










# Waste-to-Energy on a Very Small Scale: The Metlakatla Indian Community Experience

Presented by  
John G. Carlton, P.E., BCEE, Senior Vice President  
Gershman, Brickner & Bratton, Inc.  
August 23, 2016



## Presentation Objectives

- Discuss the solid waste management challenges faced by a small island community
- Present the options evaluated by the Metlakatla Indian Community
- Review the feasibility study for a small scale waste-to-energy system
- Present the current Metlakatla Indian Community project status





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Quality – Value – Ethics - Results

Established in 1980

Solid Waste Management and Technology Consultants

Helping Clients Turn Problems into Opportunities




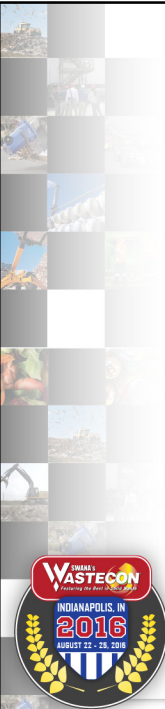
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ANNETTE ISLANDS RESERVE  
1887




Annette Islands Reserve

Only Island Indian Reservation in Alaska



200 sq. mi.

Population ~ 1,500



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Division of Energy and Mineral Development

Tribal Grant Program

Supporting MIC with Energy Development including Hydro and Waste-to-Energy



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## Small Island Solid Waste Management Challenges

