

# ***Organic Recycling Using N-Viro***

Introduction



## ***WACAU – 2014, ISRAEL International Workshop on Agricultural Coal Ash Uses 28.5.2014***

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N-Viro Representative in Israel  
Dan - Viro Ltd

## N-Viro International Corporation



Project Intro

Market Needs

N-Viro Technology

Israeli Market

Alternative Techs

DAN WWTP

Business Formats

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Summary

### Effective and Efficient Organic and Mineral Byproduct Management



## N-Viro International

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- Developer /owner/industry leader of patented BioMineral disinfection and stabilization processes.
- Developer of BioMineral recycling programs - Provider of technology transfer through direct license to third party, own/operate, partnership.
- Consultant for BioMineral derived products - N-Viro Soil; N-Viro BioBlend; N-Viro BioFuel



## ***The Market Needs (Israel)***

- The Barcelona Agreement
- Class A Disinfection and Stabilization
- Community Acceptance
- Responsible, Beneficial Reuse
- Integrated Flexibility
- Liability Concerns
- Environmental Stewardship



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## ***Where Do We Start*** **Dewatered Cake Sludge**





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## ***What is the Goal*** **Finished N-Viro Soil**



## Process Schematics

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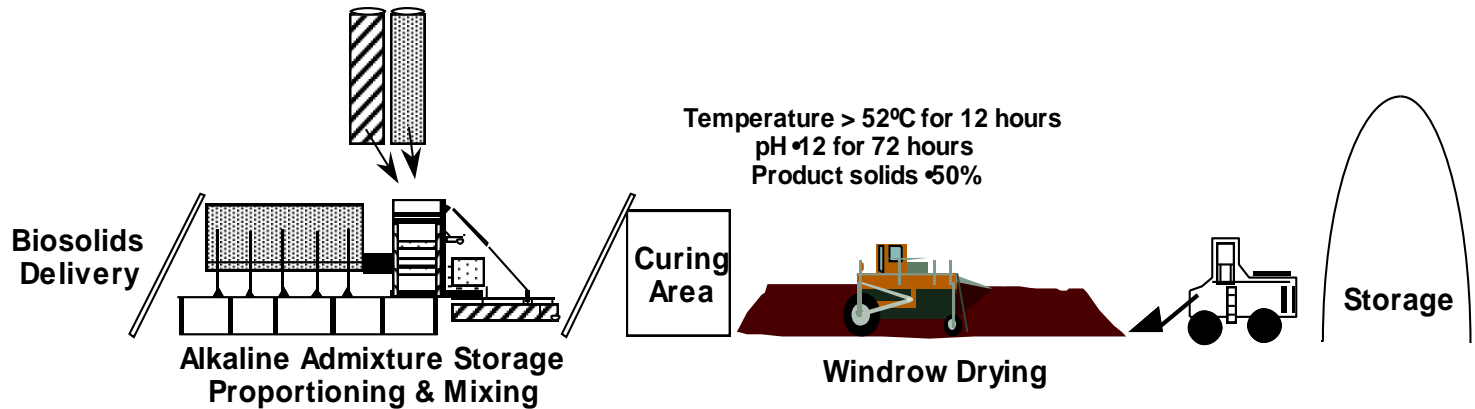
Alternative Techs

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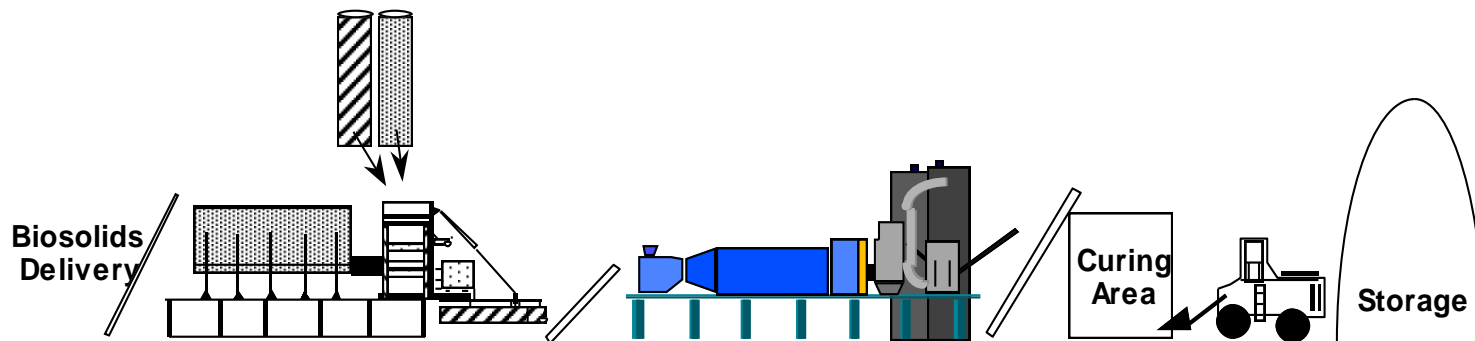
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## Traditional N-Viro Process



