Examples of Typical Mitigation Measures

TABLE J-1
Example of Typical Mitigation Measures

Environmental Concerns	Mitigation Measures	Application
WATER QUALITY		
Sedimentation of streams due to erosion from the right-of-way.	-minimize use of slopes adjacent to streams - maintain a cover crop.	During soil testing, selective cutting, construction and maintenance. During restoration following construction and long term maintenance.
Stream bank erosion.	- mechanical erosion control. - retain shrubby stream bank vegetation and selectively cut or prune trees.	In line clearing/maintenance.
	- selective spraying of herbicides.	During line maintenance.
	- mechanical erosion control.	Stream crossings, as required.
Impedance of natural flow of streams /-other surface waters.	- use and maintenance of appropriate stream crossing device.	At stream crossings during construction and line operation.
	- use of equalizing culverts in roads in wetlands.	During construction and throughout line operation.
	- use of corduroy in wetlands, where available.	Line construction in wetlands.
Ponding or channelization of surface waters due to rutting.	- timing activities to stable ground conditions. - use of gravel roads.	Construction/maintenance on seasonally unstable ground surfaces. New line construction on unstable ground surfaces.
Contamination of surface or ground waters through spills or leaks of toxic substances.	- spill control material and procedures readily available.	At station sites and in general whenever toxic substances are used.
	- site selection where possible.	Stations warehousing sites and structures locations.
Sedimentation of streams with pumped soil/bentonite from dewatering operations.	- containment of material when working in the vicinity of water bodies.	Dewatering during installation of augured footings.
	- use of sediment traps or settling tanks.	When necessary during dewatering operation.
	- removal of material from the site.	Restoration.
Channel disturbance, sediment production at stream crossings.	- installation of an appropriate crossing device.	During access road construction.
	- use of sediment traps or settling tanks.	During access road construction.
Increase in water temperature due to vegetation removal at stream crossings.	- retain shrubby stream bank vegetation and selectively cut/prune trees. - selective spraying of herbicides to retain as much vegetation as possible on stream banks.	Line clearing/maintenance. Line maintenance (vegetation control).
Reduction in water storage capacity due to removal of vegetation or diversion caused by rutting.	- selective removal of vegetation.	In identified source/recharge areas during initial line clearing.
	- revegetation with compatible shrubs.	Selection of structure sites and access routes.

TABLE J-1(Continued)
Examples of Typical Migration Measures

Environmental Concerns	Mitigation Measures	Application
SOILS		
Soil compaction/topsoil-subsoil mixing.	- avoidance of rutting by vehicles.	Application in generally all phases of construction and maintenance, particularly during line clearing and construction.
	- construction timing.	"
	- use of gravel roads.	"
	- use of vehicles with low bearing pressure.	"
	- stop activities when ground conditions are poor.	"
Wind/water erosion.	- avoidance of areas with high erosion potential.	Access road location erodible soils, slopes.
	- timing activities to the most stable ground conditions.	Access road location erodible soils, slopes.
	- slope stabilization.	As required.
	- mechanical erosion control.	As required.
	- vegetation erosion control.	Erodible soils, slopes, as a restoration measure.
	- recompaction of trenches.	Installation of counterpoise, underground transmission lines.
	- avoid trenching parallel to the fall of a slope.	Counterpoising on steep slopes.
Contamination by petro-chemicals.	- spill control material and procedures made readily available.	At station sites or during the transport of oil containing equipment.
	- restoration methods investigated.	As an ongoing process.
FISH AND WILDLIFE		
Loss of habitat, breeding and/or food source for terrestrial wildlife due to Vegetation removal.	- environmental mapping to identify sensitive sites.	Prior to the start of construction, line clearing
	- avoidance of areas containing rare /-endangered species.	Access road location, selective clearing for new lines.
	- the creation of "edge" (may be considered a positive impact).	Selective clearing on a right-of-way.
	- promotion of wildlife habitat through vegetation control and brush piles	Restoration and right-of-way management.
	- avoid the filling of small wetlands.	Access road and tower construction.
Changes in composition of vegetation as a result of soil disturbance.	- construction timing to minimize soil disturbance.	Right-of-way clearing and construction activities in general.
	- restoration of soils to a stable condition.	Restoration following construction.
Removal or burial of stream bottom habitat and increased turbidity due to sedimentation.	- minimize erosion from the right-of-way by maintaining a cover crop.	Restoration and maintenance.
	- mechanical erosion control.	As required during the operation of the line and maintenance of the right-of-way.
	- minimize stream bank erosion by retaining shrubby bank vegetation and selective cutting/pruning of trees near watercourses.	At stream crossing during right-of-way clearing.
	- installation of sediment traps when necessary.	At any time during construction as required
	- containment or filtering of pumped spoil/water near watercourses.	During the installation of tower footings near watercourses.

