
APPENDIX B
SOIL CHARACTERISTICS AND
MAPPING

TABLE 1 - HIGHWAY 7 PLANNING STUDY
SOIL CHARACTERISTICS

Map Symbol	Soil Series	Surface Texture	Parent Material	Drainage	Capability Class	Soil Features Affecting Highway and Road Construction
Waterloo County						
Bg*	Burford	gravelly loam	Outwash gravel on outwash plains and terraces.	well drained	BgA 2 ^m BgB 2 ^m Bgb 3 ⁱ BgC 2 ^m BgD 3 ⁱ	No problems, excellent subgrade.
By*	Brady	sandy loam	Coarse and medium outwash sands on outwash plains, terraces, etc.	imperfectly drained	ByB 2 ^f	Fill or transition zone situation. Thick topsoil should be stripped for shallow fills. No major problems.
Ca*	Caledon	sandy loam	12 to 36 inches sandy loam over outwash gravel on outwash plains, terraces, etc.	well drained	CaA 2 ^m CaB 2 ^m	No problems. Excellent subgrade.
Cd*	Colwood	loam	Stratified glacio-lacustrine silts in depressions of till plains, drumlin fields, etc.	poorly drained	Cd 3 ^m	Fill situation; thick topsoil, wet to saturated, frost susceptible materials should not be within 30 inches of grade.
Cm*	Camilla	sandy loam	12 to 36 inches sandy loam over outwash gravel on outwash plains, terraces, etc.	imperfectly drained	CmA 2 ^f CmB 2 ^f	Fill to transition zone situation; no major problems but seasonally high water table condition, and some seepage is possible.
Co*	Conestogo	loam	12 to 36 inches of silt loam over loam till on till plains.	imperfectly drained	CoA 1 CoB 1	Fill to transition zone situation; frost-susceptible surface horizons; seasonally high water table; seepage zones may occur at till boundary.
Dn	Donald	loam	12 to 36 inches alluvial silt-sandy loam over gravel on floodplains.	imperfectly drained	Dn 3 ⁱ	Embankment situation; seasonal flooding hazard.
EI*	Elmira	loam	Silt loam alluvium on floodplains.	poorly drained	EI 4 ^l	Embankment situation may be bearing or settlement problems.
Fo*	Fox	sandy loam	Coarse and medium outwash sand on outwash plains and in the Waterloo Sandhills.	well drained	FoA 2 ^m FoB 2 ^m FoC 3 ⁱ Foc 4 ⁱ High capability for specialty crops	Usually a cut situation. Excellent subgrade; no problems if slope re-sodded immediately.
Fr	Freeport	sandy loam	12 to 36 inches sandy loam over loam till on till plains and drumlins.	well drained	FrB 2 ^f	Usually a cut situation; no major problems; may be some local sloughing of surface sands.
Gu*	Guelph	loam	Loam till on drumlins and fluted till plains.	well drained	GuA 1 GuB 2 ^t Gub 3 ^t GuC 3 ⁱ GuD 4 ⁱ	Cut situation; no major problems; occasional boulders or sand seams; minor seepage in deeper cuts.

