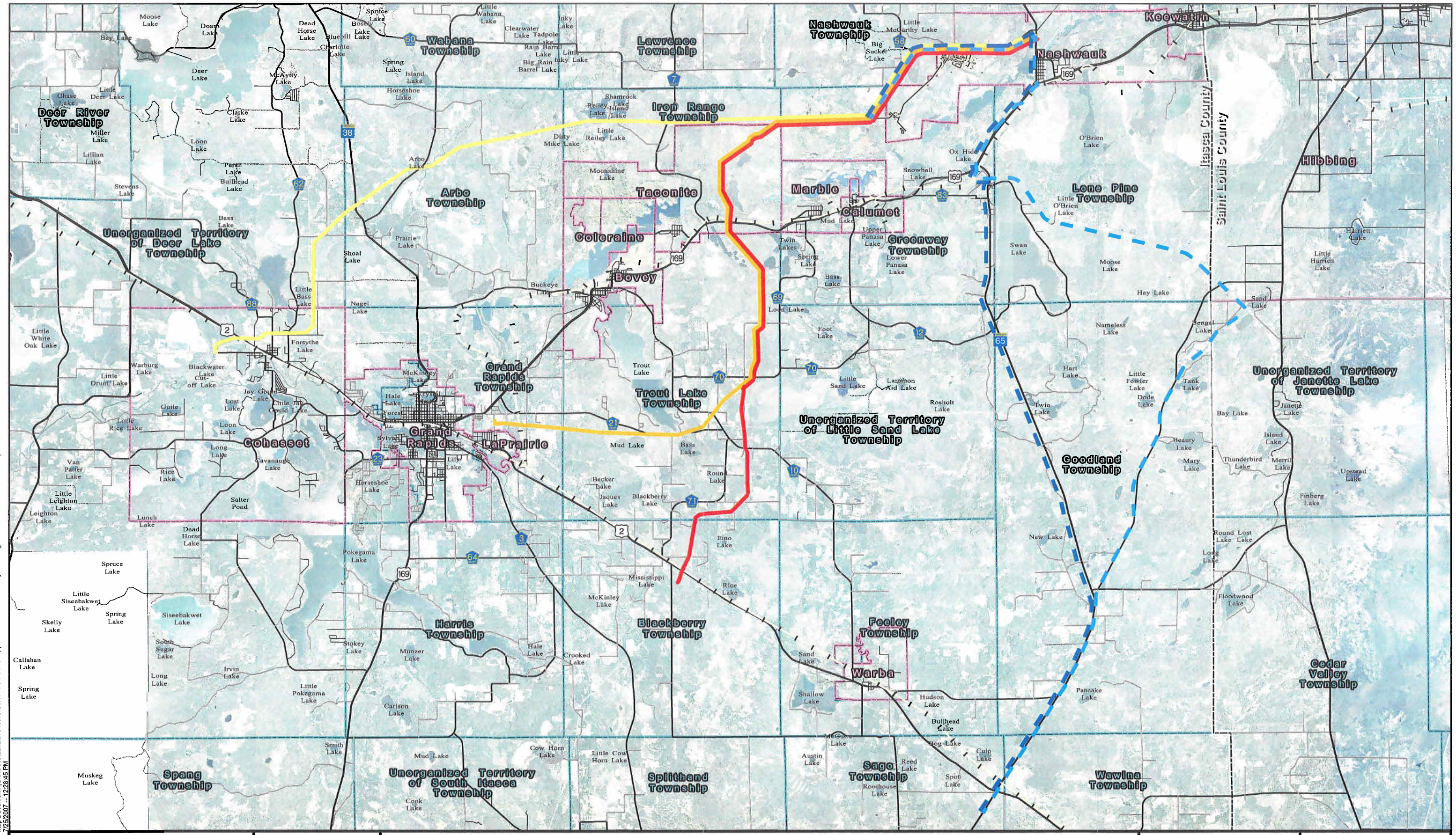


SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- MN Steel Plant Layout
- Existing Roads
- Existing Rail Lines
- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries

Source: NAIP 2003 & 2006, Itasca County, USGS, Mn/DOT, Barr, MN Steel, and SEH.
© 2007 SEH

Nashwauk-Blackberry Pipeline Project

Itasca County/MSI & Citizen's Alignment Alternatives

Itasca County - South Coordinate System

N W E S

0 2.5 Miles

Map Document: (S:\KO\N\Nashu\07010\GIS\MNPUC Permit Supplement Alternatives Analysis - 5 Alignments OVERALL 11x17 L.mxd)
7/25/2007 -- 12:28:45 PM

Legend

Trout stream or tributary according to Minnesota Rules 6264. Designation is defined on the basis of PLS sections.
- Designated trout stream
- Designated trout stream tributary

Streams - Protected Waters Inventory (PWI)
- Watercourse not indicated on PWI Maps
- Protected watercourse on PWI; indicated on PWI Maps
- Protected Public Ditch; indicated on PWI Maps

Protected/Public Waters Inventory (PWI)
- PWI-Lake
- PWI-Wetland

USFWS NWI (CIRC39)
- Seasonally flooded basin or flat
- Wet meadow
- Shallow marsh
- Deep marsh
- Shallow open water
- Shrub swamp
- Wooded swamps
- Bogs
- Municipal and industrial activities
- Riverina systems

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend
- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- Residential Homes (05-ICMSI-1)
- MN Steel Plant Layout

Existing Gas Lines
- Great Lakes
- Northern Natural Gas

- USGS 100k DLG Pipelines (SEH Adjusted Centerline)
- SEH Interpreted from (7.5' Topo & 2003 Orthos)
- Existing HVTL Lines

Mn/DOT Abandoned Rails Database (2004)
SEH Improved (2007)
- Abandoned Rail Lines
- Existing Rail Lines

Mn/DOT Basemap Roads Jurisdiction
- 02, U. S. Trunk Highway
- 03, Minnesota Trunk Highway
- 04, County State-aid Highway
- 05, Municipal State-aid Street
- 07, County Road
- 08, Township Road
- 09, Unorganized Township Road
- 10, Municipal Street
- 12, National Forest Development Road
- 13, Indian Reservation Road
- 14, State Forest Road
- 15, State Park Road
- 22, Ramp
- U.S. 169 Bovey Bypass

- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries
- State Park Statutory Boundary
- Additional Lease Area

Source: NAIP 2003 & 2006, USGS, USFWS, Mn/DOT, MNDNR, Barr, MN Steel, URS, NNG, NPUC, and SEH.
© 2007 SEH