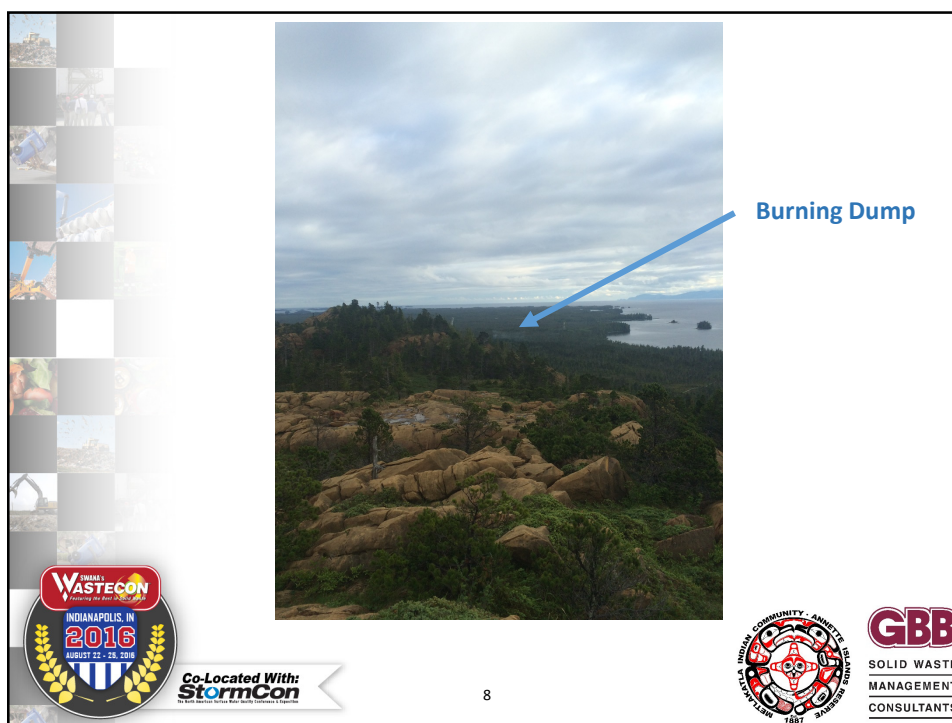


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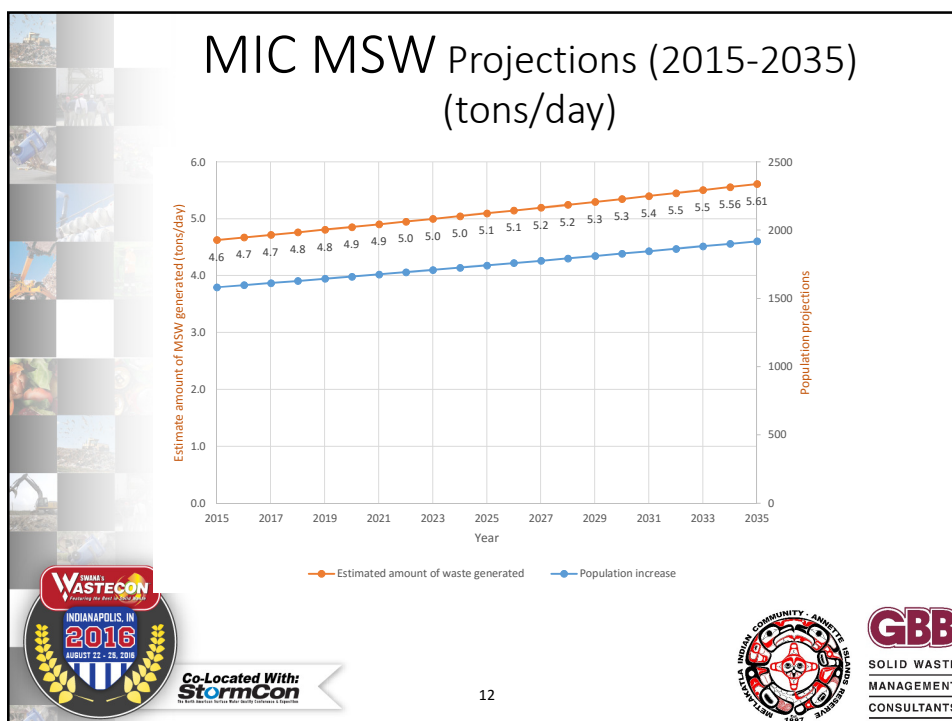
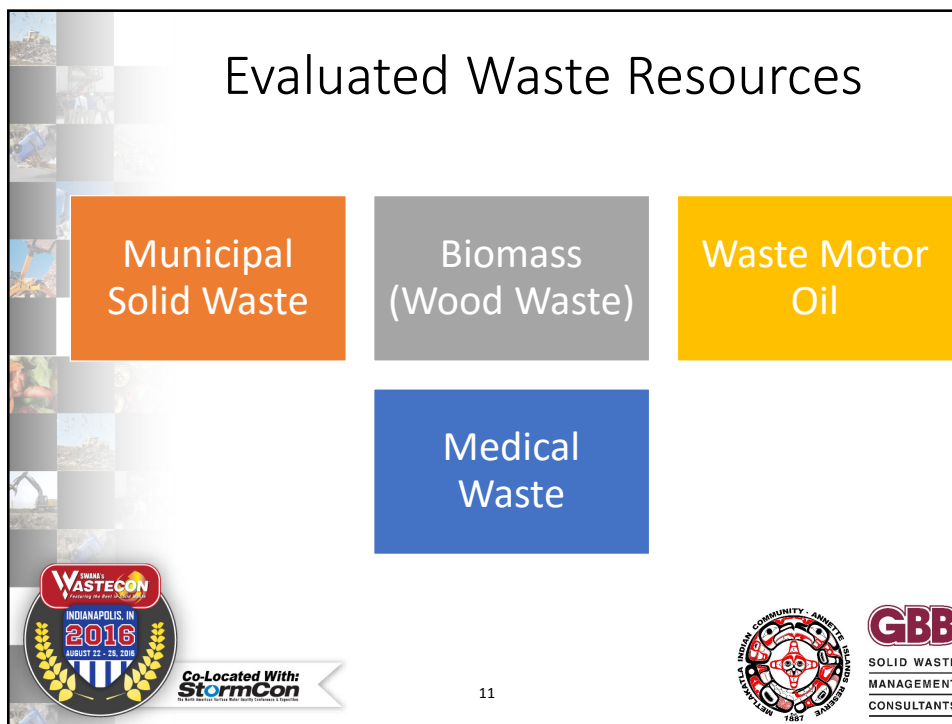
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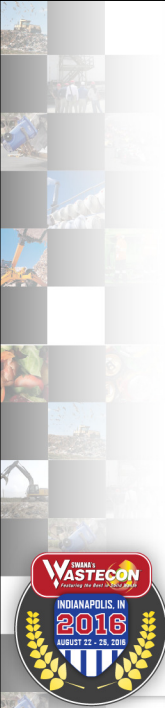
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Request for Expression of  
Interest and Qualifications  
Metlakatla Indian Community