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Gs*	Guelph	sandy loam	Loam till on drumlins and fluted till plains.	well drained	GsA 1 GsB 2t GsC 1	Cut situation; no major problems; occasional boulders or sand seams; minor seepage in deeper cuts.
Gy*	Granby	sandy loam	Outwash sands in depressions on outwash plains, terraces, etc.	poorly drained	Gy 4f	Fill situation; ditches or culverts may be necessary to remove excess water; thick topsoil should be stripped for fills less than 4 feet.
He*	Heidelberg	fine sandy loam	Mainly glacio-lacustrine fine sands in Waterloo Sandhills and on outwash plains.	imperfectly drained	HeA 1	Fill or transition zone situation; soil is usually frost susceptible, difficult to compact and seasonally wet; avoid "grass roots" grades, replace by fill if within 30 inches of final grade.
Ko	Kossuth	sandy loam	12 to 36 inches sand loam over loam till on till plains and drumlinized areas.	imperfectly drained	KoA 2f	Usually a cut or minor fill situation; few problems other than minor sloughing and seepage in upper sand layers.
Li*	Lisbon	sandy loam	Coarse outwash sand on outwash plain and in Waterloo Sandhills.	well drained	LiB 2f	Usually a cut situation; no problem if slopes re-sodded as soon as possible.
Lo	London	loam	Loam till on drumlins and fluted till plains.	imperfectly drained	LoB 2t	Usually a fill or transition (gentle slopes) situation; no major problems except seasonally high water table and seepage seams.
Mc*	Organic Soils	1 to 3 feet thick over coarse-textured soils	12 to 36 inch thickness of organic material over soil materials and bedrock in depressions, etc.	very poorly drained	Mc 0	Evacuate to firm bottom and replace by suitable backfill; culverts, ditches, etc. necessary.
Mn*	Martin	sand and gravel	Mainly alluvial sand and gravel on floodplain.	variable drainage	Mn 6f	Embankment situation; overlies variable, often wet alluvium; drainage provisions necessary.
Mr*	Maryhill	loam	12 to 36 inches silt loam over loam till in depressions of till plains.	poorly drained	Mr 2w	Low fill situation; upper horizons are frost susceptible and topsoil needs stripping, drainage provisions necessary.
Md*	Organic	organic soils greater than 36 inches deep	More than 3 feet thickness of organic material in depressions, channels, etc.	very poorly drained	Md 0 High capability for specialty crops	Excavate to firm bottom and replace with suitable backfill; culverts, ditches, etc. necessary.
Mt*	Macton	loam	Silt loam alluvium on floodplains.	imperfectly drained	Mt 3i	Embankment situation; soils may be frost susceptible; risk of flooding.
Sc*	St. Clements	silty clay loam	Silty clay loam till on dissected areas adjacent to till plains.	well drained	ScB 2t	Usually a cut situation; upper horizons frost-susceptible; minor seepage problems.
Sj*	St. Jacobs	loam	12 to 36 inches silt loam over outwash gravel on outwash plains and terraces.	well drained	SjA 1	Cut or fill situation; surface horizons usually frost-susceptible, otherwise no major problems.
Tu*	Tuscola	loam	Stratified glacio-lacustrine silt in Waterloo Sandhills and adjacent areas.	imperfectly drained	TuA 1 TuB 1	Fill situation; high frost-susceptibility, sidehill seepage may require subdrains.

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Wa*	Waterloo	fine sandy loam	Mainly glacio-lacustrine fine sands in Waterloo Sandhills.	well drained	WaA 1 Wab 2t WaB 1	Usually a cut situation; materials are often frost-susceptible and difficult to compact; unsodded slopes subject to erosion.
Wo*	Woolwich	loam	12 to 36 inches silt loam over loam till on till plains	well drained	WoA 1 WoB 1	Cut situation; upper horizons may be frost-susceptible but no major problems.
Wellington						
Bs	Brady	sandy loam	Outwash; calcareous, medium sand.	imperfect	<u>Bs</u> 2f A2S4	n/a
Cof*	Colwood	fine sandy loam	Lacustrine deposits; calcareous, fine sandy loam and silt loam.	poor	<u>Cof</u> 2w A0S0	n/a
Db	Donnybrook	sandy loam	Outwash; coarse gravel and cobblestone.	good	<u>Db</u> 2l B4S2 6 ¹ / ₈ 6 ¹ / ₄ <u>Db</u> 6 ¹ / ₈ 6 ¹ / ₄ B4S3	n/a
Fs	Fox	sandy loam	Outwash; calcareous, medium sand.	good	<u>Fs</u> 2l A2S0 High capability for specialty crops	n/a
Gil	Gilford	loam	Outwash; loam material overlying coarse gravel.	poor	<u>Gil</u> 4w A1S2	n/a
Grs	Granby	sandy loam	Outwash; calcareous, medium sand.	poor	<u>Grs</u> 5w A0S0	n/a
Gl*	Guelph	loam	Glacial till; pale brown, calcareous, loam.	good	<u>Gl</u> 3t ² A3S1	n/a
Ll*	London	loam	Glacial till; pale brown, calcareous, loam.	imperfect	<u>Ll</u> 1 A2S1	n/a
M	Muck	organic	Organic deposits.	very poor	<u>M</u> 0 A0S0 High capability for specialty crops	n/a
Pal*	Parkhill	loam	Glacial till; pale brown, calcareous, loam.	poor	<u>Pal</u> 2w A0S0 <u>Pal</u> A1S1	n/a

TABLE 1 - HIGHWAY 7 PLANNING STUDY
SOIL CHARACTERISTICS

* Soil series found along technically preferred alternative.

