

Maple Lake Site Compared to Treatment Options

Municipal Class EA - Part C Municipal Wastewater Projects

Source: 1993 Class EA for Municipal Water and Wastewater Projects

Typical Effects on the Environment caused by construction activities * likely positive or negative effect	Constructed Wetland	Advanced Treatment Option	Ponds and Lagoons	Maple Lake Site
AESTHETICS				
removal of vegetation or landscape features	*	*	*	negative impact - removal of vegetation
change of compatibility with landscape	*	*	*	negative impact - not compatible with existing landscape
residents, non-residents, recreationalists and tourists exposed to new view	*	*	*	moderate - residents are far enough away that exposure would be minimal however, there is a hiking trail within the vicinity that maybe exposed to the view
CLIMATIC EFFECTS				
vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities	*	*	*	minimal - adjacent building and activities are far enough away there should be no impact
change in air quality	*	*	*	moderate - possible odours
ECONOMIC AND SOCIAL EFFECTS				
change to tax base	*	*	*	negative - potential increase in taxes
change in employment opportunities	*	*	*	positive - possibility of an employment opportunity
change in tax rate or cost of service	*	*	*	negative - potential to increase taxes or to charge for service
GROUNDWATER				
change in quality			*	moderate - potential to change water quality
interference with flows or levels			*	minimal - potential to increase flows and levels
PUBLIC HEALTH				
effects on quality of life e.g. decreased sewage back-up	*	*	*	positive - knowledge that residents septage is being handled properly
NOISE & VIBRATION				
changes in existing noise and vibration levels	*	*	*	minimal during construction
RECREATION				
effects on quality of user experience due to environmental changes	*	*	*	potential impact - users of the hiking trail located near the landfill may be able to see the treatment system
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL				
temporary disruption during construction	*	*	*	minimal - possible industrial impact during construction
nuisance odours	*	*	*	negative - potential for odours
SOIL AND GEOLOGY				
erosion or compaction during construction	*	*	*	negative - soil will be compacted during construction activities
contamination of soils	*	*	*	negative - possibility of soil contamination i.e. spills
mixing of topsoil with subsoil	*	*	*	negative - possibility of mixing of soils
SURFACE DRAINAGE				
increased surface runoff			*	negative - potential for increased surface water runoff
decreased surface water drainage	*	*	*	negative - potential for a decrease in surface water drainage
TERRESTRIAL VEGETATION AND WILDLIFE				
mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture conditions resulting in reduction and/or deterioration of wildlife habitat	*	*	*	high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture
changes in vegetative composition as a result of environmental changes	*	*	*	high - vegetation will be removed resulting in the reduction of wildlife habitat
removal or disturbance of significant trees and/or ground flora	*	*	*	minimal - no significant changes in vegetation composition high - a significant amount of trees and/or ground flora will have to be removed
new or increased exposure of trees leading to increased loss of habitat for wildlife	*	*	*	high - new areas of trees will be exposed leading to loss of habitat
effect on wildlife habitat	*	*	*	high - some habitat will be lost
effect of contaminants on vegetation and wildlife			*	minimal - contaminants may act as a fertilizer for vegetation
UTILITIES				
effects on other utilities				site has single phase hydro

At this point the Advanced Treatment Option will be divided into two (2) different treatment systems: The Waterloo Biofilter and the FAST system