Nashwauk-Blackberry Pipeline Project

Itasca County/MSI Alternative 05-ICMSI-1

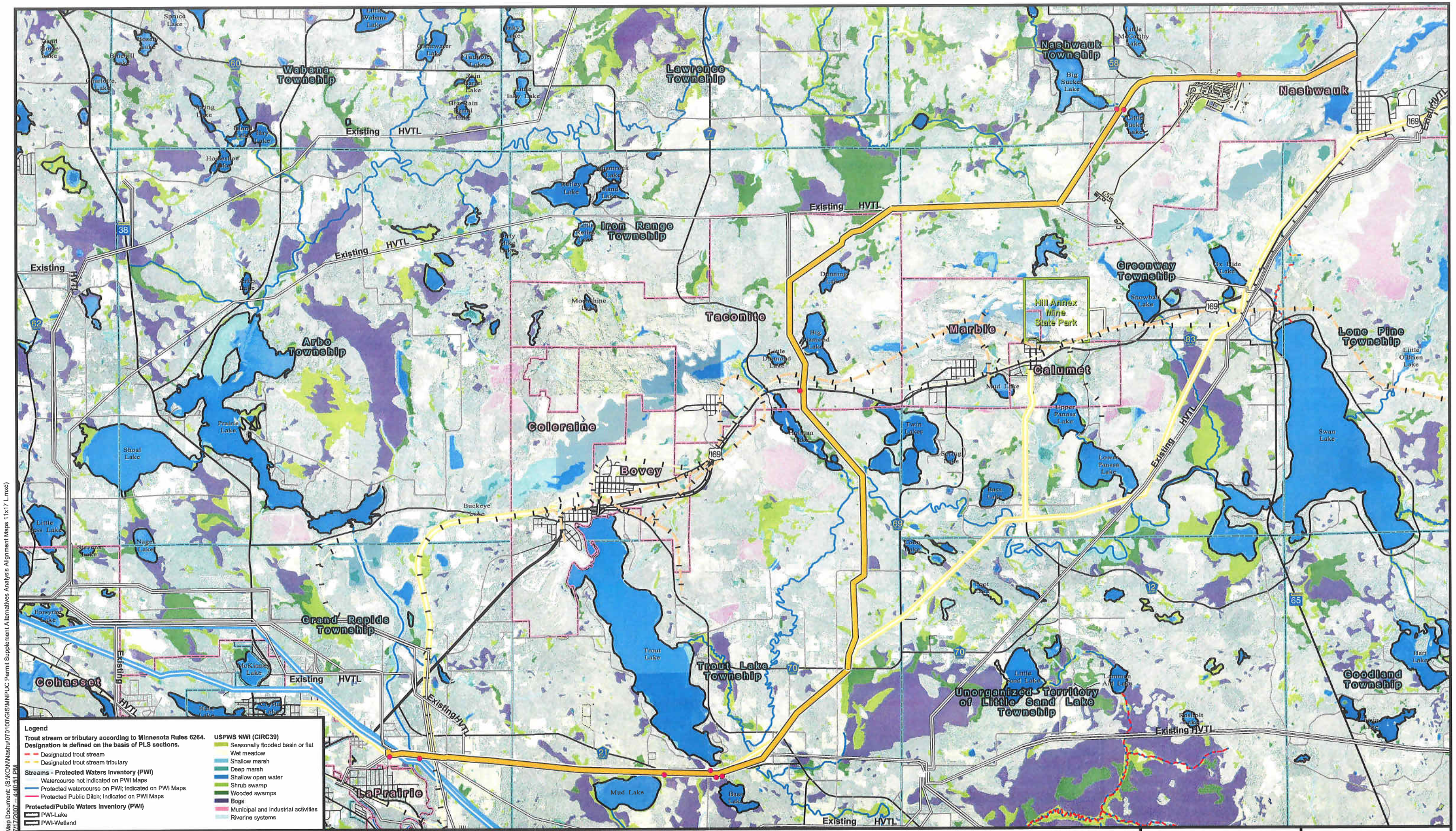
Itasca County - South Coordinate System

N W E S

D - 20

0 0.9 Miles

Map Document: (S:\KOWN\nashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis Alignment Maps 11x17 L.mxd)
7/17/2007 -- 4:40:51 PM



Map Document: (S:\KON\Nashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis Alignment Maps 11x17 L.mxd)
7/17/2007 -- 4:40:51 PM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- Residential Homes (05-ICMSI-2)
- MN Steel Plant Layout

Existing Gas Lines

- Great Lakes
- Northern Natural Gas
- USGS 100k DLG Pipelines (SEH Adjusted Centerline)
- SEH Interpreted from (7.5' Topo & 2003 Orthos)
- Existing HVTL Lines

Mn/DOT Abandoned Rails Database (2004) SEH Improved (2007)

- Abandoned Rail Lines
- Existing Rail Lines

Mn/DOT Basemap Roads Jurisdiction

- 02, U. S. Trunk Highway
- 03, Minnesota Trunk Highway
- 04, County State-aid Highway
- 05, Municipal State-aid Street
- 07, County Road
- 08, Township Road
- 09, Unorganized Township Road
- 10, Municipal Street
- 12, National Forest Development Road
- 13, Indian Reservation Road
- 14, State Forest Road
- 15, State Park Road
- 22, Ramp
- U.S. 169 Bovey Bypass

- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries
- State Park Statutory Boundary
- Additional Lease Area

Source: NAIP 2003 & 2006, USGS, USFWS, Mn/DOT, MNDNR, Barr, MN Steel, URS, NNG, NPUC, and SEH.
© 2007 SEH