## BioDry Heat Drying System

# Three Product Technologies ®Registered

*Biosolids Combined with CCPs*



~N-VIRO Soil™

*23 N-VIRO  
Soil™  
Facilities*

*Addition of Thermal Drying*



~N-VIRO  
BioDry™

*Enhanced Thermal Drying*



~N-VIRO  
Fuel™



N-VIRO Fuel



## Fairborn, OH

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## Syracuse, NY

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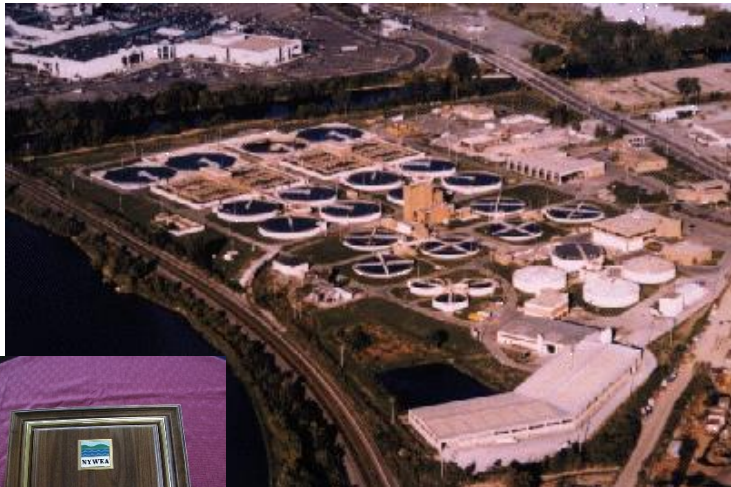
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55,000 wet tons  
of biosolids annually



# ***Syracuse, NY Windrow Building***

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## ***BioDry Provides Long Term Solution***



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- Rapid Installation Process
- Long-Term Solution
- Proven Success
- Flexible and Sustainable Process
- Exceeds Public Expectations
- Closes Recycling Circle
- Inherent Backup



## ***Sarnia, Canada BioDry Facility***

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## ***Sarnia, Canada BioDry Facility***

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## ***Leamington, Canada BioDry Facility***

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## ***Leamington Product Storage***



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## ***Class A Markets For N-Viro Soil***

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- Agriculture
- Horticulture
- Topsoil
- Topdressing
- Landscaping
- Soil blending
- Soil conditioning
- Fertilizer
- Urban Reclamation
- Minespoil Reclamation
- Structural Fill Material
- Roadbase Material
- Landfill Cover



## Class A Markets For N-Viro Soil

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Agriculture



Horticulture



Before



After



## Class A Markets For N-Viro Soil

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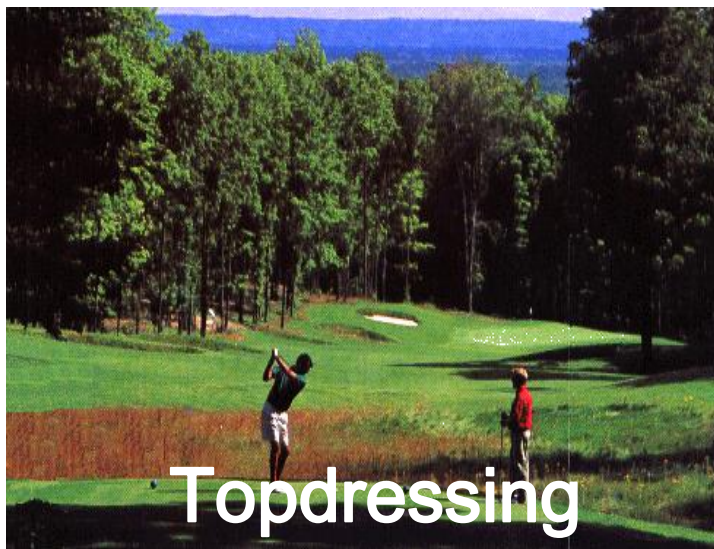
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## ***Prospective Israeli Markets***



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Summary

- Agriculture
- Horticulture
- Topsoil
- Soil Conditioning
- Soil Disinfection
- Landscaping
- Landfill Cover