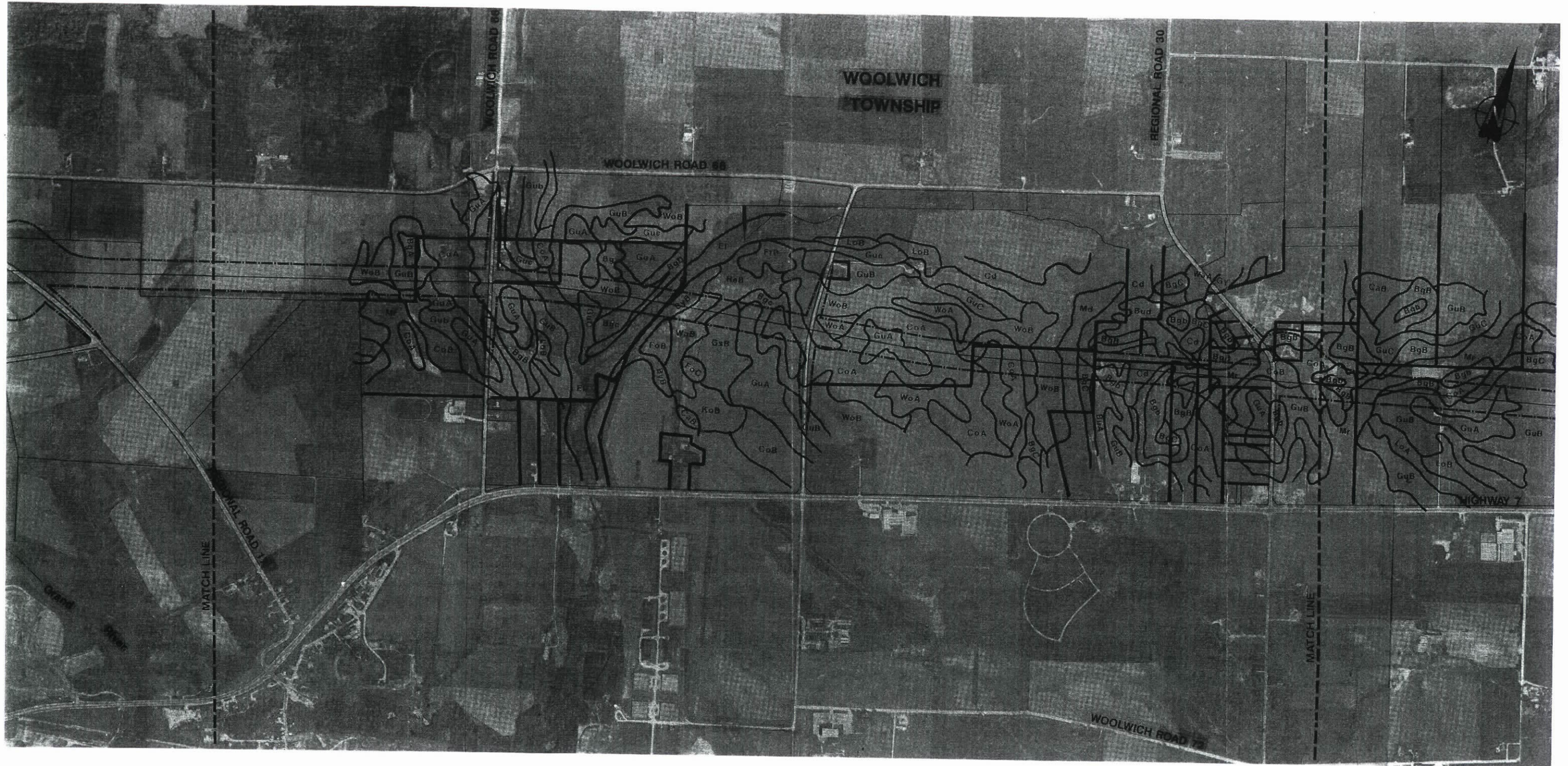
Legend:

Agricultural Capability Classes

- 1 - soils in this class have no significant limitations in use for crops.
- 2 - soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.
- 3 - soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.
- 4 - soils in this class have severe limitations that restrict the range of crops or require special observation practices or both.
- 5 - soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible.
- 6 - soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.
- 7 - soils in this class have no capability for arable culture or permanent pasture.
- O - organic.

