure and inoculants. Each trench will process sixty ton of sludge (1,200 ton) per batch.

The proposed Phase 1 layout of 20 trenches' as shown on Exhibit B would require approximately 3 acres of land. An additional 1 acre would be required for the proposed 2500 square foot pole barn or greenhouse type structure for product storage and processing for shipment.

Phase 2 will encompass the construction of approximately 70 -80 trenches and utilize an additional 9 acres. Thus the combination of Phase 1 and 2 would utilize approximately 13 acres of the total 18 acre footprint.

It should be noted trenches can be designed to accommodate funding. While a less costly trench may look more desirable, efficiency, maintenance and volume of production may be reduced. In the final analysis the trench design we recommend for Auburn is approximately $35,000 each. At the end of the day it offers the best cost/benefit ratio.

The proposed design eliminates the need for additional leachate storage tanks and allows for harvesting of 99% of finished project. Trenches will be designed for minimal annual repair and Harvesting time expected to be cut in half.

The primary goal of the cost savings of transporting and landfilling of sludge is very evident to meet the City need. However, what can't be ignored is positioning the City of Auburn as leader in Central New York's the growing green movement and reducing what goes in landfills. In addition to sludge, yard waste, manures and food waste can be processed at the proposed vermicomposting facility.

The second direct benefit is the harvesting of a soil amendment and liquid worm tea that is highly desirable as a nutritional value for rapid and plant growth. Its main use and attraction would be in landscaping, greenhouses, flowers, lawns, parks and athletic fields. Best of all it is very competitive with top soil and commercial fertilizers-pricing and custom processed and priced to meet market demands.

Further product may be used for City of Auburn landfill covering. It has no odor and when screened, it is easy to work with. No clumps and no foreign material. The end product may also be used at a substantially reduced cost as a landscaping amendment at various city and county facilities

III. FACILITY FINANCING, CONSTRUCTION, AND OPERATION

The task force proposes that the City of Auburn utilize the Consolidated Funding Process to apply for New York State Energy and Research Development Category 3(Three) Funding and Empire State Development Funding to finance the construction of Phase 1 and 2 Facility Development and some Equipment for Phase 1 and 2.

Operational and Maintained costs and necessary material processing equipment will be purchased by Organix Green Industries with financing secured through tipping fees from the City of Auburn and other municipalities in Central NY as shown in the operating budget below.

Upon approval of the project by the City Council, the City would enter into a contract with Organix Green Industries to construct and operate the vermicomposting facility and a contract with Larsen Engineers to provide facility engineering services including securing all necessary permits to construct, operate and assistance in environmental oversight and product marketing.

Organix Green Industries will provide the city with the necessary hold harmless provisions in all contracts to ensure the City risk is minimal in the low tech, proven technology.

The following preliminary capital and operating budget has been prepared for the grant application submissions. Upon Council approval for the City to precede with the CFA applications the vermicomposting task force with the guidance of Organix Green Industries and Larsen Engineers will proceed to complete necessary refinements to this business plan and meet all the submission requirements for the NYSERDA and ESD development grants.

It is important to note that Larsen successfully secured in NYSERDA Category Grant of over 1.2 million dollars for a client working through Finger Lakes Economic Development Council 2013 CFA Round 3.

IV. ESTIMATED BUDGET COSTS AND PROJECT REVENUES

A. Capital Budget – to be financed through NYSERDA Category 3 and Empire State Development		**Budget Costs**
One Time Initial Cost		
1.	Phase 1: 20 trenches /material and site work @$35,000 each	$700,000.00
2.	Starter Worms & seed Material (30.00 ton x $500.00 =$15,000)	$15,000.00
3.	Equipment (Screener)	$70,000.00
4.	2500 sq. ft. pole barn	$25,000.00
5.	NYSDEC Part 360 Permit and site engineering	$35,000.00
Total Phase I Grant Application Amount (total of #'s 1-5):		**S845,000.00**
Total Phase 2 Grant Application (60 trenches @ 35,000)		**$2,100,000.00**
Total CFA Application (phase 1 and 2 for Regional Facility)		**$2,945,000.00**

Note- Grant request is anticipated to be for 75% of capital cost with 25% as cash or In kind services and Land.

