Pines Springs 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	Pine Springs Site
AESTHETICS				
removal of vegetation or landscape features	*	*	*	negative impact - removal of vegetation
change of compatibility with landscape	*	*	*	negative impact - may not be compatible with existing landscape
residents, non-residents, recreationalists and tourists exposed to new view	*	*	*	minimal - far enough way from existing residents that exposure would be minimal
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			*	high - potential to change water quality
interference with flows or levels	*	*	*	minimal - potential to increase flows and levels
HERITAGE RESOURCES				
disruption and/or destruction of sites, cultural heritage landscapes and structures having archaeological, historical, architectural or cultural/heritage significance	*	*	*	negative - potential to disrupt a natural heritage wetland area
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
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL				
temporary disruption during construction	*	*	*	minimal - may 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
scarring of unique landforms	*	*	*	negative - possibility to disturb significant wetland
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	*	*	*	high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture
conditions resulting in reduction and/or deterioration of wildlife habitat	*	*	*	high - vegetation will be removed resulting in the the reduction of wildlife habitat
changes in vegetative composition as a result of environmental changes	*	*	*	minimal - no significant changes in vegetation composition
removal or disturbance of significant trees and/or ground flora	*	*	*	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 e.g. relocations		*		negative - would have to bring in hydro to site

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

Pine Springs Site Compared to Constructed Wetlands Treatment System

Municipal Class EA - Part C Municipal Wastewater Projects

Typical Effects on the Environment caused
by construction activities
* likely positive or negative effect

	Constructed Wetland	Pine Springs 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 - minimal - far enough way for existing residents that exposure would be minimal
CLIMATIC EFFECTS		
vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities		none - vegetation will be removed but replaced with new vegetation
change in air quality	*	negative - moderate - possible odours
ECONOMIC AND SOCIAL EFFECTS		
change to tax base	*	negative - potential increase in taxes. Moderate to High capital costs approx. $500 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
HERITAGE RESOURCES		
disruption and/or destruction of sites, cultural heritage landscapes and structures having archaeological, historical, architectural or cultural/heritage significance	*	negative - potential to disrupt a natural heritage wetland area
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
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL		
temporary disruption during construction	*	negative - 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
scarring of unique landforms	*	negative - possibility to disturb significant wetland
SURFACE DRAINAGE		
increased surface runoff		none
decreased surface water drainage	*	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	*	negative - high - vegetation will be impacted due to construction. Minimal impact due to n increased soil moisture
conditions resulting in reduction and/or deterioration of wildlife habitat	*	negative - moderate - vegetation will be removed resulting in the reduction of wildlife habitat however new vegetation will be planted which will promote new wildlife habitat minimal impact due to increased soil moisture
changes in vegetative composition as a result of environmental changes	*	negative - vegetation composition will be changed to wetland vegetation
removal or disturbance of significant trees and/or ground flora	*	negative - high - a significant amount of trees and/or ground flora will have to be removed - total area required is 8 ha
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		none - only contamination on site would result form spills which should be leaned and may act as fertilizer
UTILITIES		
effects on other utilities e.g. relocations	*	negative - would have to bring in hydro to site - cost approx. $100 K or can use an alternative power source for the cost of approx. $50 K

Pine Springs Site Compared to Waterloo Biofilter Treatment 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

* likely positive or negative effect

	Waterloo Biolfilter	Pine Springs 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 - minimal - far enough way for existing residents that exposure would be minimal
CLIMATIC EFFECTS		
vegetation removal or snow accumulation, wind screening and shade on adjacent buildings and activities	*	negative - minimal - will have to remove some vegetation however adjacent building and activities are far enough away there should be no impact
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 no interfere with groundwater flows or levels
HERITAGE RESOURCES		
disruption and/or destruction of sites, cultural heritage landscapes and structures having archaeological, historical, architectural or cultural/heritage significance	*	negative - potential to disrupt a natural heritage wetland area
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
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL		
temporary disruption during construction	*	negative - 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
scarring of unique landforms	*	negative - possibility to disturb significant wetland
SURFACE DRAINAGE		
increased surface runoff		none - surface water runoff is not expected to increase
decreased surface water drainage		none - surface water drainage is not expected to decrease
TERRESTRIAL VEGETATION AND WILDLIFE		
mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture	*	negative - high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture
conditions resulting in reduction and/or deterioration of wildlife habitat	*	negative - moderate - vegetation will be removed resulting in the reduction of wildlife habitat. Do not need to remove as large of land area
changes in vegetative composition as a result of environmental changes		none - no changes in vegetative composition
removal or disturbance of significant trees and/or ground flora	*	negative - moderate - trees and/or ground flora will have to be removed - land requirements for treatment is 1.5 ha 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 form spills which should be leaned and may act as fertilizer
UTILITIES		
effects on other utilities e.g. relocations	*	negative - would have to bring in hydro to site - cost approx. $ 100 k