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INVITATION COVER SHEET



SERVICE: Request for Expression of Interest for  
Community Small Scale Waste-to-Energy Project

Responses must be submitted by: 5:30 P.M. EST, August 28 2015


For Information Contact: John Carlton P.E. BCEE,  
Senior Vice President, Gershman Brickner & Bratton, Inc.  
Phone: 1-808-319-5992  
e-mail: [jcarlton@gbblnc.com](mailto:jcarlton@gbblnc.com)




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## Responses to the RFIQ




Eco Waste Solutions, Ontario,  
Canada





Pennram Diversified Mfg. Corp.,  
Pennsylvania, USA





Consutech Systems, LLC.,  
Virginia, USA

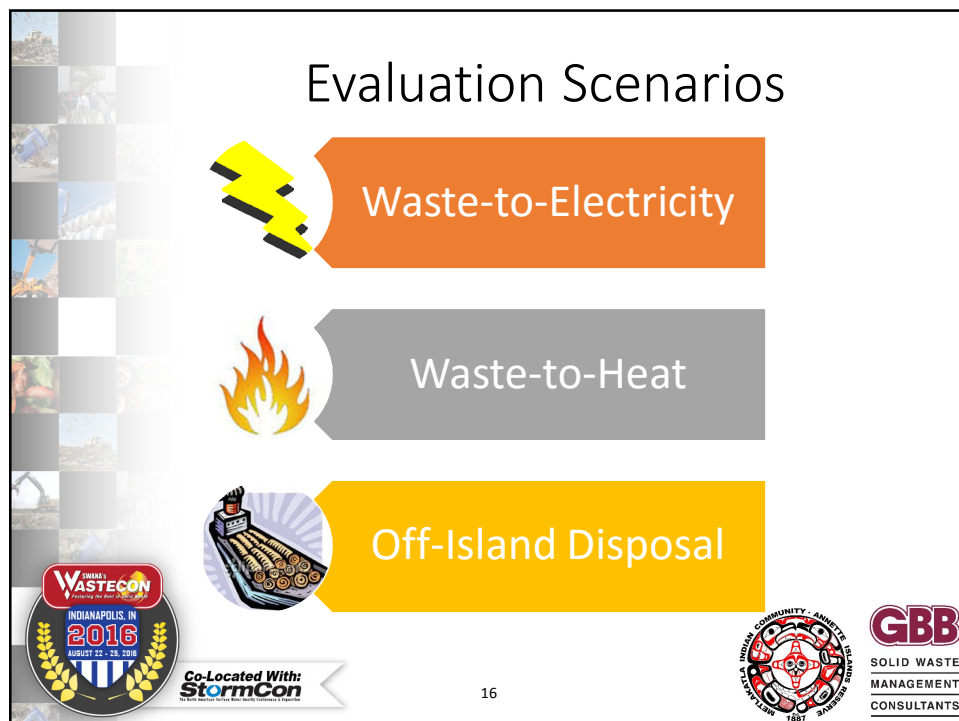
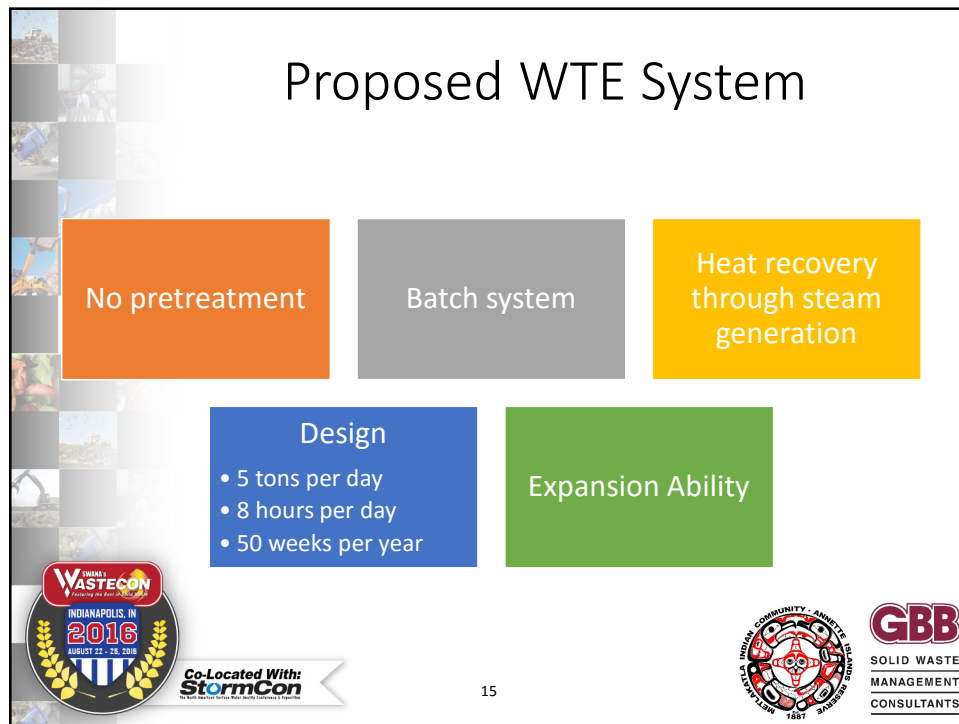


