

		<b>City of Grand Rapids</b> <b>Environmental Services Department</b> <b>Policies and Procedures</b>	
<b>Title:</b> Element 3 – Critical Control Points		<b>Created by:</b> Dave Harris <b>Approved by:</b> William R. Kaiser	
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### General

Identifying critical control points (CCP) along our Biosolids value chain is fundamental to an effective biosolids management program (BMP). Through identification of CCP and potential or actual environmental impacts, we can plan and implement proactive operational controls to ensure that our biosolids are consistent with the intended final use as stated in the City's biosolids mission statement<sup>A</sup> and manage the potential and actual environmental impacts associated with these activities.

### Procedures

The following protocol will be implemented to identify CCP which impact the biosolids value chain for the City;

1. The internal BMP team<sup>B</sup> will review CCP identified in Table 3.1 whenever there are regulatory changes or whenever major operational changes occur.
2. Revisions will be documented in writing by the BMP coordinator<sup>B</sup> and the internal BMP team, who will then be responsible for ensuring that any necessary changes are made in Table 3.1.
3. Documentation will occur through notation in the annual biosolids program performance report and discussed with the ESD manager as part of the periodic management review of performance.
4. "Critical Control Point" postings<sup>C</sup> will be updated as needed.
5. If revisions to CCP are necessary due to operational changes, information related to roles and responsibilities<sup>B</sup>, operational controls<sup>D</sup>, monitoring and measurement<sup>E</sup>, potential and actual environmental impacts, and any other relevant areas of the BMP will be reviewed and modified as appropriate. Utilizing communication methods identified in Element 9 "Communication and Public Outreach", the City will promptly notify contractors, interested parties, the public, the National Biosolids Partnership (NBP), assigned third party auditor, and wastewater plant employees whenever operational changes occur which result in changes to the CCP.
6. Each CCP is assigned a lead responsible party as identified in Element 7 Roles and Responsibilities Table 7.1 "Roles and Responsibilities – Internal BMP Team". This individual will track their assigned CCP's to verify that operational controls are current and functional and any associated monitoring and

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measurement data is being recorded. A progress report will be submitted to the BMP coordinator during July of each year<sup>F</sup>.

## **References**

Appendix A Glossary

Appendix B Tables, Figures, Forms

Appendix C CCP Postings

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<sup>A</sup> Reference Element 2 Biosolids Management Policy

<sup>B</sup> Reference Element 7 Roles and Responsibilities Table 7.1 “Roles and Responsibilities – Internal BMP Team”, Table 7.2 “Employee Roles and Responsibilities grouped by Biosolids Value Chain Component “, and Table 7.3 “Internal BMP Team Name and Contact Information”

<sup>C</sup> Reference Appendix C “CCP Postings”

<sup>D</sup> Reference Element 10 Operational Controls of Critical Control Points, and Table 3.1 “Critical Control Points”

<sup>E</sup> Reference Element 13 Monitoring and Measurement

<sup>F</sup> Reference Figure 3.1 “CCP Periodic Review”

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Figure 3.1 CCP Periodic Review

<b>Critical Control Point Periodic Review</b>		
Review all operational controls assigned to each critical control point for which you have lead responsibility (reference Element 7 Roles and Responsibilities Table 7.1). Verify that monitoring and measurement data is adequate and is being properly recorded. Submit completed forms to BMP Coordinator.		
<b>Critical Control Points (circle only one)</b>		
Significant Industrial Users	Commercial User Discharges	Discharge Authorization Permits
Pollutant Minimization	Septage (Portable Toilet) Receiving	Solids Screening & Grit Collection
Scum	Primary Treatment	Raw Sludge Storage
Secondary Treatment	WAS Thickening	Centrifuge Dewatering
Odor Control	Truck Cover	Truck Transport
Truck Washing Procedure	Truck Loading	Composting
Landfill(s)		
Verify that operational controls are current and functional. No changes needed _____ Comments: (Note: Deviations are to be considered a nonconformance – reference Element 14)		
Verify that monitoring and measurement data is being recorded. No changes needed _____ Comments: (Note: Deviations are to be considered a nonconformance – reference Element 14)		

