MCCULLY
PHASED ENVIRONMENTAL IMPACT ASSESSMENT

PHASE III: NATURAL GAS EXPLORATION AND DEVELOPMENT IN MCCULLY FIELD

Submitted to:

Corridor Resources Inc.
Halifax, Nova Scotia

Submitted by:

AMEC Environment & Infrastructure,

A Division of AMEC Americas Limited
Fredericton, New Brunswick

February 2014

TE131040

EXECUTIVE SUMMARY

Corridor Resources Inc. (Corridor) is proposing to conduct further natural gas development and production in the McCully Field at existing natural gas well pads O-76, N-57 and D-48 as Phase III of the McCully Environmental Impact Assessment (EIA). Phase III (the Project) will involve one to three fracture treatments at each of these three well pads as well as subsequent tie-in and production activities. The Project is considered an undertaking subject to phased approval under the EIA Regulation of the *Clean Environment Act*. The Project activities are also subject to *the Rules for Industry for the Responsible Environmental Management of Oil and Natural Gas Activities in New Brunswick*. Corridor has retained the services of AMEC Environment & Infrastructure, a division of AMEC Americas Limited (AMEC) to prepare this Phase III EIA report in support of the registration of the Project under the EIA process. Future phases of this McCully EIA may include any oil and gas related exploration, development and production at existing or new well pads or areas within the McCully Field.

A description of the environment within which the Project activities will occur, or potentially have an influence on, was developed from existing information, primarily from the Phase I and II EIA document currently registered and under review by the Province (Project #1368; AMEC, 2013). Potential positive and negative interactions between Project activities and the environment were identified. Where negative interactions were anticipated, and potential effects were a concern, methods for mitigating the effects have been proposed.

A description of the existing environment in the Study Area has been presented (see Section 3.0) based on available information, including results of field and well water surveys conducted by AMEC from 2006 to 2008. The Valued Environmental Components (VECs) identified by issue scoping and pathway analysis (see Section 4.0) for which potential effects may be a concern included:

- ambient air quality;
- hydrology and hydrogeology;
- Species at Risk, migratory birds and wildlife; and
- residential environment.

No floral or faunal Species at Risk or critical / limiting habitat was identified, by desktop studies or field investigation, to occur in the proposed Project Footprints. Other Project effects are minimal and will be localized and temporary. This report also identifies measures intended to mitigate potential environmental concerns, and provides a discussion of potential residual effects resulting from the proposed Project.

Based on this Study, given the proposed mitigation, no significant adverse residual effects are anticipated as a result of the Project.

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LIST OF ACRONYMS

ACCDC	Atlantic Canada Conservation Data Centre
AFRL	Archaeological Field Research License
AMEC	AMEC Environment & Infrastructure, a division of AMEC Americas Limited
CLC	Community Liaison Committee
CNR	Canadian National Railway
Corridor	Corridor Resources Inc.
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ECC	Environmental Components of Concern
EIA	Environmental Impact Assessment
HRIA	Heritage Resource Impact Assessment
HSE	Health, Safety and Environment
LPG	Liquid Propane Gas
NB	New Brunswick
NBDELG	New Brunswick Department of Environment and Local Government
NBDEM	New Brunswick Department of Energy and Mines
NBDNR	New Brunswick Department of Natural Resources
NBENV	New Brunswick Department of the Environment
NBEUB	New Brunswick Energy and Utilities Board
NBNGG	New Brunswick Natural Gas Group
NBSRA	*New Brunswick Species at Risk Act*
OSFH	Old Spruce-Fir Habitat
SARA	*Canadian Species at Risk Act*
SARPR	Species at Risk Public Registry
VECs	Valued Environmental Components
WAWA	Watercourse and Wetland Alteration

LIST OF UNITS

ha	hectares
km	kilometre
km^2	square kilometres
L	litres
m	metre
m^3	cubic metres

1.0 INTRODUCTION

In 2006, Corridor Resources Inc. (Corridor), an Eastern Canada company, submitted a Stage 2 Development Plan for the McCully Field as a whole. Under that Plan and subsequent updates to it, Corridor is proposing to conduct exploration and development within the McCully Field (the Project). The Project is considered an undertaking and is subject to approval under the Environmental Impact Assessment Regulation of the New Brunswick *Clean Environment Act* and is further subject to the requirements as described in the *Rules for Industry for the Responsible Environmental Management of Oil and Natural Gas Activities in New Brunswick* (*Rules for Industry*).