Municipal Class EA - Part C Municipal Wastewater Projects

Source: 1993 Class EA for Municipal Water and Wastewater Projects

Typical Effects on the Environment caused by construction activities

	Constructed Wetland	Maple Lake Site
AESTHETICS removal of vegetation or landscape features change of compatibility with landscape residents, non-residents, recreationalists and tourists exposed to new view	* * *	negative impact - removal of vegetation negative impact - will work with existing landscape negative to neutral - residents are far enough away that exposure would be minimal however, there is a hiking trail within the vicinity that maybe exposed to the view. View would be of a wetland, for some aesthetically pleasing
CLIMATIC EFFECTS vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities change in air quality	*	none - vegetation will be removed however it is being replace with new vegetation negative - moderate - possible odours
ECONOMIC AND SOCIAL EFFECTS change to tax base change in employment opportunities change in tax rate or cost of service	* * *	negative - potential increase in taxes. Moderate to High capital costs approx. \$ 500 K positive - possibility of an employment opportunity negative - potential to increase taxes or to charge for service
GROUNDWATER change in quality interference with flows or levels		none - effluent is of good quality none - will not interfere with groundwater flow or levels
PUBLIC HEALTH effects on quality of life e.g. decreased sewage back-up	*	positive - peace of mind
NOISE & VIBRATION changes in existing noise and vibration levels	*	negative - minimal during construction
RECREATION effects on quality of user experience due to environmental changes	*	negative to neutral - there is a potential that residents maybe able to see wetland from trail however, it is a natural feature, will blend in.
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL temporary disruption during construction nuisance odours	* *	negative - minimal - possible industrial impact during construction I.e. impede traffic negative - potential for odours
SOIL AND GEOLOGY erosion or compaction during construction contamination of soils mixing of topsoil with subsoil	* * *	negative - soil will be compacted during construction activities negative - possibility of soil contamination i.e. spills negative - possibility of mixing of soils
SURFACE DRAINAGE increased surface runoff decreased surface water drainage	*	none negative - surface water may settle in the wetland instead of infiltrating into the ground
TERRESTRIAL VEGETATION AND WILDLIFE mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture conditions resulting in reduction and/or deterioration of wildlife habitat changes in vegetative composition as a result of environmental changes removal or disturbance of significant trees and/or ground flora new or increased exposure of trees leading to increased loss of habitat for wildlife effect on wildlife habitat effect of contaminants on vegetation and wildlife	* * * * * *	high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture negative - moderate- vegetation will be removed resulting in the reduction of wildlife habitat however new vegetation will be plant which will promote new wildlife habitat negative - vegetation composition will be change to wetland vegetation negative - high - a significant amount of trees and/or ground flora will have to be removed - total area 8 ha negative - high - new areas of trees will be exposed leading to loss of habitat high - some habitat will be lost none - only contamination on site would result from spills which should be cleaned, and may act as fertilizer

**Maple Lake Site Compared to Waterloo Biofilter Treatment Option
Municipal Class EA - Part C Municipal Wastewater Projects
Typical Effects on the Environment caused by construction activities**