“I have conducted a periodic review of operational controls and monitoring and measurements for critical control points I am responsible to monitor”

Date (MM/DD/YYYY) \_\_\_\_/\_\_\_\_/\_\_\_\_ Signed \_\_\_\_\_

Table 3.1 Critical Control Points

CRITICAL CONTROL POINTS				
Biosolids Value Chain	Critical Control Point	Operational Controls	Environmental Impacts	Monitoring & Measurement
<b>Wastewater Collection and Pretreatment</b>				
	Significant Industrial Users	SOP 2701 - IPP Annual Inspections (2,3,4,8,10) <sup>G</sup> SOP 2702 - Significant Industrial User sampling (2,3,4,8,10) SOP 2703 - Issuance of Permits (2,3,4,8) SOP 2704 - Non-Domestic User Survey (2,3,4,8) SOP 2713 – SIU Self-Monitoring & Reporting (2,3,4,8,10) SOP 2715 – Compliance Tracking(2,3,4,8,10) SOP 2716 – Significant Non-compliance Notification (2,3,4,8,10)	<ol style="list-style-type: none"> <li>1. Ensure biosolids comply with state and federal regulations to protect public health and the environment by controlling discharge of heavy metals and organics into the sewer system.</li> <li>2. Prevent surface water contamination by controlling the discharge of heavy metals and organics through issuance of permits and inspections.</li> </ol>	<ol style="list-style-type: none"> <li>1. Records of annual compliance inspections</li> <li>2. Records of Industrial self monitoring and random sampling data results</li> <li>3. Review of user surveys</li> </ol>
	Commercial User Discharges	SOP 2703 - Issuance of Permits (2,3,4) SOP 2706 - Discharge Request Screening (2,3,4,8)		<ol style="list-style-type: none"> <li>1. Records of permits issued.</li> </ol>
	Discharge Authorization Permits	SOP 2703 - Issuance of Permits (2,3,4) SOP 2707 - Generating Wastewater Discharge Permits (2,3,4,8) SOP 2718 – Issuance of Discharge Authorizations		<ol style="list-style-type: none"> <li>1. Records of permits issued.</li> </ol>
	Pollutant Minimization	SOP 2705 - Pollutant Minimization Program for Total Mercury (3)		<ol style="list-style-type: none"> <li>1. Track efforts to reduce Mercury introduction into Wastewater</li> <li>2. Provide annual reports of activities to regulatory agency</li> </ol>
<b>Wastewater Treatment and Solids Generation</b>				
	Portable Toilet Waste	SOP 3119 – Portable Toilet Waste Receiving (8)	<ol style="list-style-type: none"> <li>1. Potential for surface water contamination if plastics and other non biodegradable products are allowed to pass through the wastewater plant and into receiving waters.</li> </ol>	<ol style="list-style-type: none"> <li>1. Record volume of waste by company</li> </ol>
	Solids Screening & Grit Collection	SOP 3201 - Grit Channel Operation Procedures – Placing in service (3,9) SOP 3202 - Grit Channel Operation Procedures – Taking out of service (3,9) SOP 3203 - Aerated Grit Channel – Air Flow (3,9) SOP 3204 - Grit Collector Flow Setting (3,9) SOP 3211 – Bar Screens Operation Procedures - Automatic or Electric Bypass (3) SOP 4102 - Preventive Maintenance (3)	<ol style="list-style-type: none"> <li>2. Potential for surface water contamination if grease and oils are not removed from the wastewater and pass through to the receiving waters.</li> <li>3. Potential for surface water contamination if primary sludge pumping schedules are not followed and sludge is lost in the plant effluent.</li> <li>4. Potential degradation of air quality if processes are not operated in accordance with SOP's and septic odorous conditions develop.</li> </ol>	<ol style="list-style-type: none"> <li>2. Record volume of grit and screenings removed</li> <li>3. Record equipment maintenance activities using Maximo</li> </ol>
	Scum	SOP 3250 - Scum Removal Procedures (3) SOP 4102 - Preventive Maintenance (3)	<ol style="list-style-type: none"> <li>5. Potential human and ecological impacts if</li> </ol>	<ol style="list-style-type: none"> <li>1. Perform Laboratory analysis on Influent grease and oils</li> <li>2. Record volume (pounds) of scum removed from process</li> <li>3. Record equipment maintenance activities using Maximo</li> </ol>