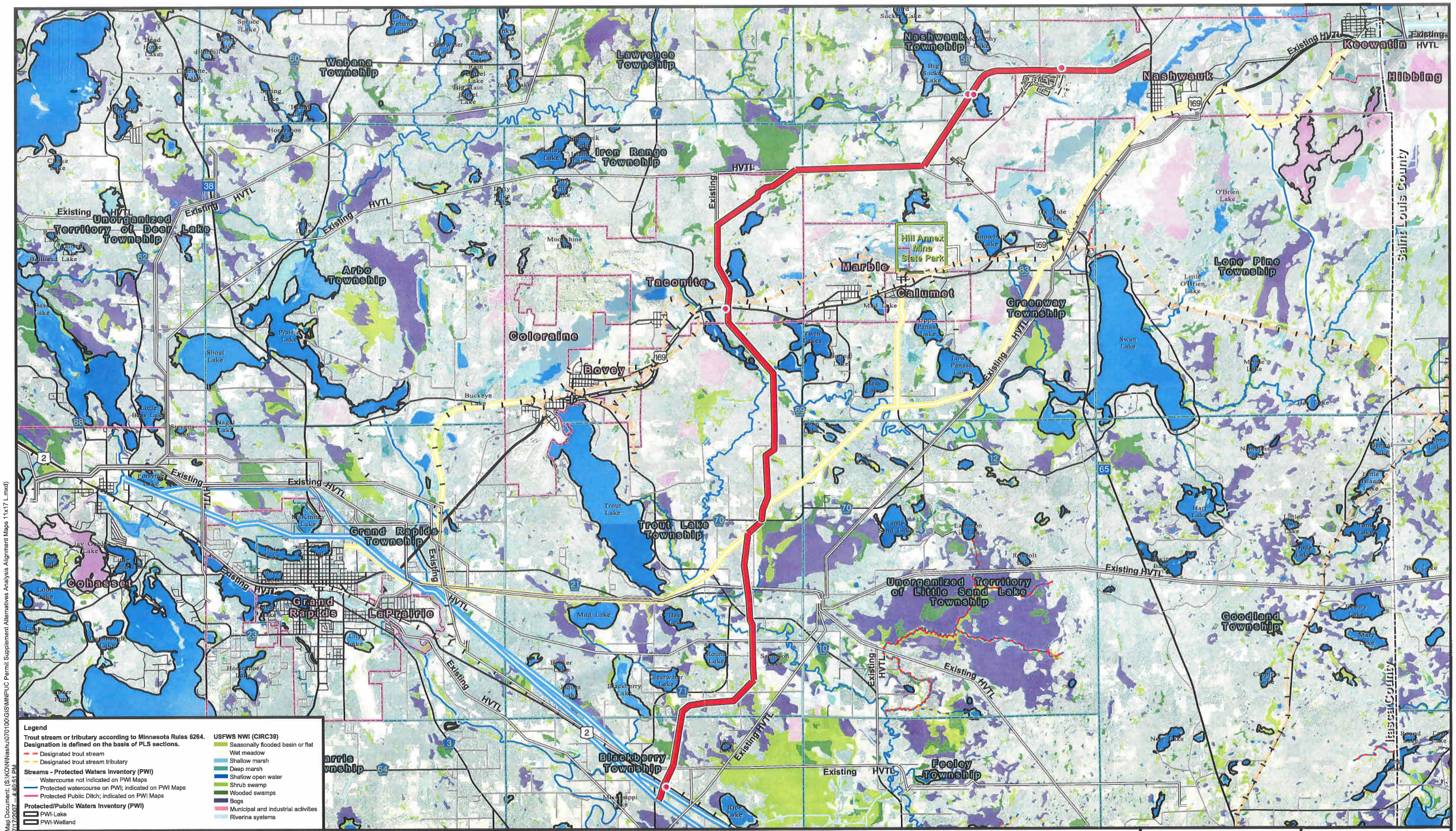
Nashwauk-Blackberry Pipeline Project

Itasca County/MSI Alternative 05-ICMSI-2

Itasca County - South Coordinate System

N W E S

0 0.8 Miles



Legend

Trout stream or tributary according to Minnesota Rules 6264. Designation is defined on the basis of PLS sections.
- Designated trout stream
- Designated trout stream tributary

Streams - Protected Waters Inventory (PWI)
- Watercourse not indicated on PWI Maps
- Protected watercourse on PWI; indicated on PWI Maps
- Protected Public Ditch; indicated on PWI Maps

Protected/Public Waters Inventory (PWI)
- PWI-Lake
- PWI-Wetland

USFWS NWI (CIRC39)
- Seasonally flooded basin or flat Wet meadow
- Shallow marsh
- Deep marsh
- Shallow open water
- Shrub swamp
- Wooded swamps
- Bogs
- Municipal and industrial activities
- Riverine systems

Map Document: (S:\KO\N\Nashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis Alignment Maps 11x17 L.mxd)
7/17/2007 -- 4:40:51 PM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- Residential Homes (05-ICMSI-3)
- MN Steel Plant Layout

Existing Gas Lines
- Great Lakes
- Northern Natural Gas

- USGS 100k DLG Pipelines (SEH Adjusted Centerline)
- SEH Interpreted from (7.5' Topo & 2003 Orthos)
- Existing HVTL Lines

Mn/DOT Abandoned Rails Database (2004)
SEH Improved (2007)
- Abandoned Rail Lines
- Existing Rail Lines

Mn/DOT Basemap Roads Jurisdiction
- 02, U. S. Trunk Highway
- 03, Minnesota Trunk Highway
- 04, County State-aid Highway
- 05, Municipal State-aid Street
- 07, County Road
- 08, Township Road
- 09, Unorganized Township Road
- 10, Municipal Street
- 12, National Forest Development Road
- 13, Indian Reservation Road
- 14, State Forest Road
- 15, State Park Road
- 22, Ramp
- U.S. 169 Bovey Bypass

- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries
- State Park Statutory Boundary
- Additional Lease Area

Source: NAIP 2003 & 2006, USGS, USFWS, Mn/DOT, MNDNR, Barr, MN Steel, URS, NNG, NPUC, and SEH.
© 2007 SEH