Source: 1993 Class EA for Municipal Water and Wastewater Projects

	Waterloo Biofilter	Maple Lake Site
AESTHETICS		
removal of vegetation or landscape features	*	negative impact - removal of vegetation
change of compatibility with landscape	*	negative impact - will work with existing landscape
residents, non-residents, recreationalists and tourists exposed to new view	*	negative - moderate - residents are far enough away that exposure would be minimal however, there is a hiking trail within the vicinity that maybe exposed to the view. Can try and hide system from view, also potential to dress system up
CLIMATIC EFFECTS		
vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities	*	negative - minimal - will have to remove some vegetation which may cause snow accumulation however adjacent building and activities are far enough away there would be no impact on surrounding properties
change in air quality	*	negative - moderate - possible odours
ECONOMIC AND SOCIAL EFFECTS		
change to tax base	*	negative - potential increase in taxes. Moderate capital costs approx. \$ 350 K
change in employment opportunities	*	positive - possibility of an employment opportunity
change in tax rate or cost of service	*	negative - potential to increase taxes or to charge for service
GROUNDWATER		
change in quality		none - effluent is of good quality
interference with flows or levels		none - will not interfere with groundwater flows or levels
PUBLIC HEALTH		
effects on quality of life e.g. decreased sewage back-up	*	positive - peace of mind
NOISE & VIBRATION		
changes in existing noise and vibration levels	*	negative - minimal during construction
RECREATION		
effects on quality of user experience due to environmental changes	*	negative - minimal - users of the hiking trail located near the landfill may be able to see the treatment system, however system will try to blend into landscape
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL		
temporary disruption during construction	*	negative - minimal - possible industrial impact during construction i.e. impede traffic
nuisance odours	*	negative - potential for odours
SOIL AND GEOLOGY		
erosion or compaction during construction	*	negative - soil will be compacted during construction activities
contamination of soils	*	negative - possibility of soil contamination i.e. spills
mixing of topsoil with subsoil	*	negative - possibility of mixing of soils
SURFACE DRAINAGE		
increased surface runoff		none - surface water runoff will not increase
decreased surface water drainage		none - no effect on surface water drainage
TERRESTRIAL VEGETATION AND WILDLIFE		
mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture conditions resulting in reduction and/or deterioration of wildlife habitat	*	negative - high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture
changes in vegetative composition as a result of environmental changes	*	negative - moderate - vegetation will be removed resulting in the reduction of wildlife habitat. Only need to remove vegetation for pre-treatment and treatment not disposal field
removal or disturbance of significant trees and/or ground flora	*	none - no changes in vegetative composition negative - moderate - trees and/or ground flora will have to be removed - 1.5 ha for treatment and 0.5 ha for disposal
new or increased exposure of trees leading to increased loss of habitat for wildlife	*	negative - moderate - new areas of trees will be exposed leading to loss of habitat
effect on wildlife habitat	*	negative - high - some habitat will be lost
effect of contaminants on vegetation and wildlife		none - only contamination on site would result from spills which should be cleaned, and may act as fertilizer

Maple Lake Site Compared to FAST Treatment System
Municipal Class EA - Part C Municipal Wastewater Projects
Typical Effects on the Environment caused by construction activities

Source: 1993 Class EA for Municipal Water and Wastewater Projects

	FAST System	Maple Lake Site
AESTHETICS removal of vegetation or landscape features change of compatibility with landscape residents, non-residents, recreationalists and tourists exposed to new view	* * *	negative impact - removal of vegetation negative impact - will work with existing landscape negative - moderate - residents are far enough away that exposure would be minimal however, there is a hiking trail within the vicinity that maybe exposed to the view.
CLIMATIC EFFECTS vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities change in air quality	*	negative - minimal - will have to remove some vegetation which may cause snow accumulation however adjacent building and activities are far enough away there would be no impact on surrounding properties None
ECONOMIC AND SOCIAL EFFECTS change to tax base change in employment opportunities change in tax rate or cost of service	* * *	negative - potential increase in taxes. Low capital costs approx. \$ 200 K positive - possibility of an employment opportunity negative - potential to increase taxes or to charge for service
GROUNDWATER change in quality interference with flows or levels		none - effluent is of good quality none - will not interfere with groundwater flows or levels
PUBLIC HEALTH effects on quality of life e.g. decreased sewage back-up	*	positive - peace of mind
NOISE & VIBRATION changes in existing noise and vibration levels	*	negative - minimal during construction
RECREATION effects on quality of user experience due to environmental changes	*	negative - minimal - users of the hiking trail located near the landfill may be able to see the treatment system, however system will try to blend into landscape
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL temporary disruption during construction nuisance odours	*	negative - minimal - possible industrial impact during construction i.e. impede traffic none
SOIL AND GEOLOGY erosion or compaction during construction contamination of soils mixing of topsoil with subsoil	* * *	negative - soil will be compacted during construction activities negative - possibility of soil contamination i.e. spills negative - possibility of mixing of soils
SURFACE DRAINAGE increased surface runoff decreased surface water drainage		none - surface water runoff will not increase none - no effect on surface water drainage
TERRESTRIAL VEGETATION AND WILDLIFE mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture conditions resulting in reduction and/or deterioration of wildlife habitat changes in vegetative composition as a result of environmental changes removal or disturbance of significant trees and/or ground flora new or increased exposure of trees leading to increased loss of habitat for wildlife effect on wildlife habitat effect of contaminants on vegetation and wildlife	* * * * *	negative - high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture negative - moderate - vegetation will be removed resulting in the reduction of wildlife habitat. none - no changes in vegetative composition negative - moderate - trees and/or ground flora will have to be removed - 0.5 ha for treatment negative - moderate - new areas of trees will be exposed leading to loss of habitat negative - high - some habitat will be lost none - only contamination on site would result from spills which should be cleaned, and may act as fertilizer