TABLE J-1 (Continued)
Esamples of Typical Mitigation Measures

Environmental Concerns	Mitigation Measures	Application
FISH AND WILDLIFE (con't)		
Impediment to the mitigation of fish or wildlife.	- avoid filling small wetlands serving as staging areas for waterfowl migration.	Small wetlands during access road and tower pad construction.
Impediment to the mitigation and/or breeding of fish or wildlife.	- installation and maintenance of proper stream crossing device.	At steam crossings during construction and as required for maintenance.
	- time construction activities to avoid disturbance to migrating fish and wildlife or during breeding.	During construction and maintenance.
	- follow Ontario Hydro standards for the application of herbicides near watercourses.	Near watercourses during line clearing and maintenance cycles.
Change in the chemistry of water bodies.	- minimize sedimentation of streams (see Water Quality).	Near watercourses during line clearing, con-struction and throughout the operation of the line.
	- prevent cut vegetation from entering watercourses.	Line clearing and maintenance cycles.
	- selective spraying or manual control of vegetation near watercourses.	Line clearing and maintenance cycles.
Increased water temperature as a result of clearing vegetation near streams.	- selective removal of vegetation; pruning.	At stream crossings during line clearing and maintenance cycles.
	- retain shrubby bank vegetation.	At stream crossings during line clearing and maintenance cycles.
VEGETATION		
Introduction of exotic plant species resulting from vegetation erosion control.	- use of native species for erosion control.	On areas where erosion control is necessary.
Vegetation stress due to nutrient loss as a result of soil deterioration.	- erosion control measures.	The management of the right-of-way erosion prone slopes.
Changes in vegetation due to soil disturbance (topsoil-subsoil mixing).	- time construction/clearing to take advantage of stable soil conditions.	During construction and line clearing operations, maintenance cycles.
Loss of forested land	- hectare for hectare reforestation.	Selection of clear cutting of transmission line right-of-way.
	- planting of wind breaks.	
	- landscaping plantings.	
AGRICULTURE		
Loss of standing crop due to access road and tower work site.	- limit width of access and size of tower site.	Agricultural areas - generally all construction/maintenance operations.
	- monetary compensation for crop loss.	Following determination of losses.
	- time construction to avoid growing season.	Construction/maintenance.
Soil Compaction	- scheduling activities to times of the year when soils are least susceptible to compaction.	Construction/maintenance.
	- stop activities when ground conditions are poor.	Construction/maintenance.
	- use of equipment with low bearing capacity.	Construction/maintenance.

