

Environmental Management System for Biosolids

Document 03.6 – Calumet WRP CCP Table

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Biosolids Value Chain	CCP	Operational Controls	Potential Environmental Impacts	Monitoring/Measuring/Record Keeping	Primary Person Roles/Responsibilities
Wastewater Collection and Pretreatment	Residential Discharges	<ul style="list-style-type: none"> Public Outreach Household hazardous waste collection(HHW) 	<ul style="list-style-type: none"> Poor surface water quality Metals accumulation in biosolids 	<ul style="list-style-type: none"> # Educational outreach events HHW Event Summaries 	Section 072 Public and Intergovernmental Affairs Officer (X16626); Section 643 SE (X16553)
	Industrial Discharges	<ul style="list-style-type: none"> Permits – DA Pretreatment Inspections SPCC Plans (Spill) TOMP Plans (Toxics) Sewage & Waste Control Ordinance Field Surveillance and Enforcement Action Regulated community outreach 	<ul style="list-style-type: none"> Pipe Corrosion Process upsets – poor quality surface water & biosolids Metals accumulation in biosolids Violation of NPDES Permit Fish Kills Explosions 	<ul style="list-style-type: none"> Random Sampling Inspections Continuous Sampling Interceptor Sampling IEPA Annual Pretreatment Report Notices of Noncompliance Cease and Desist Orders Semi-annual Continued Compliance Reports Discharge Authorizations # of outreach events 	Section 192 Supervising Environmental Specialist (X13050) Section 195 Senior Environmental Specialist (X63577)
	Spills into Collection System	<ul style="list-style-type: none"> Sewage & Waste Control Ordinance Enforcement Regulated community outreach 		<ul style="list-style-type: none"> Incident Report # of outreach events 	Section 195 SES(X63577)



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Wastewater Treatment & Solids Generation	Screening & Grit Removal	<ul style="list-style-type: none"> Operate timed, differential head or manual 	<ul style="list-style-type: none"> Equipment failure/ process overload Poor quality biosolids 	<ul style="list-style-type: none"> Volume (CY) of debris removed. Operator logs 	Section 831 Principal Engineer (X63546) TPO III (X63552)
	Primary Treatment	<ul style="list-style-type: none"> Primary sludge withdrawal No. of tanks in service Operations SOPs 	<ul style="list-style-type: none"> Odor Excess loading to secondary treatment Poor quality effluent and biosolids 	<ul style="list-style-type: none"> % solids Operator logs 	Section 831 Principal Engineer (X63546) TPO III (X63552)
	Secondary Treatment Aeration Tanks Final Settling Tanks	<ul style="list-style-type: none"> NPDES Permit No. IL0028061 DO, MLSS, SRT, RAS rate, WAS rate, Feed Rate Operations SOPs 	<ul style="list-style-type: none"> NPDES Permit Violation Poor quality effluent and biosolids Odor 	<ul style="list-style-type: none"> Operator logs Daily reports NPDES permit parameters Microscopic examination DO, SS, SVI, F/M, Blanket level, RAS, WAS, MLSS, BOD, NH3, pH 	Section 831 Principal Engineer (X63546) TPO III (X63552) Section 122 Associate Environmental Research Scientist (X83780)