## N-Viro BioBlend™



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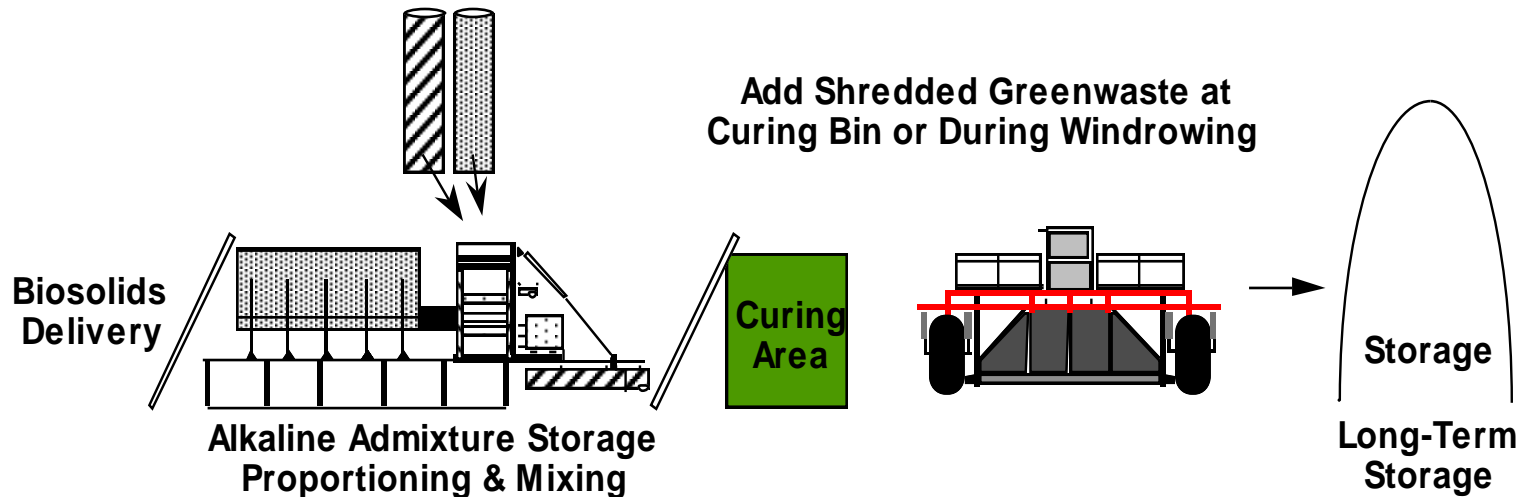
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### Using Community Byproducts to Add Value to the Finished Product