**CRITICAL CONTROL POINTS**

Biosolids Value Chain	Critical Control Point	Operational Controls	Environmental Impacts	Monitoring & Measurement
	Primary Treatment	SOP 3209 – Primaries – Taking Tanks in and out of Service (3) SOP 3251 - Raw Sludge Pumping (3) SOP 4102 - Preventive Maintenance (3)	equipment is not operated in accordance with SOP's and plant effluent exceeds permit limits. 6. Overfeeding ferrous chloride can introduce contaminants into Biosolids. 7. Improper wasting rates from the secondary treatment could impact biosolids processing.	<ol style="list-style-type: none"> <li>Record volume of sludge pumped daily</li> <li>Record sludge blanket levels in tanks</li> <li>Record equipment maintenance activities using Maximo</li> <li>Analyze sludge %TS 3 times per week</li> </ol>
	Raw Sludge Storage	SOP-3607- GVRBA Primary Sludge Storage Tank Operation (1,3,5,6,7,11,12) SOP-3608- GVRBA WAS Sludge Storage Tank Operation (1,3,5,6,7,11,12) SOP 4102 - Preventive Maintenance (3)		<ol style="list-style-type: none"> <li>Record tank levels</li> <li>Record equipment maintenance activities using Maximo</li> <li>Record odor control system status</li> </ol>
	Secondary Treatment	SOP 3304 – Secondary Treatment Mode of Operation (3) SOP 3701 - Phosphorus Removal Guidelines (3) SOP 4102 - Preventive Maintenance (3)		<ol style="list-style-type: none"> <li>Monitor Ferrous Chloride addition, gallons per day</li> <li>Record equipment maintenance activities using Maximo</li> </ol>

***Solids Stabilization, Conditioning, and Handling***

## CRITICAL CONTROL POINTS

Biosolids Value Chain	Critical Control Point	Operational Controls	Environmental Impacts	Monitoring & Measurement
Biosolids Value Chain	Centrifuge Dewatering (GVRBA)	SOP 3601 - Start Up Of GVRBA Dewatering Centrifuges (1,3,5,6,7,11) SOP 3602 – Centrifuge Operating Parameters for the GVRBA Dewatering Centrifuges (1,3,5,6,7,11) SOP 3603 - Centrifuge Sampling Record Keeping (1,3,5,6,7,11) SOP 3604 – Dewatering Operation Sampling (1,3,5,6,7,11) SOP 3605 - Shutdown of GBRVA Dewatering Centrifuges (1,3,5,6,7,11) (1,3,5,6,7,11,12) SOP-3609- GVRBA Cake Silo and Truck Load Out Operation (1,3,5,6,7,11,12) SOP 3611 – Cake Pump Discharge Pressure Control During Start Up of GVRBA Dewatering Centrifuges (1,3,5,6,7,11) SOP 3612 – Silo Valve Switching Procedure while Centrifuge is in Operation (1,3,5,6,7,11) SOP 3613 – Prevention of Water Intrusion into Cake Hopper During Shutdown of GVRBA Dewatering Centrifuges (1,3,5,6,7,11) SOP 3614 – Manual flushing of GVRBA Dewatering Centrifuges (1,3,5,6,7,11) SOP 3615 – Cleaning of the Polymer Strainers At The GVRBA Dewatering Facility (1,3,5,6,7,11) SOP 4102 - Preventive Maintenance (3,11)	1. Potential air quality degradation due to equipment failures. 2. Potential land and surface water contamination if dewatering centrifuges are not operated or maintained properly resulting in dewatered Biosolids not meeting paint filter tests for free running water. 3. Potential degradation of air quality if processes are not operated in accordance with SOP's and septic odorous conditions develop.	1. Record centrifuge feed rate gpm and %TS, centrate TSS, and cake %TS. Record equipment operating data including bowl rpm, scroll rpm, pump gpm 2. Equipment maintenance activities
	Odor Control	GVRBA SOP #12 – Odor Minimization Plan and Malfunction Abatement Plan (3,11,12)		1. Record odor control system status
	WAS Thickening (Waste Activated Sludge) Volute Thickeners	SOP 3350 – WAS Thickening System Startup (3) SOP 3351 - WAS Thickening System Shutdown (3) SOP 4102 - Preventive Maintenance (3)		1. Record drum speed 2. Record feed gpm, neat polymer feed rate & thickened gpm 3. Analyze thickened WAS %TS, centrate TSS and Feed TSS 4. Record equipment maintenance activities using Maximo