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Solids Stabilization & Dewatering	Pre-Digestion Screens	<ul style="list-style-type: none"> Operate continuously in manual 	<ul style="list-style-type: none"> Odor Poor quality biosolids 	<ul style="list-style-type: none"> Volume (CY) of debris removed. Operator logs 	Section 834 COE (X63548)
	Solids Thickening by Gravity Concentration	<ul style="list-style-type: none"> Rate of feed Overflow SS Rate of withdraw Polymer addition 	<ul style="list-style-type: none"> Odor Poor quality biosolids 	<ul style="list-style-type: none"> % Solids Operator logs Blanket level Recycle Polymer dosage 	Section 834 COE (X63548)
	Solids Thickening by Gravity Belt	<ul style="list-style-type: none"> Rate of Feed Filtrate %SS Belt Speed # Plows in service Polymer Addition 	<ul style="list-style-type: none"> Odor Poor quality biosolids 	<ul style="list-style-type: none"> Cake % Solids Operator logs Belt Speed Recycle Polymer dosage 	Section 834 COE (X63548)
	Thickened Solids Transfer to Digesters	<ul style="list-style-type: none"> Feed pumps operate continuously Flow 	<ul style="list-style-type: none"> Process interruption Recycle of overflow 	<ul style="list-style-type: none"> Pump run time Feed tank elevation Operator log 	Section 834 COE (X63548)
	Anaerobic Digestion	<ul style="list-style-type: none"> Feed & draw rates Temperature Detention time Digester SOP 	<ul style="list-style-type: none"> Odor Poor quality biosolids 	<ul style="list-style-type: none"> VS destruction Methane produced Volatile acids/alk. pH Temperature Detention time Operator logs 	Section 834 COE (X63548)



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	CCP	Operational Controls	Potential Environmental Impacts	Monitoring/Measuring/Record Keeping	Primary Person Roles/Responsibilities
	Post-Digestion Centrifuge	<ul style="list-style-type: none"> • Feed rate • Polymer & ferric dose • Torque setting • Centrifuge SOP 	<ul style="list-style-type: none"> • Odor • Poor quality biosolids 	<ul style="list-style-type: none"> • Operator logs • % Solids (feed, cake, centrate) • Polymer dosage • Cake production 	Section 834 COE (X63548)
	Dewatered Solids Transfer to Truck Loading	<ul style="list-style-type: none"> • Belt runs continuously during dewatering operation 	<ul style="list-style-type: none"> • Process interruption • Spillage 	<ul style="list-style-type: none"> • Operator logs 	Section 834 COE (X63548)
Solids Transport	Pump to Lagoon (low solids)	<ul style="list-style-type: none"> • Flow • Pressure 	<ul style="list-style-type: none"> • Spill 	<ul style="list-style-type: none"> • Volume • % Solids • Operator logs 	Section 652 SE (X63704) Section 834 COE (X63548)
	Truck Loading/Transport	<ul style="list-style-type: none"> • Loading/Hauling SOP • Scale operation SOP • Spill plan • Vehicle maintenance 	<ul style="list-style-type: none"> • Odor • Spill • Dust • Water pollution • Noise & air pollution 	<ul style="list-style-type: none"> • Truck Scale database • Solids File • Solids Transported • Operator Logs 	Section 652 SE (X63704)



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Biosolids Value Chain	CCP	Operational Controls	Potential Environmental Impacts	Monitoring/Measuring/ Record Keeping	Primary Person Roles/Responsibilities
Solids Stabilization & Drying	Lagoons	<ul style="list-style-type: none"> Lagoon Operation SOP Sampling SOP Holding Time 40 CFR 503 Requirements 	<ul style="list-style-type: none"> Odor Poor quality biosolids Groundwater contamination 	<ul style="list-style-type: none"> Lagoon Records % Solids Fill/empty start date Lysimeters and groundwater monitoring wells 	<p>Section 652 SE (X63704)</p> <p>Section 123 Supervising Environmental Soil Scientist (X84201)</p>
	Air Drying (Low-Solids & High-Solids)	<ul style="list-style-type: none"> IEPA Permit No. 2015-AO-59622 Drying time Air drying SOP Odor Control SOP 40 CFR 503 Requirements Sampling SOP 	<ul style="list-style-type: none"> Odor Dust Poor quality biosolids Groundwater contamination 	<ul style="list-style-type: none"> Pathogens testing for Class A IEPA Quarterly & semi-annual reports % solids IEPA operating permit parameters Lysimeters and groundwater monitoring wells 	<p>Section 652 SE (X63704)</p> <p>Section 123 Supervising Environmental Soil Scientist (X84201)</p>
	Compost	<ul style="list-style-type: none"> 40 CFR 503 Requirements SOP For Compost IEPA Permit No. 2017-017-DE/OP 	<ul style="list-style-type: none"> Odor Spills Dust Water pollution Truck noise & air pollution 	<ul style="list-style-type: none"> Temperature & Time BS/WC/YW ratio # of Turns Curing Time Screen Size Operator Time 	<p>Section 652 PE (X84303)</p>