B. Operation and Maintenance – Budget (financed via tipping fees)		**Budget Costs**
Weekly weeding, pumping, monitoring, and mowing. Topping off, mixing and filling and harvesting.		
1.	1 PT Site Manager, Machine Operator (Iraq or Afghanistan Vet) - 20 hours/week @ $20.00/hr. (includes fringe benefits)	$20,800.00
2.	1 PT worker as needed 8 hours/month @$20.00/hr. (BOCES Student) - $160.00 per month	$1,920.00
Other		
3.	Oversight/consulting (Organix) 5 hours/month @ $30.00/hr	$4,500.00
4.	Environmental Monitoring/ Reporting (Larsen Eng.)	$4,500.00
5.	Laboratory Analysis ($1,000 x 6)	$6,000.00
Total Annual Labor and Monitoring Cost/ Year =		**$37,720.00**
C. Trench Maintenance Equipment (Provided by Organic Green from tipping fee revenues)		**Budget Costs**
One Time Initial Cost		
1.	Pumps (2), small tools, clothing, monitoring equipment	$1,000.00
2.	Riding mower, push mower	$2,000.00
3.	Weed eater (string or fuel)	$500.00
4.	Mule or used pickup, small trailer	$10,000.00
5.	Single axle truck -used	$12,000.00
6	Mixer	$6,000.00
7.	Skid Steer (leased)	$4,000.00
8.	Fuel	$3,000.00
Total Material Processing and Site Maintenance Equipment Expenses		**$38,500.00**
Total Labor, Equipment and Monitoring Cost		**$76,220.00**

D. Projected/Potential Revenues (Annual) Phase I:		Revenue
One Time Initial Cost		
1.	Saleable non-organic soil amendment, 2,400 ton x $30/ton	$72,000.00
2.	Saleable Leachate (worm aide) Liquid Fertilizer, $2/gallon x 100,000 gallons (5,000 gallons/trench)	$200,000.00
3.	Fee for food waste (nursing homes, schools, jails, etc.)	TBD
4.	Fee from Biosolids (Auburn Sludge) Disposal @ $30 per Ton x 2400 tons per year	$72,000.00
5.	Fee for yard waste (can't go to landfills)	TBD
Total Potential Revenue		**$60,000 to $332,000.00**

Note: An arrangement may be structured to provide the City and County landscaping material at a fixed processing cost with no profit. Thus a operational cost avoidance for facility landscaping budget.

City of Auburn Phase 1 WWTP Tipping Fee $30.00 / ton. Note as volume increases in Phase 2 tipping fee will be reduced as cost of labor and equipment will increase only marginally compared with volume. Per ton processing cost decrease with volume.

The City will also see a further reduced tipping fee of $2.00-$3.00 as result of accepting material from City of Cortland and other WWTP facilities and some food processing in the region.

Annual City of Auburn Transportation to Ontario County Landfill Avoided Cost

$21.00 ton x 12,000 = $252,000 Annual Avoided Cost / plus offset of carbon footprint via trucking

Phase 1 transportation cost avoidance = 2,400 tons x 21.00 = $50,400

V. PROJECT FINANCING CONSIDERATION

With revenues averaging even half of potential, trenches are fully paid for in three years and city will show a sizable profit in which to expand and pay for the expansion in the event NYSERDA and/ or Empire State Development Funding is not fully secured.

Startup costs for only 20% of their disposable sludge are not spread over a larger base.

This draft plan is conservative on production and slightly liberal on expenses.

VI. REVENUE SHARING BY PROJECT STAKEHOLDERS

This project can be financially attractive with a coordinated marketing approach to sell to Large Landscaping supply company and utilize the final products by NYS Agencies, City and County Facilities.

1. City of Auburn: 25% of the revenues generated by sale of solid and liquid Vermi-compost product. This amount will be credited to the City Disposal charges.
2. Marketing and Promotional Cost Budget : 35% of the Revenues
3. Organix – Industries: 25% of the revenues
4. Larsen Engineers – 15% of the Revenues to reimburse for past investments in engineering and support services and ongoing presentations and contacts with future buyers.