Dynamis Energy LLC, Idaho, USA

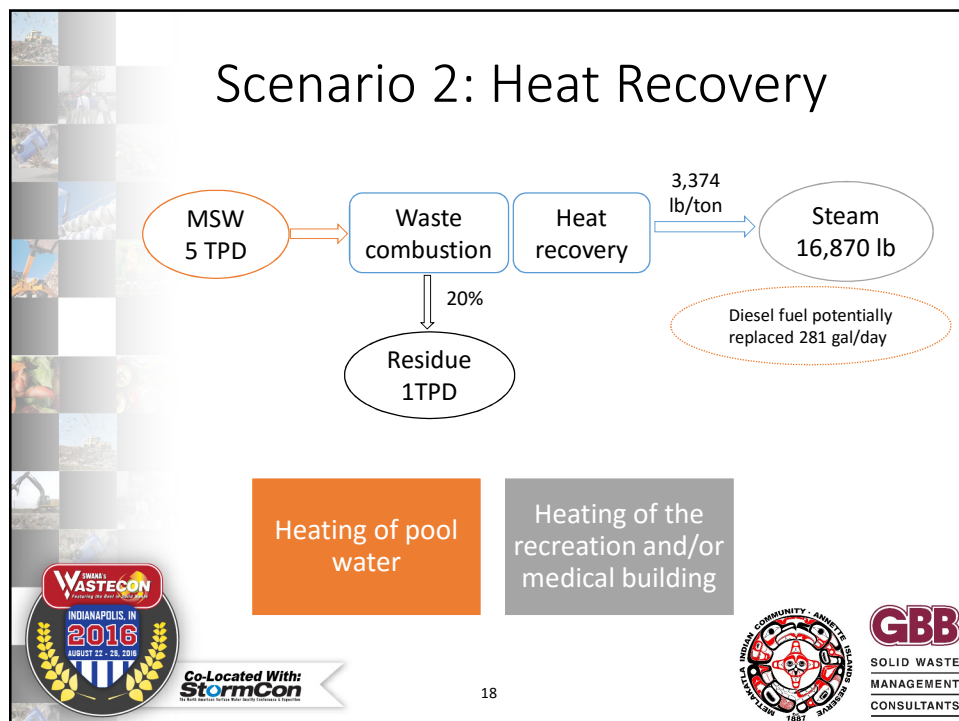
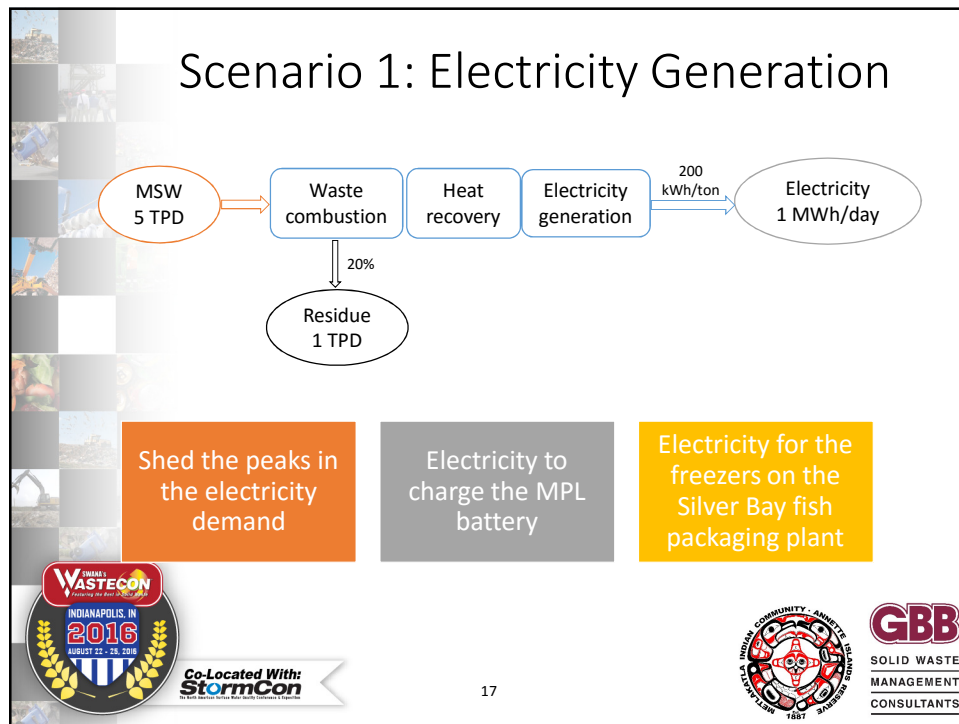


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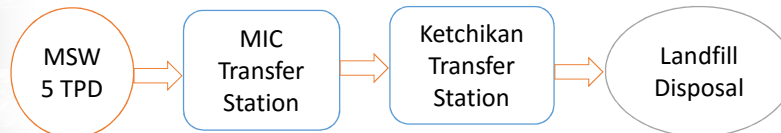








## Scenario 3: Barging the MSW off Annette Island for Disposal



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Source: Eco Waste Solutions



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Capital Costs	\$/installed daily ton of processing capacity	Installed Cost (\$)
WTE Facility Capital costs (Excluding Finance)	\$230,000	\$1,150,000
Air Pollution Control equipment (80% of the WTE Facility Capital cost)	\$88,000	\$440,000
Hot Water Storage Tank, (20,000 gal Scenario 2 only)	\$14,800	\$74,000
Transportation cost of the equipment to Annett Island	\$17,000	\$85,000
<b>Expense Items</b>	<b>\$/ton MSW processed</b>	<b>\$/year</b>
Operation and Maintenance	\$100	\$125,000
Residue Barging of the island	\$220	\$275,000
Oversight Costs (labor) 1 full time operator	\$44	\$57,200
<b>Revenue Items</b>	<b>\$/ton MSW processed</b>	<b>\$/year</b>
Electricity	\$10	\$125,000
Diesel Fuel avoided cost	\$261	\$326,250