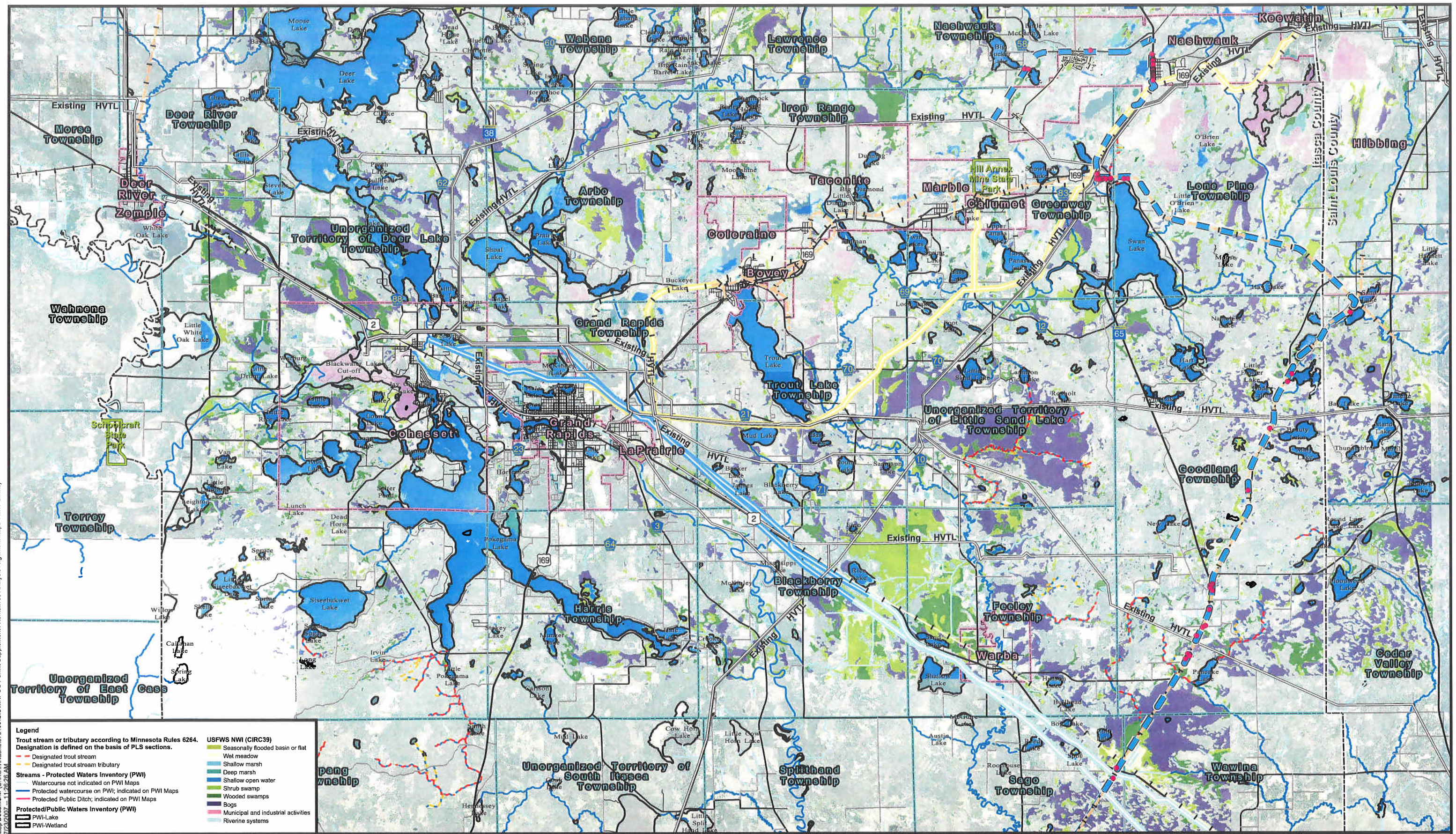
Nashwauk-Blackberry Pipeline Project

Itasca County/MSI Alternative 05-ICMSI-3

Itasca County - South Coordinate System

N W E S

0 1 Miles



Map Document: (S:\KO\N\Nashwauk\070100\GIS\MNPUC Permit Supplement Alternatives Analysis Alignment Maps 11x17 L.mxd)
7/23/2007 -- 11:26:26 AM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- Residential Homes (07-MNPUC-P1)
- MN Steel Plant Layout

Existing Gas Lines

- Great Lakes
- Northern Natural Gas

- USGS 100k DLG Pipelines (SEH Adjusted Centerline)
- SEH Interpreted from (7.5' Topo & 2003 Orthos)
- Existing HVTL Lines

Mn/DOT Abandoned Rails Database (2004) SEH Improved (2007)

- Abandoned Rail Lines
- Existing Rail Lines

Mn/DOT Basemap Roads Jurisdiction

- 02, U. S. Trunk Highway
- 03, Minnesota Trunk Highway
- 04, County State-aid Highway
- 05, Municipal State-aid Street
- 07, County Road
- 08, Township Road
- 09, Unorganized Township Road
- 10, Municipal Street
- 12, National Forest Development Road
- 13, Indian Reservation Road
- 14, State Forest Road
- 15, State Park Road
- 22, Ramp
- U.S. 169 Bovey Bypass

- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries
- State Park Statutory Boundary
- Additional Lease Area

Source: NAIP 2003 & 2006, USGS, USFWS, Mn/DOT, MNDNR, Barr, MN Steel, URS, NNG, NPUC, and SEH.