### Solids Storage and Transportation

**CRITICAL CONTROL POINTS**

Biosolids Value Chain	Critical Control Point	Operational Controls	Environmental Impacts	Monitoring & Measurement
	Truck Loading <b>(Contractor)</b>	SOP Truck Loading Procedures (5,6,7,11) SOP Spill Response Plan (5,6,7,11)	<ol style="list-style-type: none"> <li>1. Improper inspections of trucking equipment could lead to surface water or land contamination if Biosolids leakage occurs from trucks.</li> <li>2. Potential for air quality degradation if trucks are not promptly transported to compost or landfill facilities or improper use of tarps or truck covers.</li> <li>3. Potential for human and ecological impacts if trucking equipment is not kept clean or not properly maintained resulting in equipment breakdowns.</li> <li>4. Potential land, odor, water contamination if trucks track materials onto public roadways.</li> </ol>	<ol style="list-style-type: none"> <li>1. Driver name</li> <li>2. Truck number</li> <li>3. Date</li> <li>4. Trucking log sheet completed and signed by employee</li> </ol>
	Truck Cover <b>(Contractor)</b>	SOP Vehicle Inspection (5,6,7,11) SOP Spill Response Plan (5,6,7,11)		<ol style="list-style-type: none"> <li>1. Driver name</li> <li>2. Truck number</li> <li>3. Date</li> <li>4. Trucking log sheet completed and signed by employee</li> </ol>
	Truck Transport to Landfill(s) <b>(Contractor)</b>	SOP Vehicle Inspection (5,6,7,11) SOP Spill Response Plan (5,6,7,11)		<ol style="list-style-type: none"> <li>1. Driver name</li> <li>2. Truck number</li> <li>3. Date</li> <li>4. Trucking log sheet completed and signed by employee</li> <li>5. Spill incident reported</li> </ol>
	Truck Washing Procedure <b>(Contractor)</b>	SOP Truck Washing Procedure (5,6,7,11)		<ol style="list-style-type: none"> <li>1. Documentation of routine cleaning</li> </ol>
<b>Biosolids End Use or Disposal</b>				
	Compost Facility or Landfill(s) <b>(Contractor)</b>	SOP Landfill Contracts/Agreements (5,6,7,11) SOP Composting Contract/Agreement (5.6.7.11)	<ol style="list-style-type: none"> <li>1. Potential for ground water contamination if Biosolids do not meet regulatory requirements.</li> <li>2. Potential for air quality concerns if Biosolids are not properly managed at compost facility or the landfill (daily cover requirements)</li> <li>3. Potential for land contamination if Biosolids are tracked off the site by transport vehicles.</li> </ol>	<ol style="list-style-type: none"> <li>1. Odor complaints</li> <li>2. Spill incidents</li> <li>3. Landfill cover requirements</li> <li>4. Site tracking incidents</li> </ol>

<sup>6</sup> Numbers in parenthesis refer to Legal and Other Requirements cross reference to operational controls. Reference Element 4 Legal and Other Requirements – Table 4.1 “Legal and Other Requirements”