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Biosolids Utilization	Controlled Solids Distribution	<ul style="list-style-type: none"> • IEPA Permit No. 2015-SC-59620 • 40 CFR 503 Requirements • 35 IAC 391 Requirements • Weather • IL Dept. of Agriculture Soil Amendment License No. 100181 	<ul style="list-style-type: none"> • Odor • Spill • Dust • Water pollution • Truck noise & air pollution 	<ul style="list-style-type: none"> • Solids transported • Solids File:%TS and daily tons • Truck scale records • Controlled Distribution User Forms • IEPA Quarterly & semi-annual report • IEPA operating permit parameters 	<p style="text-align: center;">Section 652 SE (X63704)</p> <p style="text-align: center;">Section 123 Supervising Environmental Soil Scientist (X84201)</p>



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Biosolids Value Chain	CCP	Operational Controls	Potential Environmental Impacts	Monitoring/Measuring/Record Keeping	Primary Person Roles/Responsibilities
Biosolids Utilization	Land Application	<ul style="list-style-type: none"> • IEPA Permit No. 2014-SC-58425 • 40 CFR 503 Requirements • 35 IAC 391 Requirements • Contract Specifications • Weather 	<ul style="list-style-type: none"> • Odor • Spills • Dust • Water pollution • Truck noise & air pollution 	<ul style="list-style-type: none"> • Solids Transported • Solids File:%TS and daily tons • Truck scale records • IEPA Quarterly & semi-annual reports • Contractor – Monthly Operating Report • NANI forms • User Forms • Field Inspections • IEPA operating permit parameters 	<p>Section 652 SE (X63704)</p> <p>Section 123 Supervising Environmental Soil Scientist (X84201)</p>
	Landfill Daily/Final Cover	<ul style="list-style-type: none"> • Daily/Final Cover Requirements • Landfill Permit • Contract/Agreement Specifications • Weather • Adjusted Std. 03-02 	<ul style="list-style-type: none"> • Odor • Spills • Dust • Water pollution • Truck noise & air pollution 	<ul style="list-style-type: none"> • Solids Transported • Solids File: %TS, daily tons • Truck Scale Report • IEPA Quarterly & semi-annual reports 	<p>Section 652 SE (X63704)</p> <p>Section 123 Supervising Soil Scientist (X84201)</p>
	Landfill Disposal (Unsuitables)	<ul style="list-style-type: none"> • Permit requirements • Contract Specifications 	<ul style="list-style-type: none"> • Odor • Spills • Dust • Water pollution • Truck noise & air pollution 	<ul style="list-style-type: none"> • Solids Transported • Solids File: %TS, daily tons • Truck Scale Report • IEPA Quarterly & semi-annual reports 	<p>Section 652 SE (X63704)</p> <p>Section 123 Supervising Soil Scientist (X84201)</p>



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Odor Control Management	Mechanical Operation/Solids Processing	<ul style="list-style-type: none"> • Ozone generation • Chemical spray system 	<ul style="list-style-type: none"> • Odor 	<ul style="list-style-type: none"> • Operator Logs 	Section 831 Principal Engineer (X63546)
	Solids Handling, Drying, Disposal	<ul style="list-style-type: none"> • Odor Control SOP 	<ul style="list-style-type: none"> • Odor 	<ul style="list-style-type: none"> • Odor Patrol Forms • Odor complaint Forms • Odor complaint Log 	Section 652 SE (X63704) Section 122 Senior Environmental Research Scientist (X84070) Section 129 CEIII (X84225)