© 2007 SEH

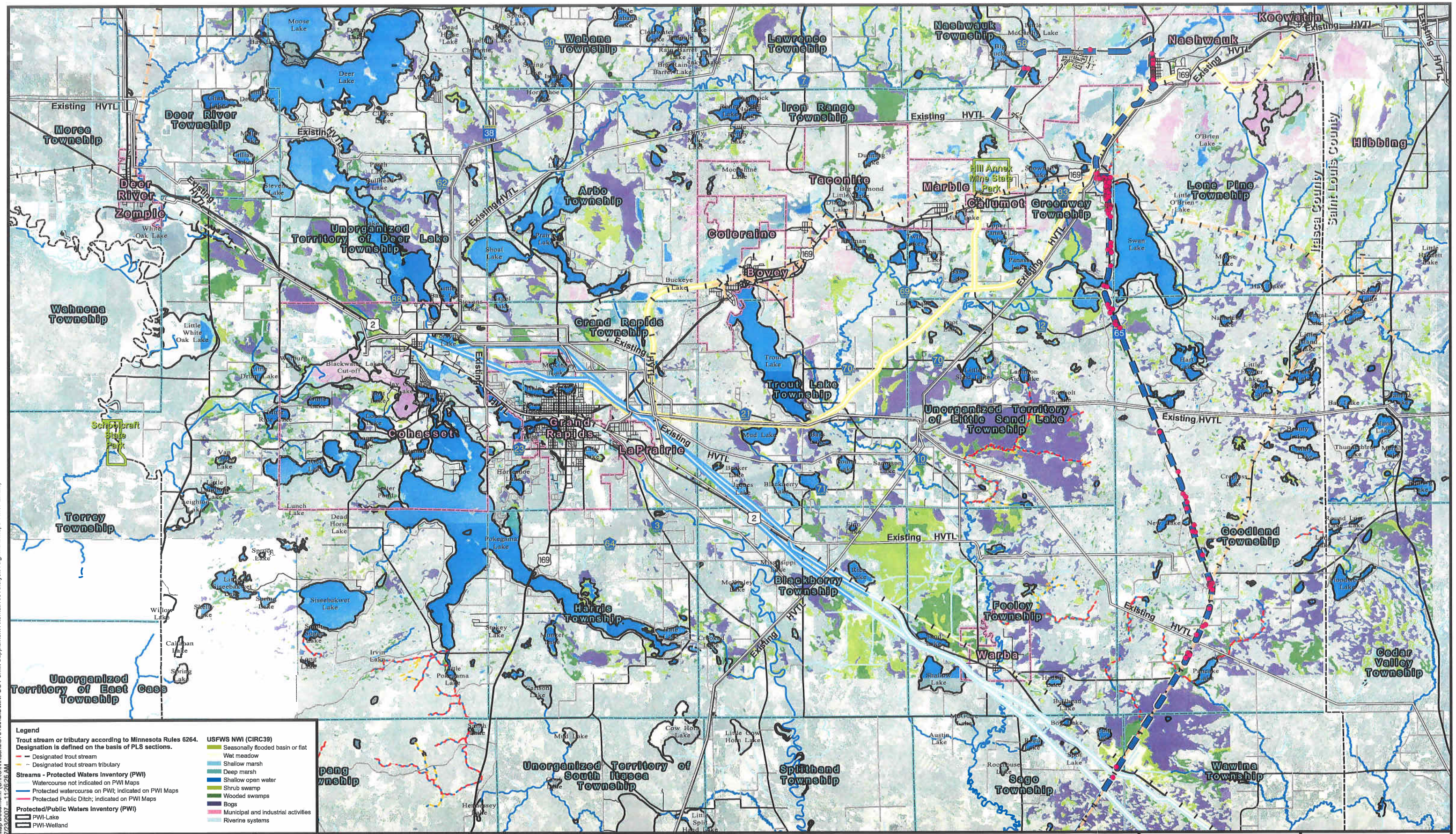
Nashwauk-Blackberry Pipeline Project

Citizen's Alternative Alternative 07-MNPUC-P1

Itasca County - South Coordinate System

N W E S

0 2 Miles



Map Document: (S:\KON\Nashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis Alignment Maps 11x17 L.mxd)
7/23/2007 -- 11:26:26 AM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- Residential Homes (07-MNPUC-P2)
- MN Steel Plant Layout

Existing Gas Lines

- Great Lakes
- Northern Natural Gas

- USGS 100k DLG Pipelines (SEH Adjusted Centerline)
- SEH Interpreted from (7.5' Topo & 2003 Orthos)
- Existing HVTL Lines

Mn/DOT Abandoned Rails Database (2004) SEH Improved (2007)

- Abandoned Rail Lines
- Existing Rail Lines

Mn/DOT Basemap Roads Jurisdiction

- 02, U. S. Trunk Highway
- 03, Minnesota Trunk Highway
- 04, County State-aid Highway
- 05, Municipal State-aid Street
- 07, County Road
- 08, Township Road
- 09, Unorganized Township Road
- 10, Municipal Street
- 12, National Forest Development Road
- 13, Indian Reservation Road
- 14, State Forest Road
- 15, State Park Road
- 22, Ramp
- U.S. 169 Bovey Bypass

- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries
- State Park Statutory Boundary
- Additional Lease Area

Source: NAIP 2003 & 2006, USGS, USFWS, Mn/DOT, MNDNR, Barr, MN Steel, URS, NNG, NPUC, and SEH.
© 2007 SEH

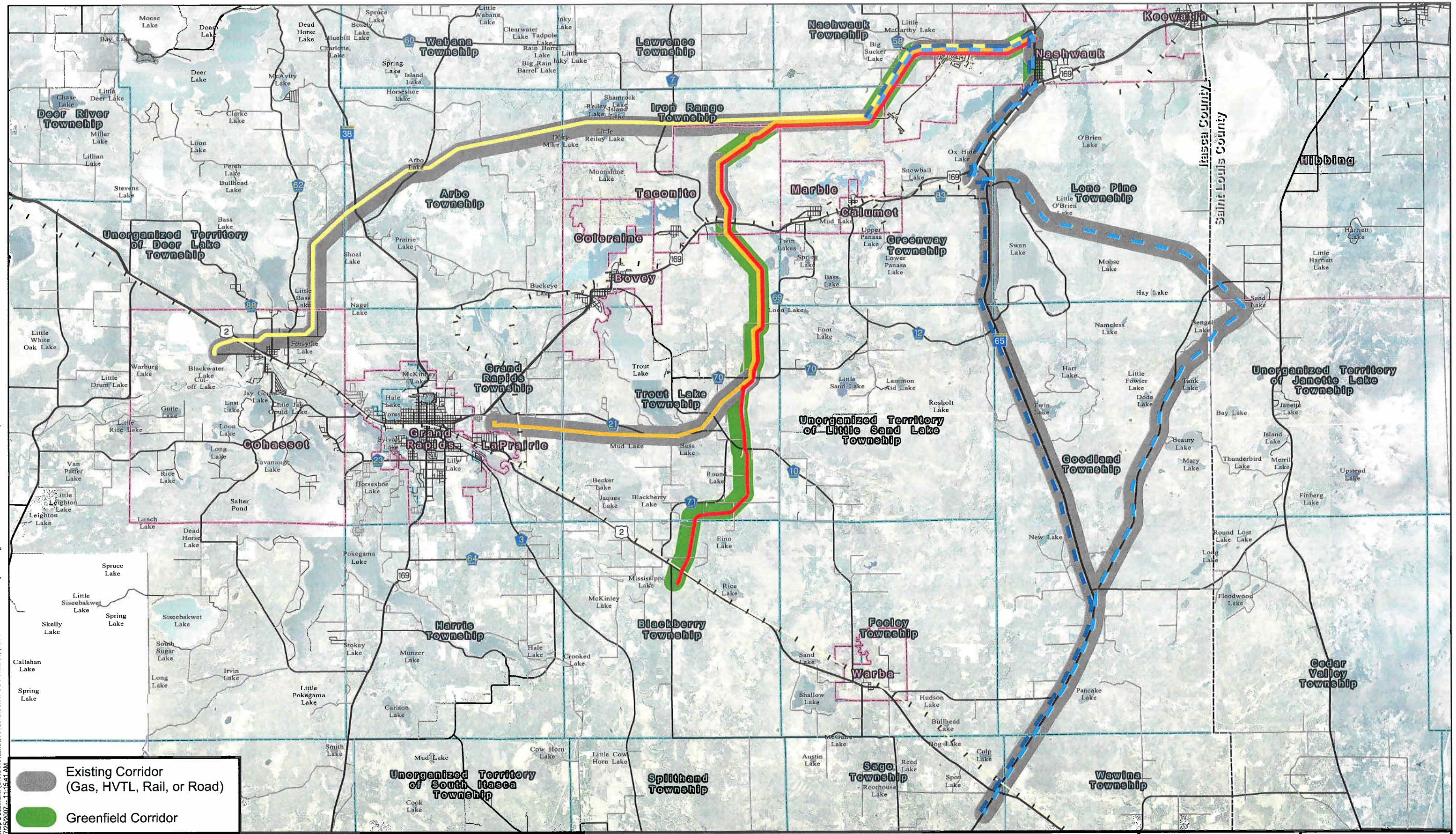
Nashwauk-Blackberry Pipeline Project

Citizen's Alternative Alternative
07-MNPUC-P2

Itasca County - South Coordinate System

N W E S

0 2 Miles



Map Document: (S:\KOI\Nashuk\070100\GIS\MNPUC Permit Supplement Alternatives Analysis - 5 Alignments - CORRIDOR CLASS 11x17 L.mxd)
7/25/2007 -- 11:15:41 AM