This ongoing McCully Project will be conducted under a phased Environmental Impact Assessment (EIA) process, the first two of which were described in an EIA Registered with the Province October 11, 2013 (Registration Project Number 1368) which is currently under Review (AMEC, 2013). Phase III will be assessed within this document. Phase III activities will involve liquid propane gas (LPG) fracture stimulation of the Hiram Brook Sand and Frederick Shale formations, flow testing and tie-in as follows:

- **O-76 Well Pad:** Fracture-stimulate two existing wells, J-76 and D-67. Two treatments will be conducted on J-76 in the shale formation; activity will also include subsequent tie-in to the existing field gathering system at the well pad should testing results be indicative of production value. One fracture treatment in the sand formation will be conducted at well D-67, which is already tied-in to the gathering system.
- **N-57 Well Pad:** Fracture stimulation of an existing well, P-67, using one treatment in the sand formation, which is already tied-in to the gathering system.
- **D-48 Well Pad:** Fracture stimulation of an existing well, L-37, using two treatments in the sand formation. Activity will also include subsequent tie-in to the existing gathering system at the well pad should testing results be indicative of production value.

Depending on the results of Phases II and III, other oil and gas exploration, development, tie-in and production activities may be conducted in the future within the McCully Field.

AMEC Environment & Infrastructure, a division of AMEC Americas Limited (AMEC) was retained by Corridor to provide environmental consulting services and to prepare this EIA report in support of the registration of the Project under the New Brunswick (NB) EIA process.

1.1 Background

Corridor has been producing natural gas from the McCully Field since 2003. In addition, Corridor submitted a Stage 2 Development Plan for the McCully Field as a whole in 2006. In June 2007, after undergoing provincial EIA and Energy and Utilities Board (NBEUB) processes and following construction of a field gathering system, a gas plant, and a pipeline lateral, the McCully Field was connected to markets through the Maritimes and Northeast Pipeline. Over time other wells were developed and tied into the gathering system, with each new well/well pad tie-in and section of gathering system undergoing EIA and NBEUB review and approvals.

Corridor is in the early stages of assessing the commercial potential for shale gas development in the Sussex and Elgin sub-basins. In addition, Corridor has contingent resources and discovered shale gas resources in Elgin, NB. Several McCully wells have been drilled to varying depths within the Frederick Brook Shale formation to evaluate its potential as a future source of natural gas production. A significant amount of technical information has been gathered for the shale sections penetrated to date in these wells (Corridor, 2013). This Project will allow Corridor to access both the Hiram Brook Sands and the Frederick Brook Shale formations using existing wells and some existing tie-ins. The fracture treatment and tie-in activities to be assessed in this report are to be conducted as previously described in the Phase II EIA document currently registered with the Province (AMEC, 2013). Phase III activities will take place immediately following Phase II.