Note: Costs are Industry Based Estimates



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## Off-Island Disposal

Capital Costs	\$(2015)
Transfer Station and Equipment	\$2,562,000
Expense Items	\$ Annual (2015)
Operation and Maintenance	\$435,000

Note: Costs are Industry Based Estimates



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## Economic Evaluation of Options

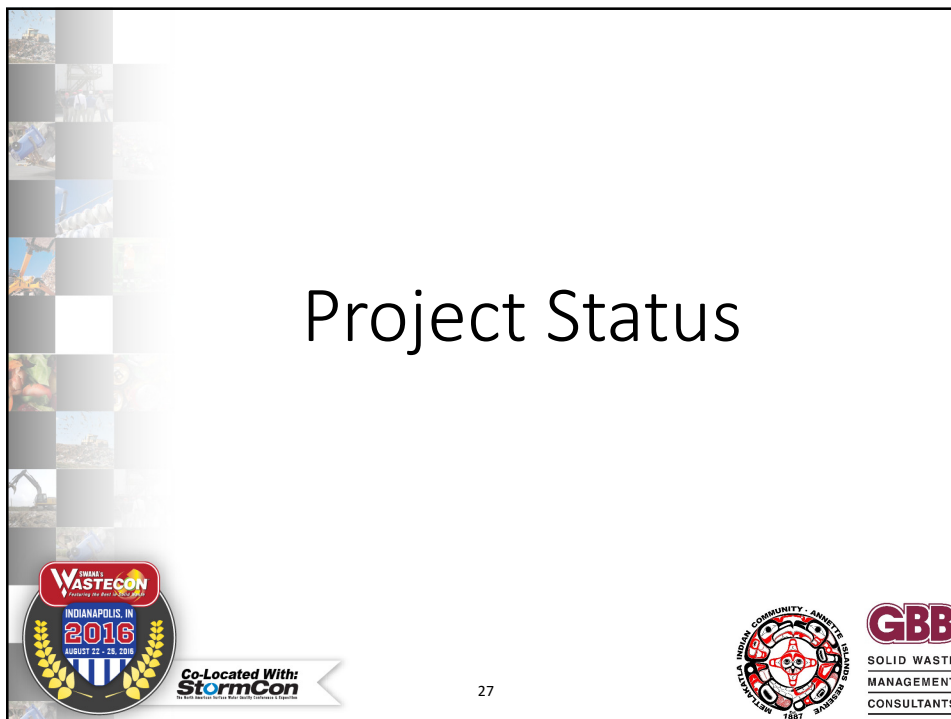
Scenario	Net Present Cost (\$2015)	Net Present Cost Per Ton (\$2015)
Scenario 1 (Electric)	\$8,763,527	\$179
Scenario 2 (Heat), Option 2 (50%)	\$7,662,740	\$157
Scenario 3 (Barge)	\$24,181,534	\$495

Note: Costs are Industry Based Estimates

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Project Status

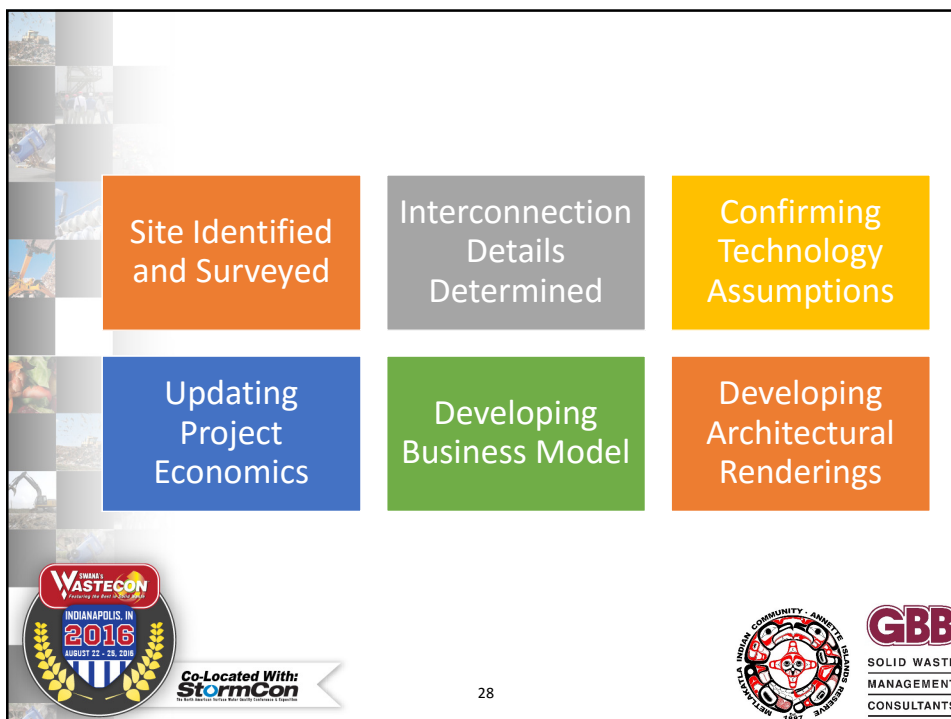
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Site Identified and Surveyed