Agricultural Capability Subclasses

- e - erosion
- f - low fertility
- i - inundation by streams or lakes
- m - moisture limitations
- s - adverse soil characteristics
- t - topography
- w - excess water



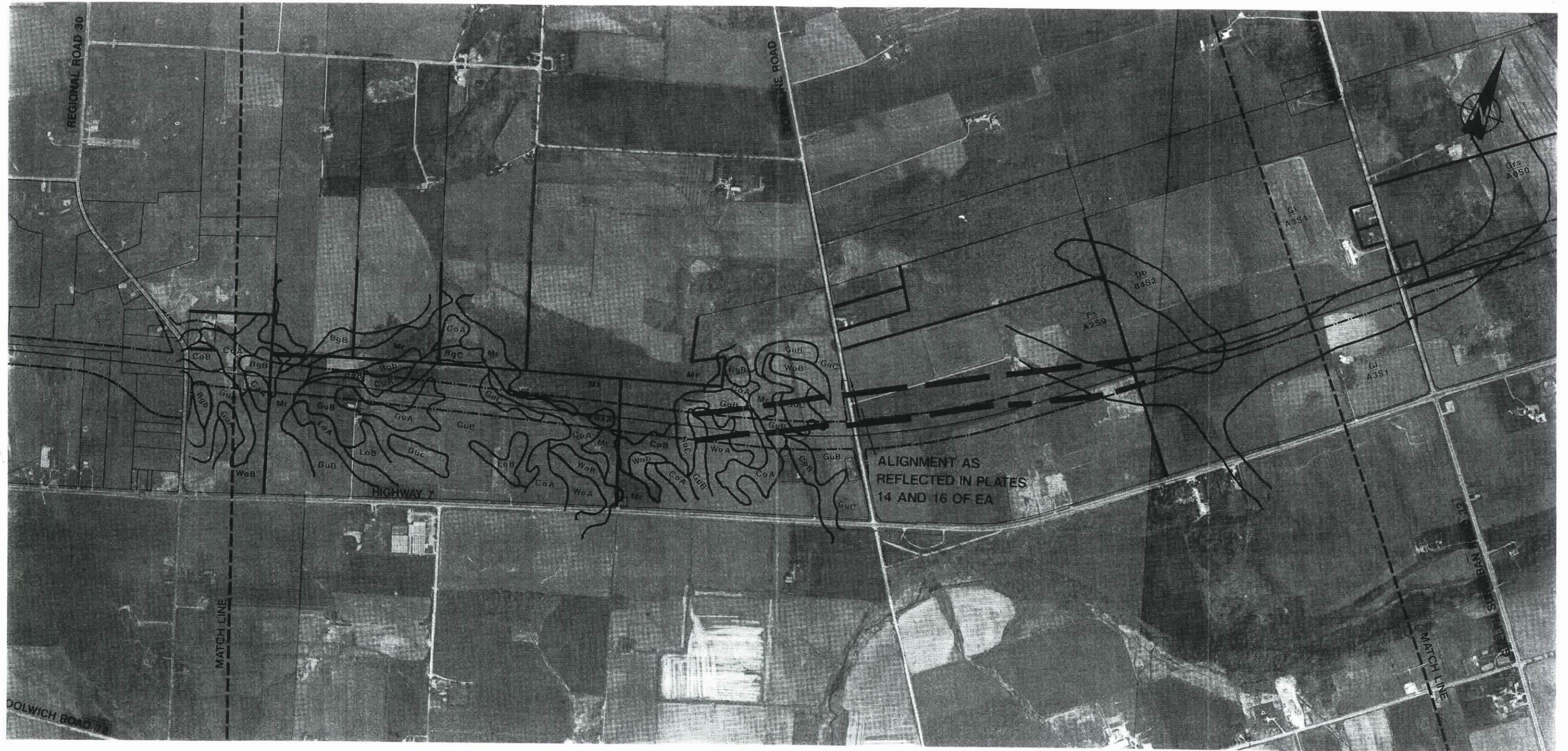
HIGHWAY 7 PLANNING STUDY
 ENVIRONMENTAL ASSESSMENT
 KITCHENER TO GUELPH

Soils Summary

FIGURE 5

PLATE 2

SEE TABLE 1 FOR SOIL SERIES CODES



HIGHWAY 7 PLANNING STUDY
 ENVIRONMENTAL ASSESSMENT
 KITCHENER TO GUELPH

Soils Summary

Existing soils information for Wellington County
 not as detailed as that available for Region
 of Waterloo

1:15,000

FIGURE 5

PLATE 3

SEE TABLE 1 FOR SOIL SERIES CODES



HIGHWAY 7 PLANNING STUDY
 ENVIRONMENTAL ASSESSMENT
 KITCHENER TO GUELPH

Soils Summary

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SEE TABLE 1 FOR SOIL SERIES CODES

FIGURE 5
 PLATE 4