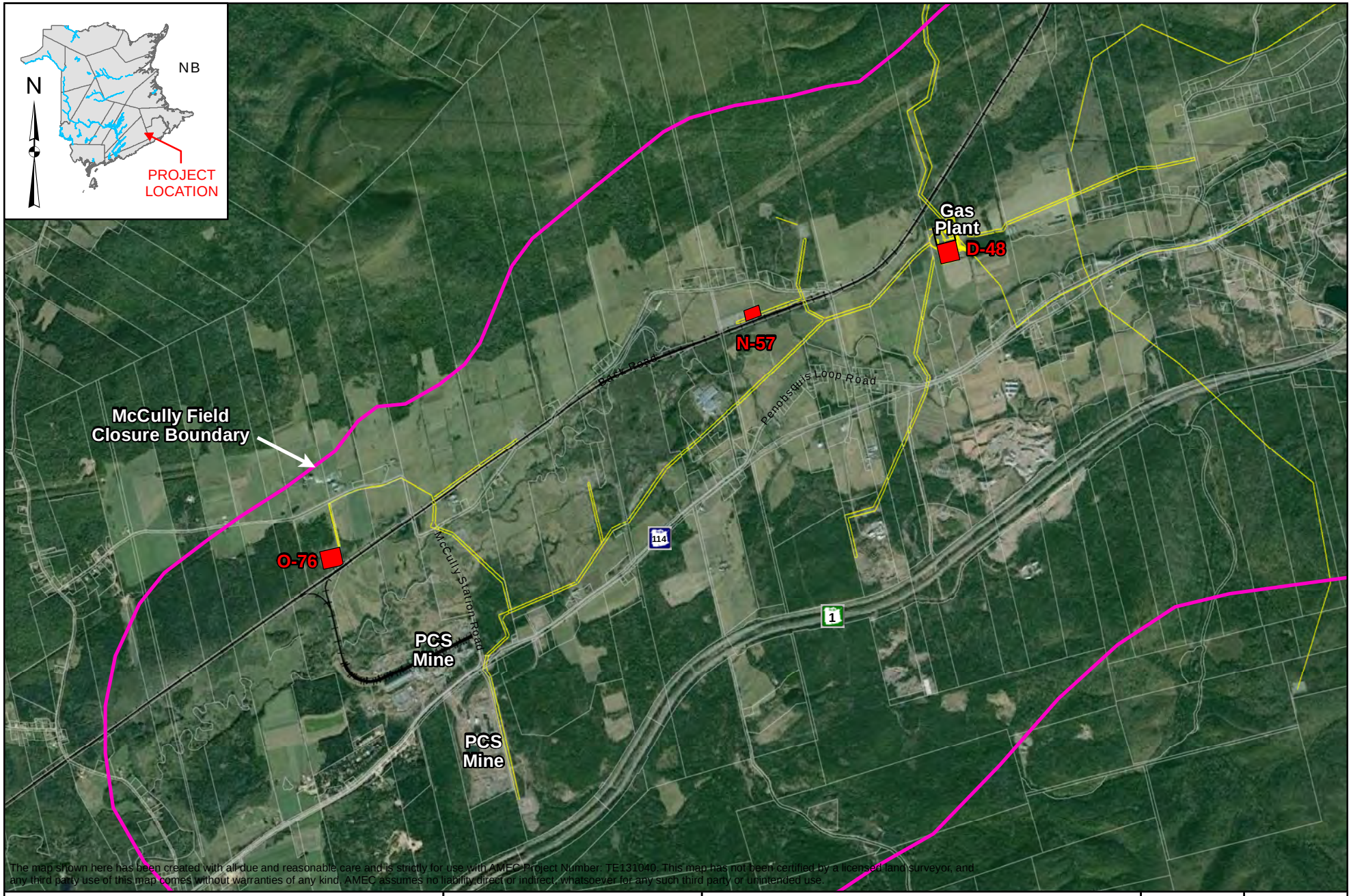
The O-76, N-57 and D-48 well pads are located within the southeastern portion of the gathering system within the McCully Field in Penobsquis, Kings County, NB (Figure 1.1). These three well pads surround well pad F-67, whose 2014 activity plans are currently under review by the Province (AMEC, 2013). All three well pads are currently tied-into the gathering system, though some individual wells are not.

The current Project, for which Corridor has prepared this Phase III EIA, will entail LPG fracture stimulation of four existing wells on the three well pads, production value assessment and the possibility of two new well tie-ins to the existing gathering system (Figures 1.2 to 1.4).

Corridor will obtain all necessary approvals for the activities in the area. These approvals will be requested from the various agencies as required for the specific activity. Corridor will also continue to operate to the highest safety and environmental standards as outlined in the Corridor Corporate Health, Safety and Environment (HSE) Management System document and in accordance with all the federal and NB regulations and requirements.