Pine Springs Site Compared To FAST Treatment System

Municipal Class EA - Part C Municipal Wastewater Projects

Typical Effects on the Environment caused by construction activities
* likely positive or negative effect

	Fast System	Pine Springs 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 - minimal - far enough way for existing residents that exposure would be minimal
CLIMATIC EFFECTS		
vegetation removal or snow accumulation, windscreening and shade on adjacent buildings and activities	*	negative - minamal - will have to remove some vegetation however adjacent building and activities are far enough away there should be no impact
change in air quality		none
ECONOMIC AND SOCIAL EFFECTS		
change to tax base	*	negative - potential increase in taxes. Low capital costs approx. $ 200 K
change in employment opportunities	*	positive - possiblity 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 - eflluent is of good quality
interference with flows or levels		none - will no interfere with groundwater flows or levels
HERITAGE RESOURCES		
disruption and/or destruction of sites, cultural heritage landscapes and structures having archaeological, historical, architectural or cultural/heritage significance	*	negative - potential to disrupt a natural heritage wetland area
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 consturction
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL		
temporary disruption during construction	*	negative - minimal - possible industrial impact during construction
nuisance odours		none
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
scarring of unique landforms	*	negative - possibility to distrube significant wetland
SURFACE DRAINAGE		
increased surface runoff		none - surface water runoff is not expected to increase
decreased surface water drainage		none - surface water drainage is not expected to decrease
TERRESTRIAL VEGETATION AND WILDLIFE		
mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture	*	negative - high - vegetation will be impacted due to construction. minimal impact due to increased soil moisture
conditions resulting in reduction and/or deterioration of wildlife habitat	*	negative - moderate - vegetation will be removed resulting in the the reduction of wildlife habitat. Do not need to remove as large of land area
changes in vegetative composition as a result of environmental changes		none - no changes in vegetative composition
removal or disturbance of significant trees and/or ground flora	*	negative - moderate - trees and/or ground flora will have to be removed - 0.5 ha for treatment
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 form spills which should be leaned and may act as fertilizer
UTILITIES		
effects on other utilities e.g. relocations	*	negative - would have to bring in hydro to site - cost approx. $ 100 k

Source: 1993 Class EA for Municipal Water and Wastewater Projects

Pine Springs Site Compared To Lagoons Treatment System

Municipal Class EA - Part C Municipal Wastewater Projects

Typical Effects on the Environment caused by construction activities
* likely positive or negative effect

	Ponds and Lagoons	Pine Springs 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 - minimal - far enough way for existing residents that exposure would be minimal
CLIMATIC EFFECTS		
vegetation removal or snow accumulation, windscreening and shade on adjacent buildings and activities	*	negative - minamal - will have to remove vegetation which will cause snow accumlation however adjacent building and activities are far enough away there should be no impact
change in air quality	*	negative - moderate - 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 - possiblity 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
HERITAGE RESOURCES		
disruption and/or destruction of sites, cultural heritage landscapes and structures having archaeological, historical, architectural or cultural/heritage significance	*	negative - potential to disrupt a natural heritage wetland area
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 consturction
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL		
temporary disruption during construction	*	negative minimal - possible industrial impact during construction
nuisance odours	*	negative - 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
scarring of unique landforms	*	negative - possibility to distrube significant wetland
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	*	negative - high - vegetation will be impacted due to construction.
movement or changes in soil moisture		minimal impact due to increased soil moisture
conditions resulting in reduction and/or deterioration of wildlife habitat	*	negative - high - vegetation will be removed resulting in the the reduction of wildlife habitat
changes in vegetative composition as a result of environmental changes	*	negative - minimal - no significant changes in vegetation composition some wetland vegetation around the lagoons
removal or disturbance of significant trees and/or ground flora	*	negative - high - a significant amount of trees and/or ground flora will have to be removed - 2.72 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 - may still becontaminants may act as a fertilizer for vegetation
UTILITIES		
effects on other utilities e.g. relocations		none - can be run as a gravity feed system

Source: 1993 Class EA for Municipal Water and Wastewater Projects