VII. SUMMARY

The proposed project offers a phased green approach for recycling and reusing the biosolids and organic waste on existing Landfill site at a cost lower than what the City currently spends on sludge disposal. It will save more money if the grants are available under the CFA program and the final product is sold for its true market value. The facility can become a regional organics recycling center to replace the current land filling practice and generate savings for the

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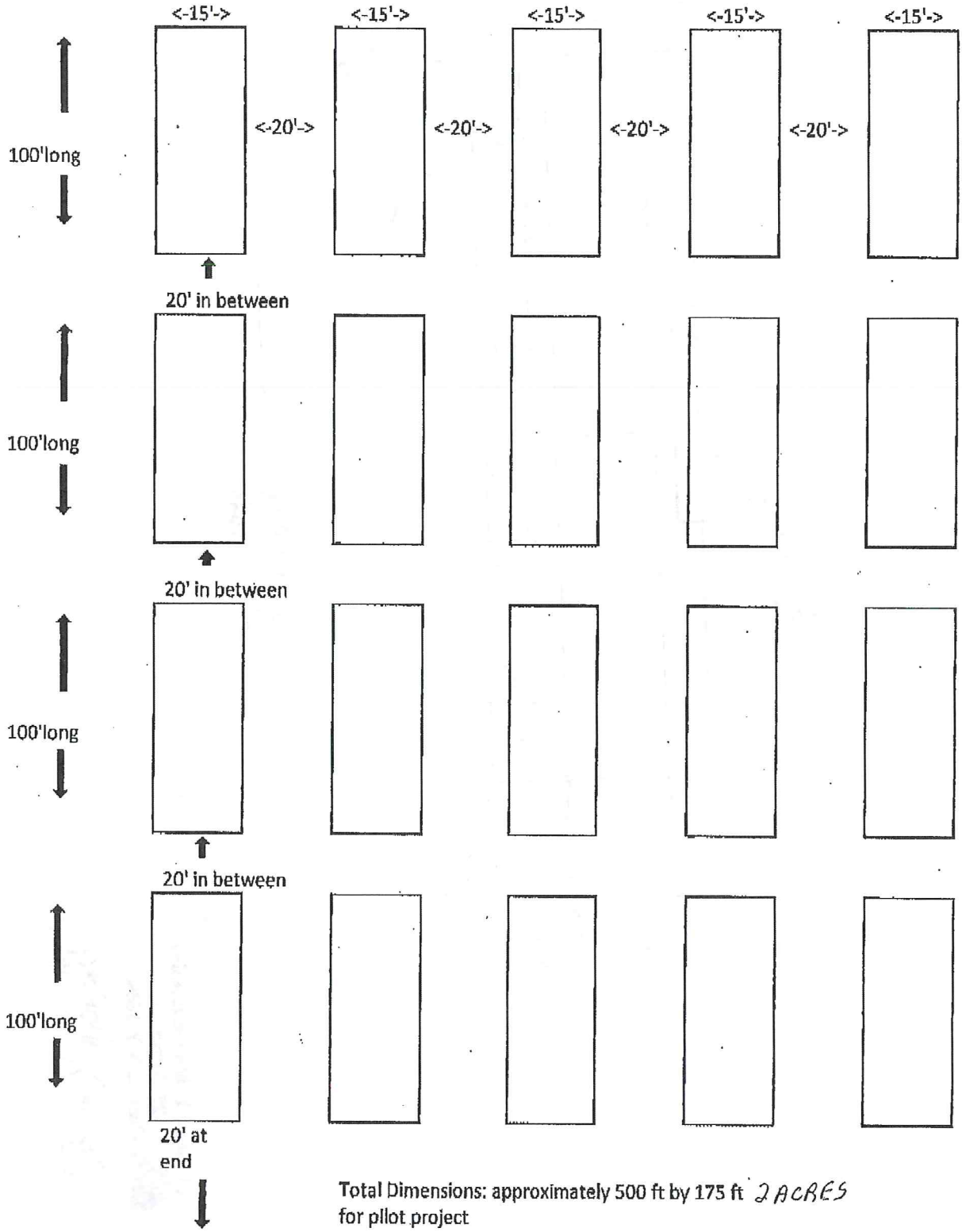
APPENDIX A: Map and Report of Findings