TABLE J-1 (Continued)
Esamples of Typical Mitigation Measures

Environmental Concerns	Mitigation Measures	Application
AGRICULTURE (Continued)		
Soil Compaction (cont'd)	- chisel ploughings	Restoration.
	- monetary compensation for subsequent crop reductions.	Property settlements.
	- use of gravel roads.	Construction of new lines
	- locate access roads along existing traffic routes.	Construction/maintenance.
Topsoil-subsoil mixing/soil rutting.	- scheduling activities.	Scheduling for construction/maintenance activities.
	- stop activity when ground conditions are poor.	Field decisions during construction phase of project.
	- use of equipment with low bearing capacity.	Construction/maintenance.
	- use of gravel roads.	Construction.
	- backblading/grading.	Restoration.
	- addition of manures to offset fertility loss.	Restoration.
	- compensation for reduced soil productivity.	As a result of negotiated settlement.
	- removal of soil and/or bentonite from foundation operations.	Augured foundations.
	- segregation of topsoil and subsoil.	Where required to prevent extensive mixing.
Disturbance to Farm Operations.	- maintain contact with landowner/tenant regarding preferences.	Throughout construction and as maintenance work is required.
Damage to Field Tiles.	- avoidance of tile beds.	Access road location landowner contact.
	- minimize tile crossings.	Access road layout.
	- scheduling activities to times of the year when ground will support the equipment to be used.	All phases of construction/maintenance where the location of the tile drains is known.
	- use of soft track equipment.	Construction/maintenance.
	- protection of tile crossings by the placement of heavy steel plate.	Construction/maintenance.
	- stop activities when ground conditions are poor.	Field decision during construction phase of project.
	- repair damaged drains.	Restoration.
	- compensate for damages.	As a result of negotiated settlement.
Loss of Livestock	- employ noise control measures near sensitive livestock.	During construction as required.
	- construction of farm gates.	Access road - construction.
	- securing farm gates.	All activities.
	- clean-up construction materials which could be ingested	As an ongoing process throughout all phases of construction and maintenance.
SOCIETAL IMPACTS	- compensation for lost, injured livestock.	Following completion of construction, as a result of negotiations with claimant.
Noise and Vibration	- limit this type of work to daylight hours.	All phases of construction where high noise levels could be a problem, e.g. residential areas.
	- observe protocol or applicable municipal bylaws.	All phases of construction where high noise levels could be a problem, e.g. residential areas.
	- use of appropriate methods where available.	As required - special circumstances; e.g. hospitals.

TABLE J-1 (Continued)
Esamples of Typical Mitigation Measures

Environmental Concerns	Mitigation Measures	Application
SOCIETAL IMPACTS		
Mud and Dust.	- wetting down dry soils.	All phases of construction.
	- chemical control of dust.	As required.
	- cleaning roads to remove mud.	As required.
	- temporary planting of grasses.	When the project duration permits and dust is a major problem,
	- screen with natural or planted vegetation.	Access roads - right-of-way clearing; restoration.
	- avoid linear access down the right-of-way.	Access road location.
	- addition of topsoil to gravel access roads.	Restoration of access roads.
	- hoarding construction sites.	Station construction.
	- installation of landscaping in advance of site completion.	Station construction.
Appearance - Lines.	- retain tree screens and curve access routes.	Where appropriate vegetation exists.
	- plant tree screens.	Where appropriate.
	- avoid sensitive soils for access routes.	Where possible.
	- stabilize erodible soils by vegetative or mechanical means.	Where soils are subject to erosion.
	- add topsoil and seed gravel access routes.	Where exposed to public view.
Appearance - Stations.	- paint hoarding to suit locale.	Where appropriate.
	- install landscaping treatment in advance.	Where construction program and site size permits.
Inconvenience.	- select cable design to suit traffic conditions.	Where possible.
	- select timing of construction.	Where scheduling permits.
Heritage Resources.	- structural and/or locational adjustments.	As required.
	- on and off site landscaping.	As required.
	- install suitable enclosures.	As required.
	- document and remove resource.	As required.
	- relocate electrical facilities.	As required.

Note: The nature of the environment in the study area will determine the potential environmental effects for any project. Mitigation to address these effects will be determined on a case by case basis. Alternatives will be evaluated on the basis of net environmental effects (i.e., environmental effect - mitigation = net environmental effect).