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*N-VIRO Fuel™*

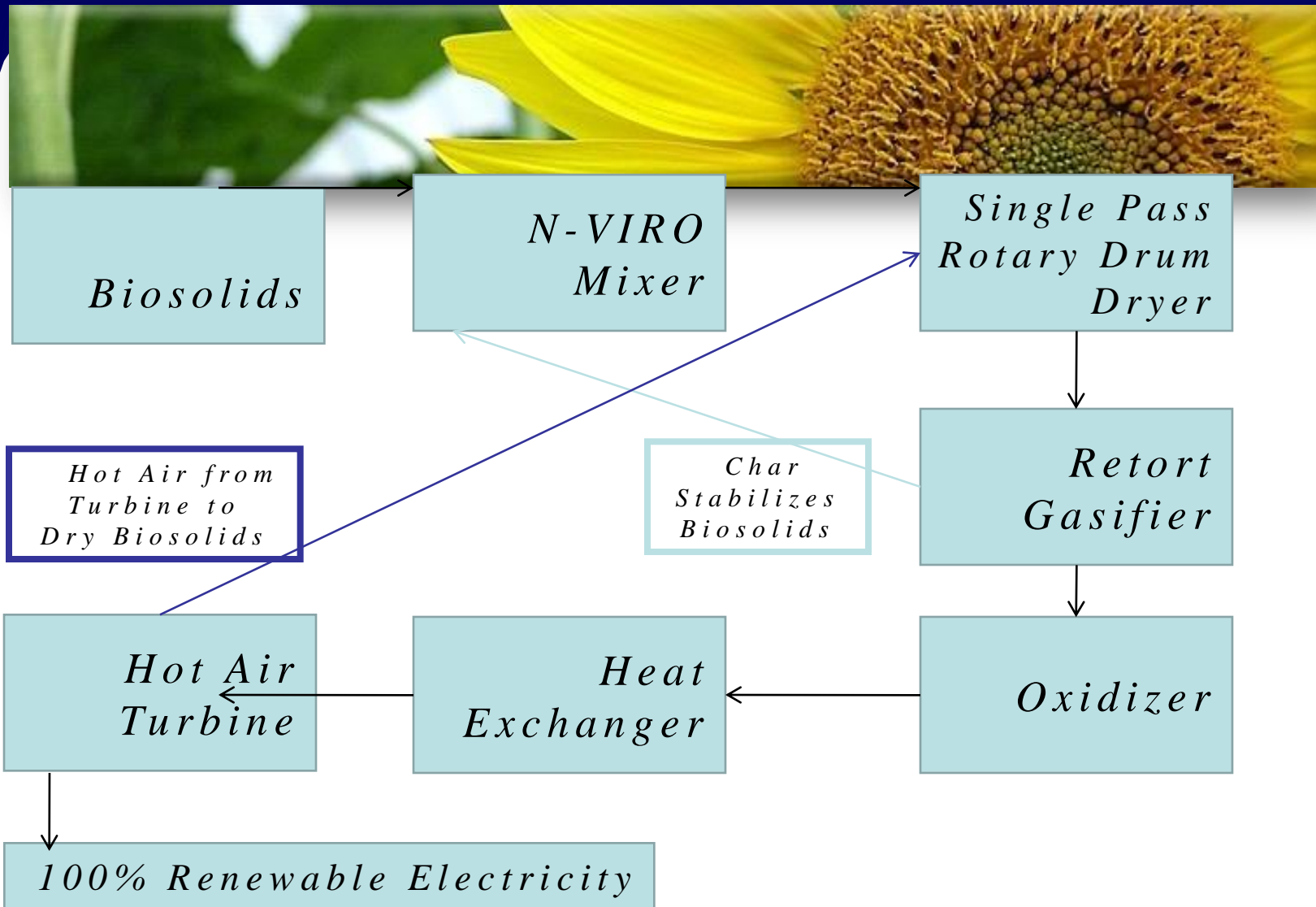
*Dry, Granular Material with Density Comparable to Coal  
Safe, Effective Energy Supplement*

*N-VIRO Fuel™ a Biomass-Derived Fuel  
Substitute for Coal at Coal-Fired Power Plants  
Fuel Gasification Process Turning Solid to Gas*

*100% Renewable Electricity  
Through Steam and Hot Air Turbines*



- Project Intro
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- Summary



## ***Process Flexibility***



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Summary

- Customized manufacturing
- Proven process with 40+ operating plants
- Off the shelf equipment for rapid installation
- Straight forward operation
- Simple materials handling
- Ministry of Environment approved
- Proven community acceptance
- Inherent Class A backup to the dryer



## ***N-Viro Process Advantages (cont.)***



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Summary

- Class A Disinfection Approval from the Ministry of Environment
- Approved USEPA Class A Process Since 1998
- Approved Advanced Treatment, Directive 86/278/EEC of the European Union

## ***Stability & Storability***



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Summary

- Stability is vital
- Maximize product value to drive demand
- Effective use of space
- Eliminate concerns due to fire and to re-inoculation by pathogens

## Product Storage

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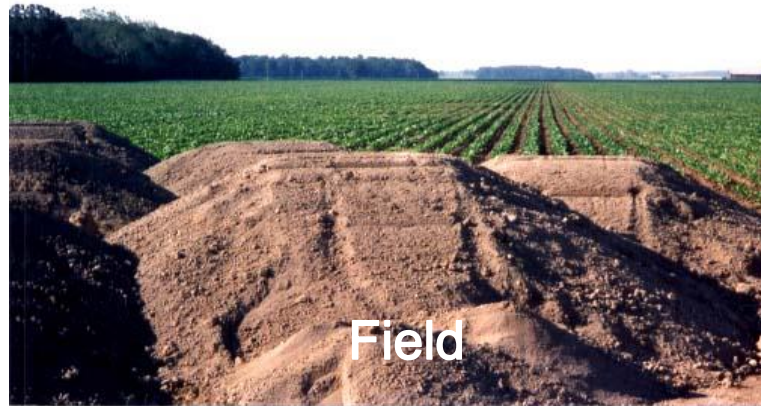
Alternative Techs

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## ***N-Viro Business Formats***



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- B.O.T. (Build, Operate & Transfer)
- Turnkey
- Turnkey & Operational Contract
- Expanded Partnership with DAN Water Assoc.