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Revision History

Version Number	Version Date	Description of Revision
0	7/28/05	Original issue.
1	8/17/05	Revised Operational Controls, Environmental Impacts, and Monitoring, Measuring and Recordkeeping Removed CCPs that do not play a role in biosolids management (TARP, Sewer Maintenance, Influent, Odor Control Management – Collection Facilities and Treatment Operations)
2	3/22/06	Added ground water contamination as a Potential Environmental Impact in the Solids Stabilization & Drying value chain. Added ground water monitoring wells and lysimeters to the Monitoring/Measuring/Record Keeping in the Solids Stabilization & Drying value chain. Added Chemical spray system as a Operational control in the Mechanical Operation/Solids Processing CCP.
3	4/12/07	Added “regulatory community outreach” to the Industrial Discharge and Spills into Collection System CCPs under the Operational Control column. Added “# of outreach events” to the Industrial Discharge and Spills into Collection System CCPs under the Monitoring/Measuring/Recordkeeping column. Added the following to the Industrial Discharge CCP under the Monitoring/Measuring/Recordkeeping column: IEPA Annual Pretreatment Report, Notices of Noncompliance, Cease and Desist Orders, Semi-annual Continued Compliance Reports, and Discharge Authorizations. Added 35 IAC 391 (Title 35 of the Illinois Administrative Code Part 391) Requirements to Land Application and CSD CCPs under Operational Control column.
4	2/26/08	Replaced Public Information Coordinator with Manager of Public Affairs under the Primary Person Roles/Responsibilities column of the Residential Discharges CCP. Replaced Section 633 with Section 643 under the Primary Person Roles/Responsibilities column of the Residential Discharges CCP. Replaced Section 850 with Section 652 for all Solids Stabilization, Drying, and Biosolids Utilization CCPs. Revised the Monitoring and Measuring column of the Landfill Daily/Final Cover and Landfill Disposal CCP.
5	7/16/08	Added pre-digestion screens as a CCP.



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Version Number	Version Date	Description of Revision
6	8/24/09	Revised PCO III to PCO III / SES.
7	3/10/10	<p>Added "Section 192 SES (X13050)" to the Industrial Discharge CCP under the Primary Person Roles/Responsibilities column.</p> <p>Combined the "Low Solids Lagoons" CCP and the "Cake Lagoons" CCP into one CCP named "Lagoons".</p> <p>Added "40 CFR 503 Requirements" to the Lagoons CCP and the Air Drying (Low-Solids & High-Solids) CCP. The District's equivalent PFRP falls under these requirements when applicable.</p> <p>Changed "Soil Scientist" to "Supervising Soil Scientist (X84063)" on both the Lagoons CCP and the Air Drying (Low-Solids & High-Solids) CCP.</p> <p>Changed "R&D" to "M&R" and added the phone extension "(X84072)" to the Solids Handling, Drying, Disposal CCP.</p>
8	4/14/11	<p>Added Section 122 – Associate Environmental Research Scientist (X83780) to Biosolids Value Chain – Wastewater Treatment & Solids Generation – Secondary Treatment Aeration Tanks Final Settling Tanks CCP under Primary Person Roles/Responsibilities column.</p> <p>Added "Section 834 COE (X63547)" to the Biosolids Value Chain – Solids Transport CCP – Pump to Lagoon (low solids) under the Primary Person Roles/Responsibilities column.</p> <p>Added Environmental to Supervising Soil Scientist to Biosolids Value Chain – Solids Stabilization & Drying – Lagoons CCP & Air Drying (Low-Solids & High Solids) CCP under Primary Person Roles/Responsibilities column.</p> <p>Added "Section 123 Supervising Environmental Soil Scientist (X84063)" to Biosolids Value Chain – Biosolids Utilization – Controlled Solids Distribution CCP under Primary Person Roles/Responsibilities column.</p> <p>Added "Section 123 Supervising Environmental Soil Scientist (X84063)" to the Biosolids Value Chain – Land Application CCP under Primary Person Roles/Responsibilities column.</p> <p>Added "Section 123 Supervising Soil Scientist (X84063)" to Biosolids Value Chain – Biosolids Utilization – Landfill Daily/Final Cover CCP under Primary Person Roles/Responsibilities column.</p> <p>Added "Section 123 Supervising Soil Scientist (X84063)" to Biosolids Value Chain – Biosolids Utilization – Landfill Disposal (Unsuitables) CCP under Primary Person Roles/Responsibilities column.</p>