SEH

3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- MN Steel Plant Layout
- Existing Roads
- Existing Rail Lines
- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries

Source: NAIP 2003 & 2006, Itasca County, USGS, Mn/DOT, LMIC-EQB, Barr, MN Steel, and SEH.
© 2007 SEH

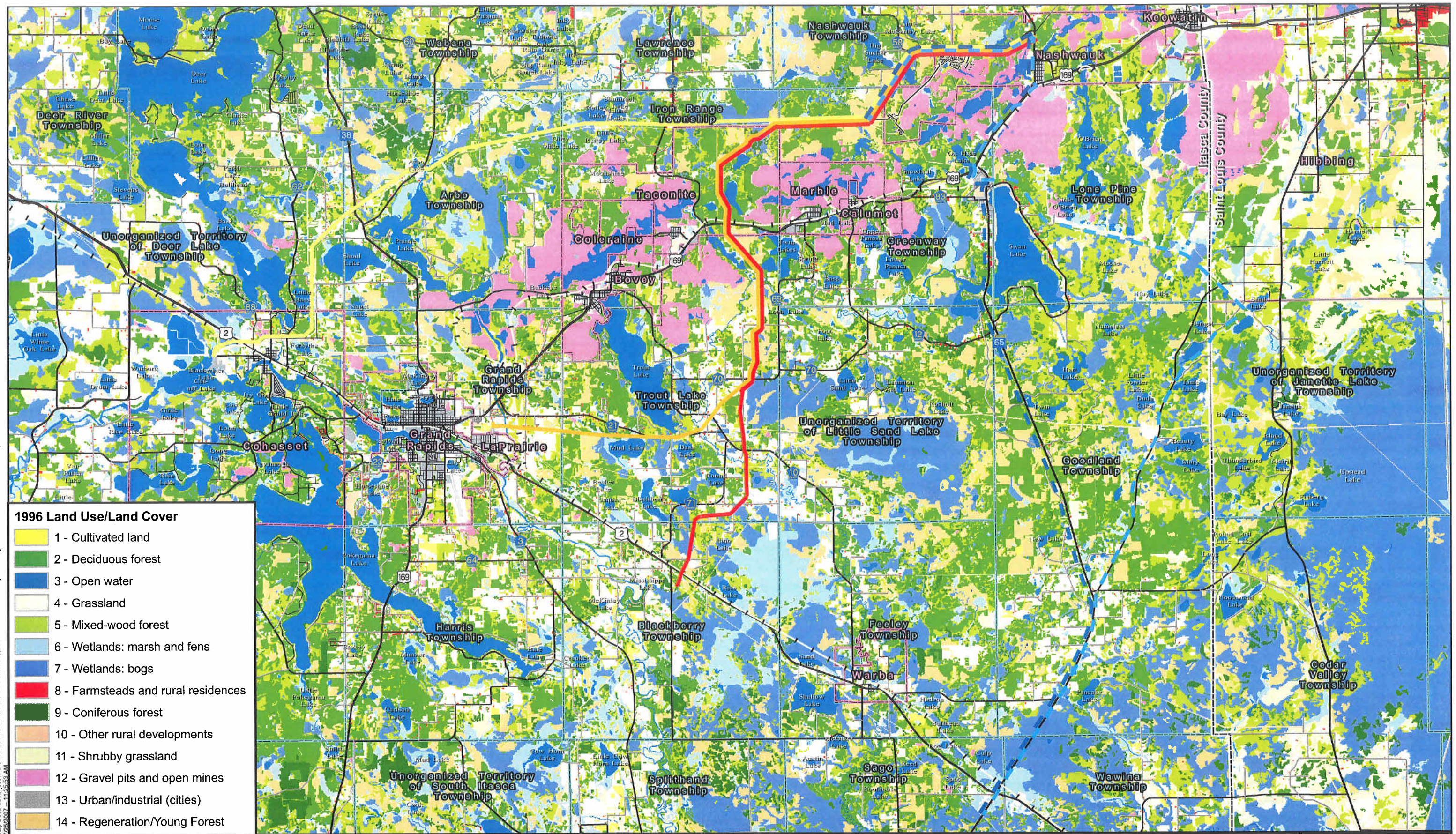
Nashwauk-Blackberry Pipeline Project

Route Corridor Existing vs. Greenfield Classification

Itasca County - South Coordinate System

N W E S

0 2.5 Miles



1996 Land Use/Land Cover

- 1 - Cultivated land
- 2 - Deciduous forest
- 3 - Open water
- 4 - Grassland
- 5 - Mixed-wood forest
- 6 - Wetlands: marsh and fens
- 7 - Wetlands: bogs
- 8 - Farmsteads and rural residences
- 9 - Coniferous forest
- 10 - Other rural developments
- 11 - Shrubby grassland
- 12 - Gravel pits and open mines
- 13 - Urban/industrial (cities)
- 14 - Regeneration/Young Forest

Map Document: (S:\KO\NNashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis - 5 Alignments LAND COVER 11x17 L.mxd)
7/25/2007 -- 11:25:53 AM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- MN Steel Plant Layout
- Existing Roads
- Existing Rail Lines
- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries

Source: Itasca County, USGS, Manitoba Remote Sensing Centre, Mn/DOT, Barr, MN Steel, and SEH.
© 2007 SEH