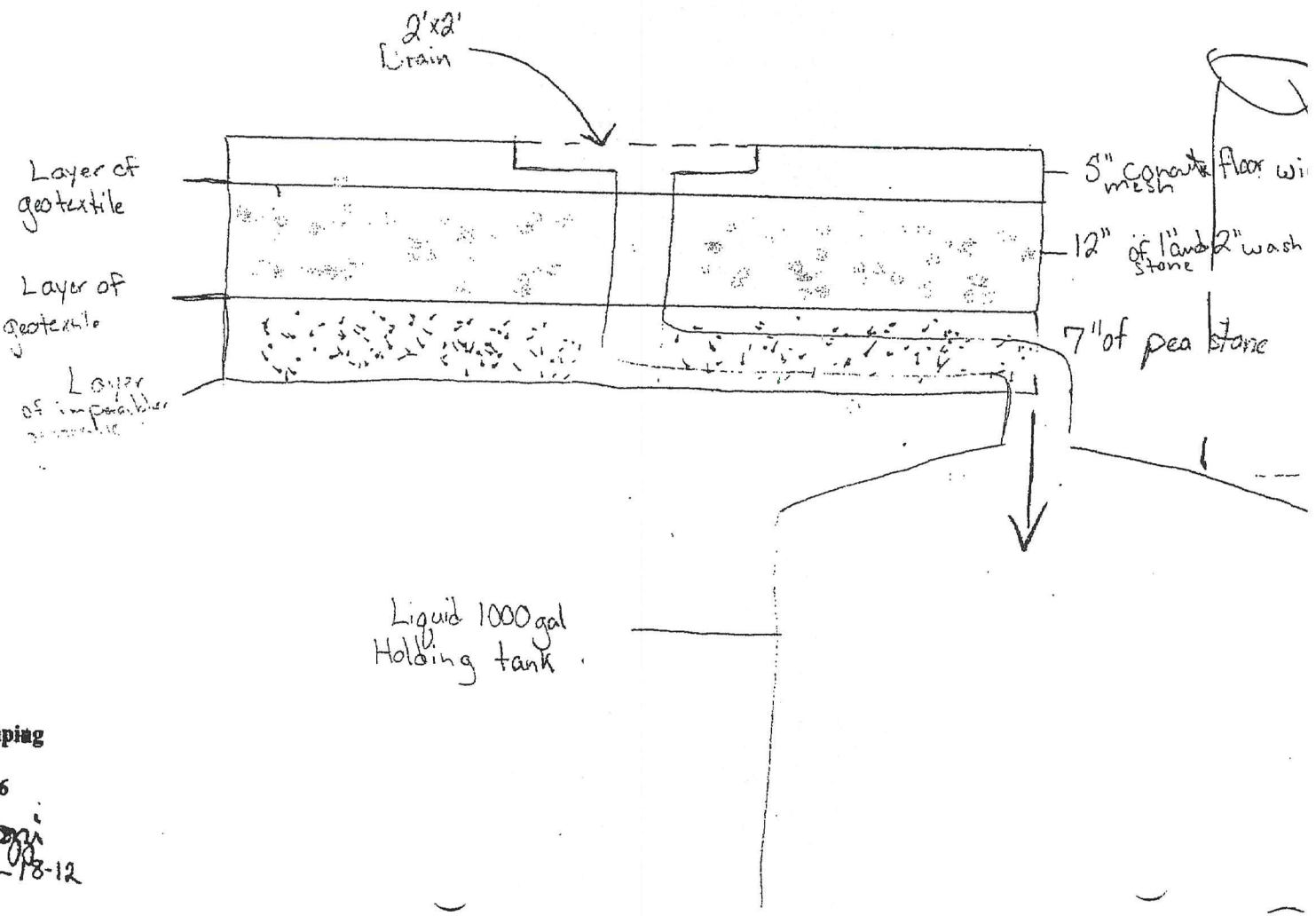
INSERT

SCHEMATIC DESIGN OF TYPICAL TRENCH CONFIGURATION



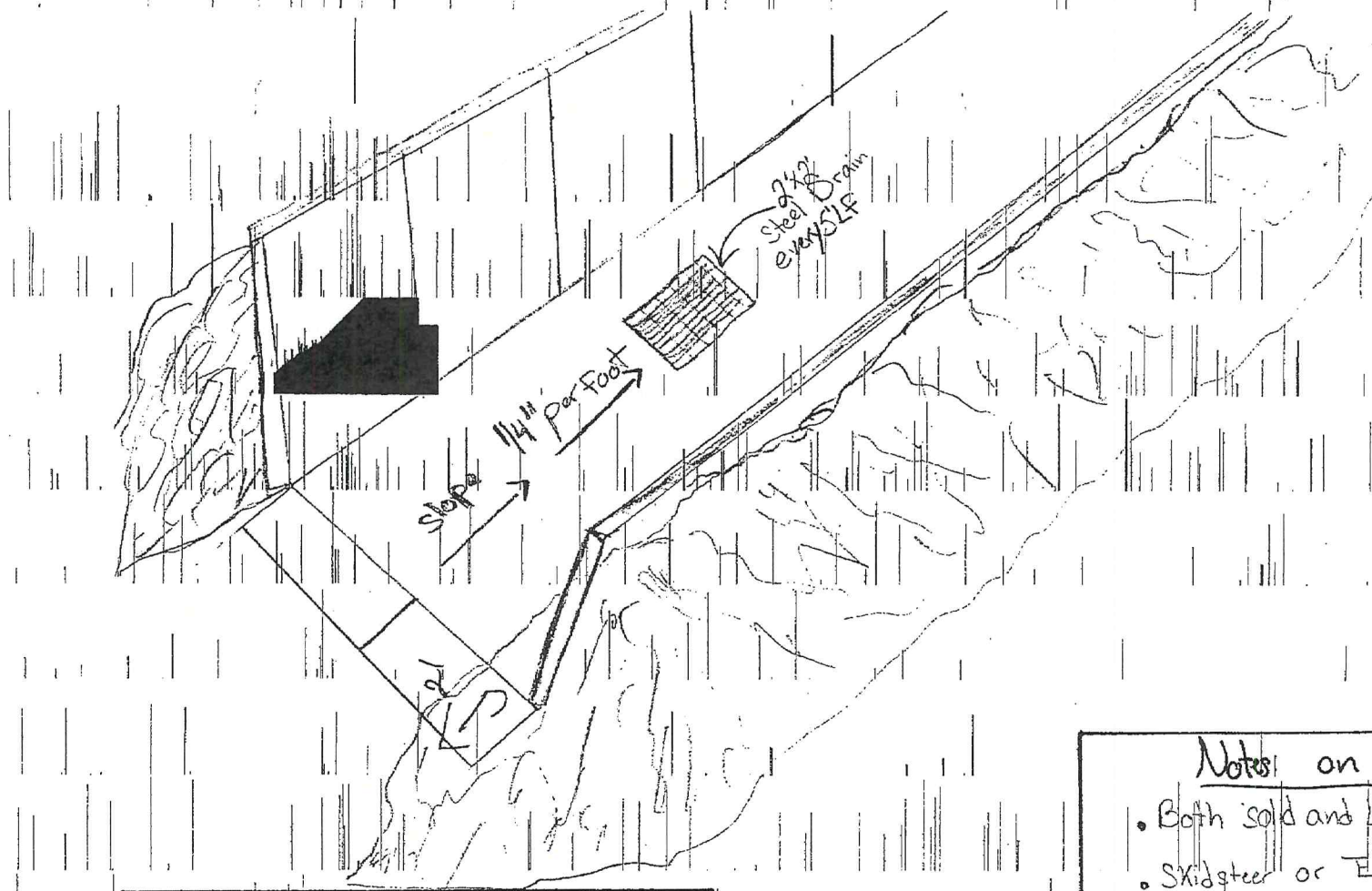
Total Dimensions: approximately 500 ft by 175 ft 2 ACRES
for pilot project

Cut Section of What is Below trench



Finger Lakes Landscaping
29 Carter Rd.
Geneva, N.Y 14456

Donna J Nardozzi
1-18-12



Sustainable Decomp Trenches

Notes
- Depth of trench 4' Deep
- Width of trench [redacted] 12'
- Length of trench is 100' long
- Floor is made of Concreted

Notes on Decomp System
- Both solid and liquid can be harvested
- Skidsteer or Excavator can harvest
- Trench will produce 60 TONS [redacted]
- Trench is sustainable and will only need attention twice a year
- Liquid system is self pumping OPTIONAL
- Stretches are green and eco friendly
- Uses 100% recycled materials OPTIONAL

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