Interconnection Details Determined

Confirming Technology Assumptions

Updating Project Economics

Developing Business Model

Developing Architectural Renderings

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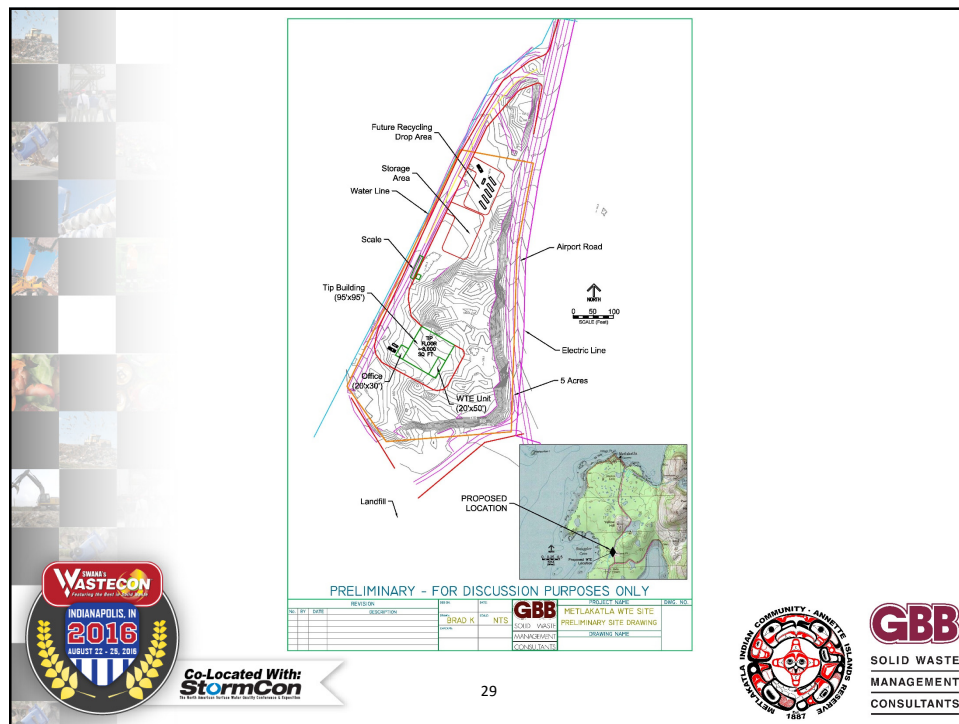
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## Thank You!



John G. Carlton, P.E., BCEE  
Senior Vice President, GBB  
908-319-5992  
[jcarlton@gbbinc.com](mailto:jcarlton@gbbinc.com)  
[www.gbbinc.com](http://www.gbbinc.com)



Genelle Winter  
Facilities Director, MIC  
908-617-0202  
[miclandscaping@gmail.com](mailto:miclandscaping@gmail.com)  
[www.metlakatla.com](http://www.metlakatla.com)

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