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9	10/17/11	Edited Footer with Official Document Location
10	02/04/13	<p>Added “Sampling SOP” under the Operational Controls Column for the Air Drying (Low-solids & High-solids) CCP.</p> <p>Updated the IEPA Permit Numbers under the Operational Controls column for the Air Drying (Low-solids & High-solids) CCP, the Controlled Solids Distribution CCP, and the Land Application CCP.</p> <p>Removed the following: “# of agitations”; “Date loaded into cell” and “Date removed from cell”; and added “Pathogens testing for Class A” under the Monitoring/Measuring/Record Keeping column for the Air Drying (Low-solids & High-solids) CCP.</p> <p>Replaced “IEPA Monthly & Semi-annual Reports” with “IEPA Quarterly & Semi-annual Reports” under the Monitoring/Measuring/Record Keeping column for the Air Drying (Low-solids & High-solids) CCP, the Controlled Solids Distribution CCP, the Land Application CCP, the Landfill Daily/Final Cover CCP, the Landfill Disposal (Unsuitables) CCP.</p> <p>Replaced “Amount hauled” with “Solids transported”, “Solids File: %TS and daily tons” and “Truck scale records” under the Monitoring/Measuring/Record Keeping column for the Controlled Solids Distribution CCP, and the Land Application CCP.</p> <p>Replaced “Contractor – Monthly Report” with “Contractor –Monthly Operating Report” under the Monitoring/Measuring/Record Keeping column for the Land Application CCP.</p> <p>Replaced “Contract Specifications” with “Contract/Agreement Specifications” under the Operational Controls column for the Landfill Daily/Final Cover CCP.</p> <p>Added “Solids Transported” under the Monitoring/Measuring/Record Keeping column for the Landfill Daily/Final Cover CCP, the Landfill Disposal (Unsuitables) CCP</p>



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11	3/1/13	<p>Updated Title for Responsible Person under Residential Discharge</p> <p>Updated Telephone Numbers Throughout</p> <p>PCOIII title changed to Senior Environmental Specialist (SES)</p> <p>Updated Title: Associate Environmental Research Scientist to Supervising Environmental Research Scientist</p> <p>Separated "Solids Concentration" CCP under Solids Stabilization and Dewatering Chain into "Solids Thickening by Gravity Concentration CCP" and "Solids Thickening by Gravity Belt CCP."</p> <p>Operational Controls and Monitoring/Measuring/Record Keeping were updated to be technology specific</p>
12	2/20/14	<p>Inserted CCP's as identified in Third Party Audit 2013. Thickened Solids Transfer to Digesters and Dewatered Solids Transfer to Truck Loading under Solids Stabilization & Dewatering.</p> <p>Updated Various Position Titles.</p>
13	4/27/16	<p>Updated Permit Numbers</p> <p>Added Compost as a Critical Control Point</p>
14	3/22/17	<p>Solids Stabilization and Drying: Update Permit No.</p> <p>Odor Control Management: add Section 129 CEIII (X84225)</p>
15	3/8/18	<p>Updated Public & Intergovernmental Affairs Officer's section # from 071 to section 072.</p> <p>Updated Public & Intergovernmental Affairs Officer's ext. # from X17909 to X16626.</p> <p>Updated Title from CE III to SE for sections 643 and 652 throughout.</p> <p>Updated Title and Ext. # from CE IV (X84301) to PE (X84303) for section 652 throughout.</p> <p>Solids Stabilization & Drying/Compost – Added IEPA Permit No. 2017-017-DE/OP</p> <p>Biosolids Utilization/Controlled Solids Distribution – Added IL Dept. of Agriculture Soil Amendment License No. 100181.</p>