Nashwauk-Blackberry Pipeline Project

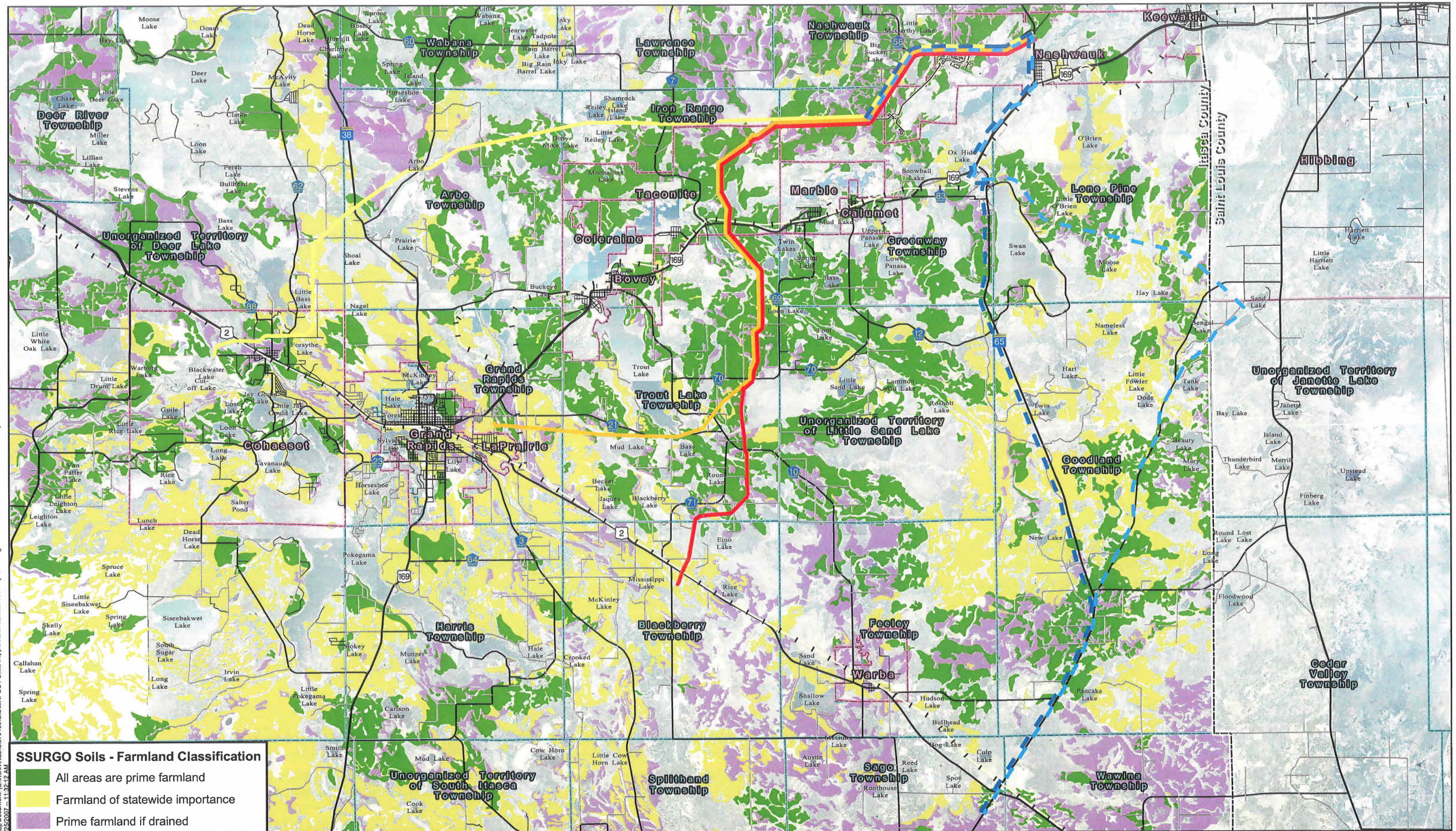
1996 Landsat TM Land Use/Land Cover

Itasca County - South Coordinate System

N W E S

D - 26

0 2.5 Miles



Map Document: (S:\KON\Nashui\070100\GIS\MNPUC Permit Supplement Alternatives Analysis - 5 Alignments SOILS FARM CLASS 11x17 L.mxd)
7/25/2007 -- 11:32:12 AM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- MN Steel Plant Layout
- Existing Roads
- Existing Rail Lines
- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries

Source: NAIP 2003 & 2006, Itasca County, USGS, USDA-NRCS, Mn/DOT Barr, MN Steel, and SEH.
© 2007 SEH

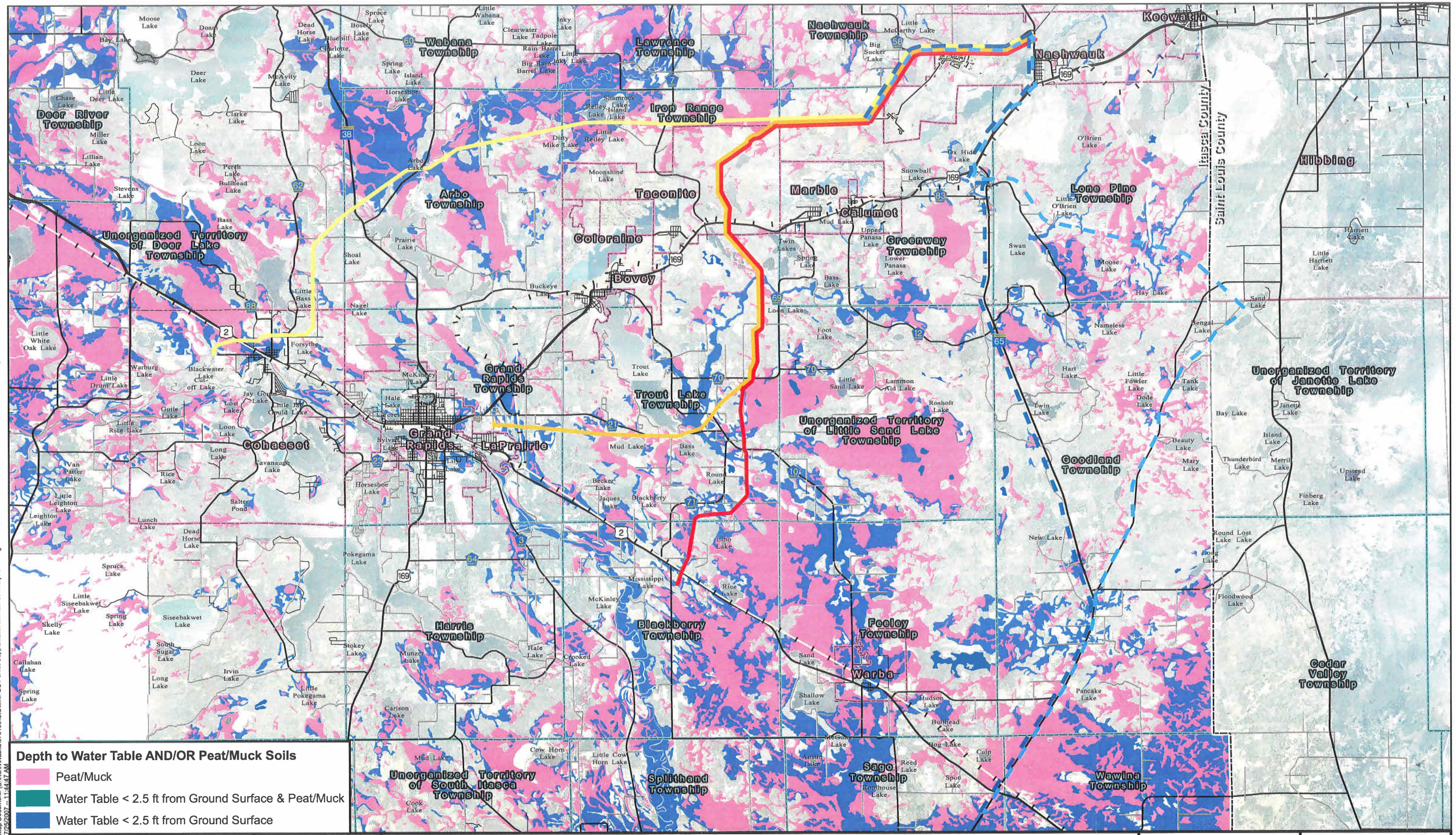
Nashwauk-Blackberry Pipeline Project

Soils Farmland Classification

Itasca County - South Coordinate System

N W E S

0 2.5 Miles



Map Document: (S:\KOIN\Nashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis - 5 Alignments SOILS and GROUNDWATER CONDITIONS 11x17 L.mxd)
7/25/2007 -- 11:44:47 AM