## ***Summary***



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Summary

- An Immediate and Long-Term solution
- Accepted by Shafdan and the Community
- Rapid Installation
- Most Efficient Use of Capital
- Flexible and Sustainable
- Commercially Viable Product

## ***DAN Water Association***



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Summary

- Barcelona Agreement
- Accelerated timeframe
- Siting concerns
- Short-term v. Long-term solutions
- Community Support





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Dan – Viro Ltd

CRM  
12.5%

GES  
87.5%

# Dan – Viro Plant (Shafdan)

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## Final Design

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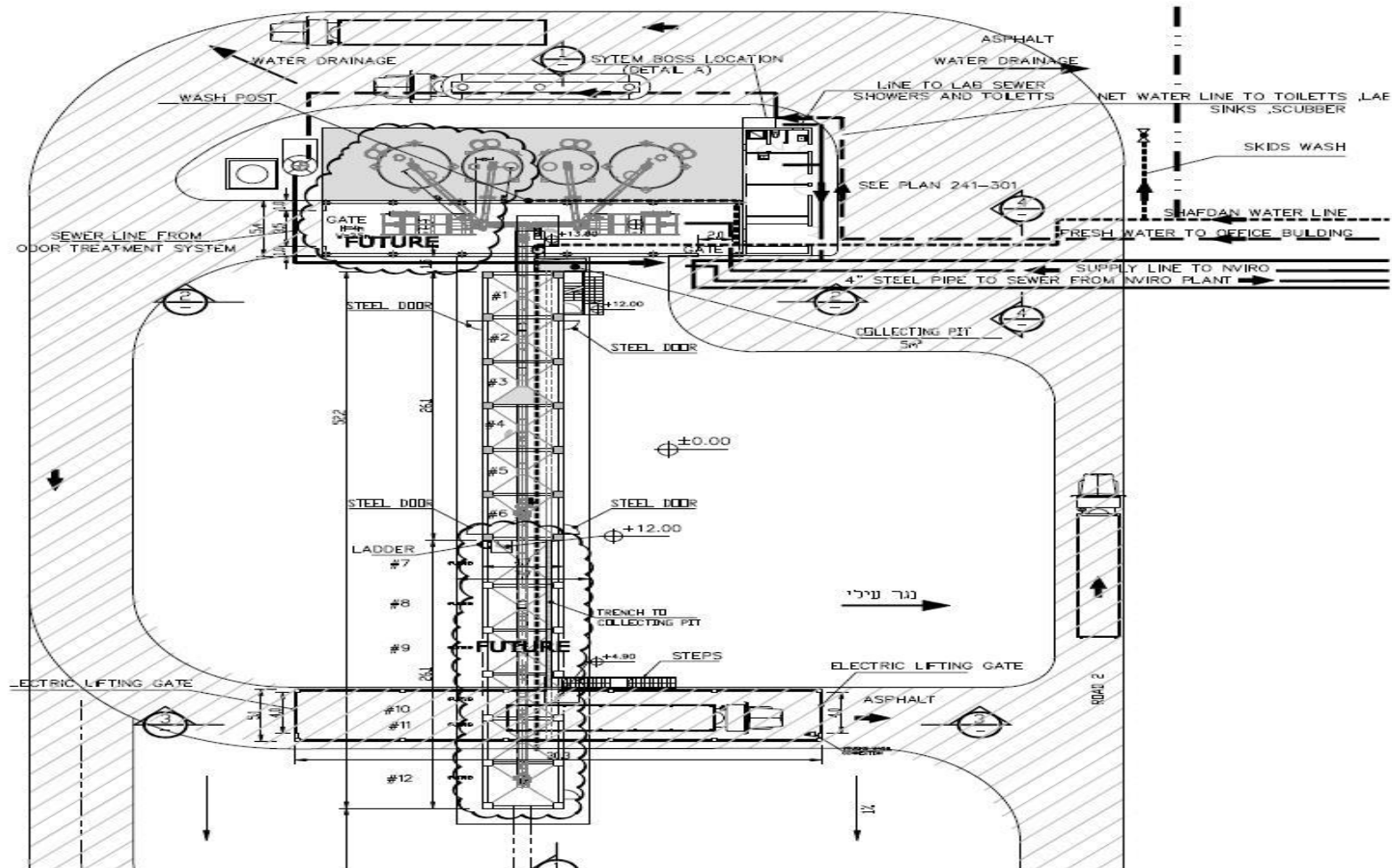
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## Dan – Viro Plant (Shafdan)

- Between the end of 2011 to the present, 97,000 Ton of Raw sludge have been treated at the Shafdan Plant.
- 150,000 Ton Class A N-Viro Soil have been manufactured.
- They have been scattered over 27,000 Dunams.
- Professional studies conducted in recent years in agricultural observed good results.



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***Any Questions?***

***Thank you for listening***

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