**Maple Lake Site Compared to Lagoons Treatment Option
Municipal Class EA - Part C Municipal Wastewater Projects
Typical Effects on the Environment caused by construction activities**

Source: 1993 Class EA for Municipal Water and Wastewater Projects

	Ponds and Lagoons	Maple Lake Site
AESTHETICS		
removal of vegetation or landscape features	*	negative impact - removal of vegetation
change of compatibility with landscape	*	negative impact - will work with existing landscape
residents, non-residents, recreationalists and tourists exposed to new view	*	negative - moderate - residents are far enough away that exposure would be minimal however, there is a hiking trail within the vicinity that maybe exposed to the view of lagoons
CLIMATIC EFFECTS		
vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities	*	negative - minimal - will have to remove some vegetation which may cause snow accumulation however adjacent building and activities are far enough away there would be no impact on surrounding properties
change in air quality	*	negative - moderate - possible odours
ECONOMIC AND SOCIAL EFFECTS		
change to tax base	*	negative - potential increase in taxes. Low capital costs approx. \$ 200 K
change in employment opportunities	*	positive - possibility of an employment opportunity
change in tax rate or cost of service	*	negative - potential to increase taxes or to charge for service
GROUNDWATER		
change in quality	*	negative - effluent quality is only fair
interference with flows or levels		none - will not interfere with groundwater flows or levels
PUBLIC HEALTH		
effects on quality of life e.g. decreased sewage back-up	*	positive - peace of mind
NOISE & VIBRATION		
changes in existing noise and vibration levels	*	negative - minimal during construction
RECREATION		
effects on quality of user experience due to environmental changes	*	negative - potential impact - users of the hiking trail located near the landfill may be able to see three tiered lagoons
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL		
temporary disruption during construction	*	negative - minimal - possible industrial impact during construction i.e. impede traffic
nuisance odours	*	negative - potential for odours

	Ponds and Lagoons	Maple Lake Site
SOIL AND GEOLOGY		
erosion or compaction during construction	*	negative - soil will be compacted during construction activities
contamination of soils	*	negative - possibility of soil contamination i.e. spills
mixing of topsoil with subsoil	*	negative - possibility of mixing of soils
SURFACE DRAINAGE		
increased surface runoff		none - will not effect surface water runoff
decreased surface water drainage	*	negative - surface water may settle in the lagoons instead of infiltrating into the ground
TERRESTRIAL VEGETATION AND WILDLIFE		
mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture conditions resulting in reduction and/or deterioration of wildlife habitat	*	negative - high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture
changes in vegetative composition as a result of environmental changes	*	negative - high - vegetation will be removed for both the treatment and disposal field resulting in the reduction of wildlife habitat
removal or disturbance of significant trees and/or ground flora	*	negative - minimal - no significant changes in vegetation composition, maybe some wetland vegetation around the lagoons
	*	negative - high - a significant amount of trees and/or ground flora will have to be removed - 2.72 ha for lagoons and 2.81 for disposal
new or increased exposure of trees leading to increased loss of habitat for wildlife	*	negative - high - new areas of trees will be exposed leading to loss of habitat
effect on wildlife habitat	*	negative - high - some habitat will be lost
effect of contaminants on vegetation and wildlife	*	negative - minimal - contaminants may act as a fertilizer for vegetation