SEH

3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- MN Steel Plant Layout
- Existing Roads
- Existing Rail Lines
- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries

Source: NAIP 2003 & 2006, Itasca County, USGS, USDA-NRCS, Mn/DOT, Barr, MN Steel, and SEH.
© 2007 SEH

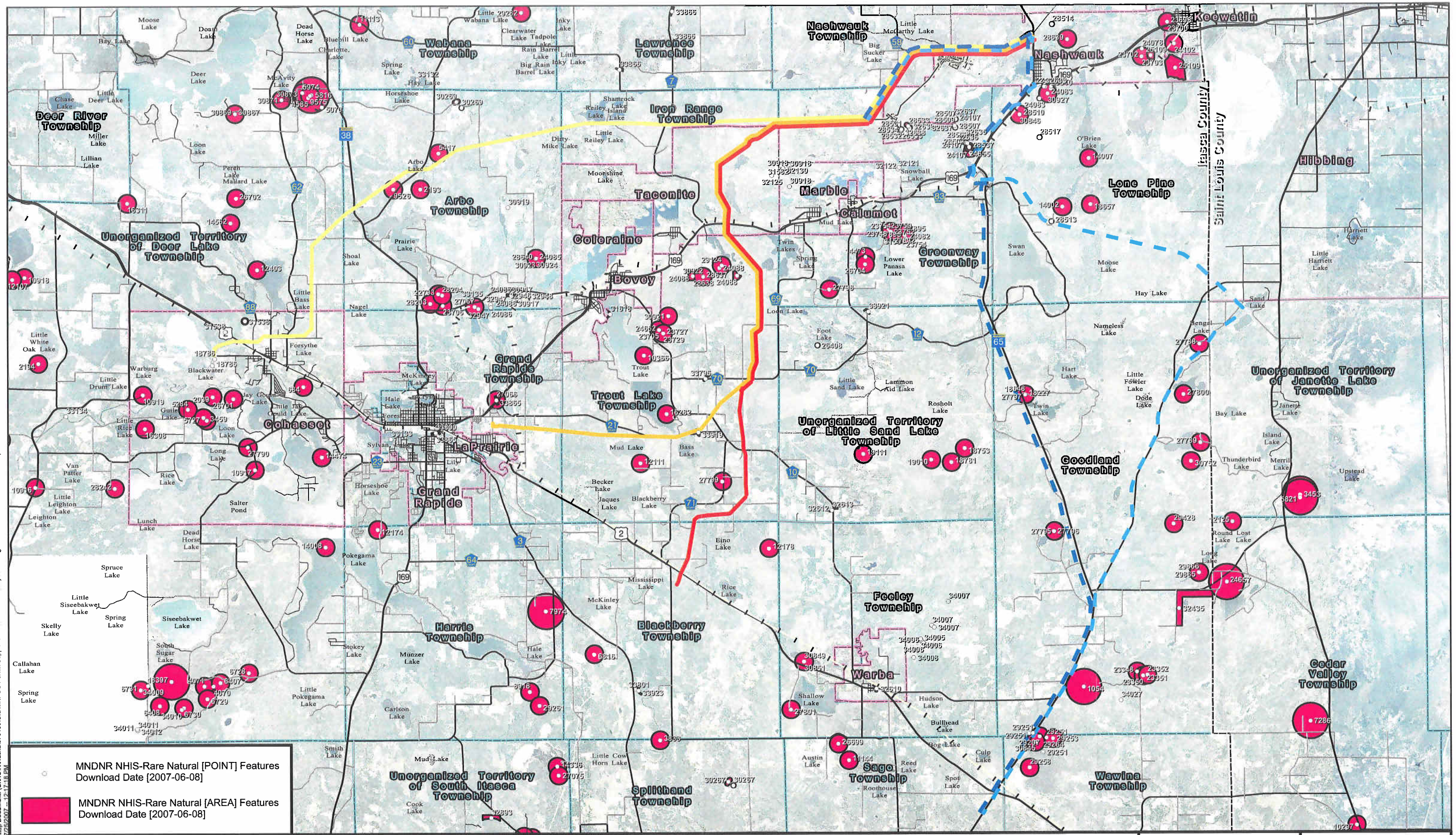
Nashwauk-Blackberry Pipeline Project

Soils and Groundwater Conditions Impacting Construction

Itasca County - South Coordinate System

N W E S

0 2.5 Miles



MNDNR NHIS-Rare Natural [POINT] Features
Download Date [2007-06-08]

MNDNR NHIS-Rare Natural [AREA] Features
Download Date [2007-06-08]

Map Document: (S:\KON\Nashu\070100\GIS\MNPUC Permit Supplement Alternatives Analysis - 5 Alignments - NHIS-RNF 11x17 L.mxd)
7/25/2007 -- 12:17:18 PM

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

City of Nashwauk Public Utilities Commission

July 2007

Legend

- 2005 Itasca County/MSI - Alternative 1 (05-ICMSI-1)
- 2005 Itasca County/MSI - Alternative 2 (05-ICMSI-2)
- 2005 Itasca County/MSI - Alternative 3 (05-ICMSI-3)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P1 (07-MNPUC-P1)
- 2007 NPUC/MNPUC Citizen's Route - Alternative P2 (07-MNPUC-P2)
- MN Steel Plant Layout
- Existing Roads
- Existing Rail Lines
- Municipal Boundaries
- Civil Township Boundaries
- County Boundaries

Source: NAIP 2003 & 2006, Itasca County, USGS, Mn/DOT, MNDNR-NHIS, Barr, MN Steel, and SEH.
© 2007 SEH

Nashwauk-Blackberry Pipeline Project

MNDNR-Natural Heritage Program Rare Natural Features

Itasca County - South Coordinate System

N W E S

0 2.5 Miles