1.2 Project Rationale

The purpose of the Project is to access an additional gas supply for Corridor and markets. Use of existing wells and well pads will minimize effects in comparison to new construction or drilling. The increased use of natural gas was recently recommended by the NB Energy Commission as an alternative resource to electricity (New Brunswick Energy Commission, 2011). The use of LPG will minimize the use of water and the production of wastewater for disposal during the fracture stimulation process.



CLIENT: corridor resources inc.

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DATUM: NAD 83

PROJECTION: UTM Zone 20 North

PROJECT NO: TE131040 Phase III

PROJECT: **ENVIRONMENTAL IMPACT ASSESSMENT: NATURAL GAS PRODUCTION IN McCULLY FIELD**

TITLE: **OVERVIEW PROJECT AREA**

DWN BY: TM | DATE: Jan 24, 2014

CHK'D BY: JB | REV. NO:

SCALE: 1:40,000 | FIGURE NO: 1-1

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a Division of AMEC Americas Limited
Suite 1 - 495 Prospect Street
Fredericton, NB E3B 9M4
Tel. 506-458-1000 Fax 506-450-0829 www.amec.com

Path: G:\GIS\PROJECTS\TE131040_Corridor_Resourses_EIA\MXD\20140124_Corridor_O76_N57_D48_WellPads_Fig1_1.mxd User: tanya.morehouse Date: 27/01/2014

SOURCE: Google Earth Pro - Cnes/Spot Image 2014

SOURCE: Google Earth Pro - Cnes/Spot Image, 2014

CLIENT: corridor resources inc.

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1:3,500

PROJECT:
ENVIRONMENTAL IMPACT ASSESSMENT:
NATURAL GAS PRODUCTION IN McCULLY FIELD

DWN BY: TM
CHK'D BY: CT/JB
DATE: Jan 24, 2014
REV. NO:
FIGURE NO: 1.2

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Fredericton, NB E3B 9M4
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DATUM: NAD 83 CSRS
PROJECTION: New Brunswick Stereographic
PROJECT NO: TE131040 Phase III

TITLE:
WELL PAD O-76
PROJECT SITE DESCRIPTION

Path: G:\GIS\PROJECTS\TE131040_Corridor_Resourses_EIA\MXD\20140124_ProjectSiteDescription_O76_Fig1_2.mxd User: tanya.morehouse Date: 28/01/2014

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Suite 1 - 495 Prospect Street
Fredericton, NB E3B 9M4
Tel. 506-458-1000 Fax 506-450-0829 www.amec.com

PROJECTION: New Brunswick Stereographic

PROJECT NO: TE131040 Phase III

TITLE: **WELL PAD N-57**
PROJECT SITE DESCRIPTION

SCALE:

FIGURE NO: 1.3

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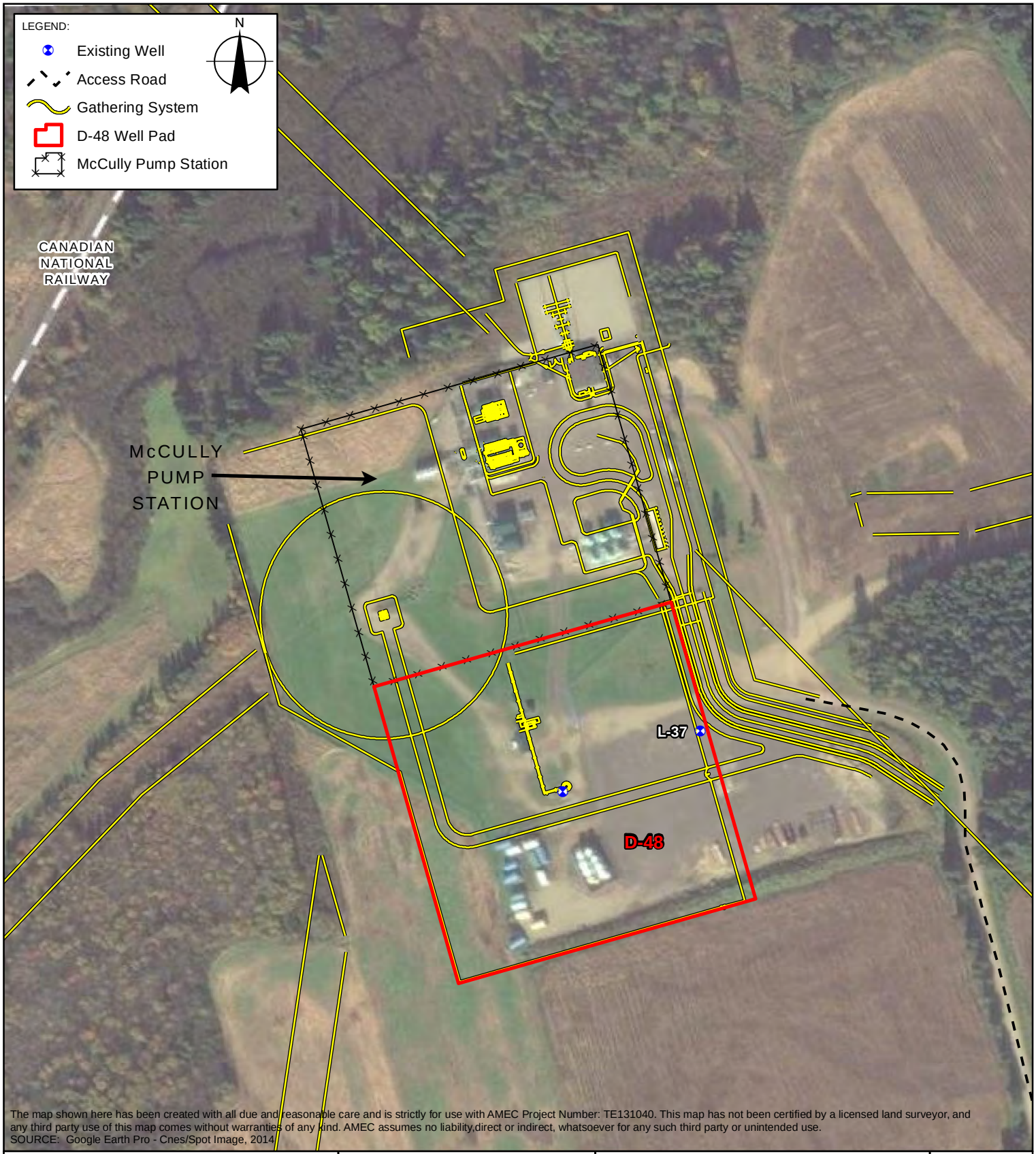

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CLIENT: Corridor Resources Inc.

SCALE: 0 10 20 40 60 80 100 Metres
1:2,500

PROJECT: **ENVIRONMENTAL IMPACT ASSESSMENT: NATURAL GAS PRODUCTION IN McCULLY FIELD**

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DATE: Jan 24, 2014
REV. NO:
FIGURE NO: 1.4

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a Division of AMEC Americas Limited.
Suite 1 - 495 Prospect Street
Fredericton, NB E3B 9M4
Tel. 506-458-1000 Fax 506-450-0829
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DATUM: NAD 83 CSRS
PROJECTION: New Brunswick Stereographic
PROJECT NO: TE131040 Phase III

TITLE: **WELL PAD D-48
PROJECT SITE DESCRIPTION**

Path: G:\GIS\PROJECTS\TE131040_Corridor_Resourses_EIA\MXD\20140127_ProjectSiteDescription_D48_Fig1_4.mxd User: tanya.morehouse Date: 28/01/2014

1.3 Regulatory Framework, Approach and Methodology

The Project will be undertaken in accordance with all applicable legislation, regulatory approvals, and relevant guidelines.

To facilitate the review of identified issues, an understanding and description of the environment within which the activities will occur, or potentially have an influence on, was developed from a review of existing information. For this Project, environmental conditions were identified and fully described in the Phase I and II EIA document (AMEC, 2013). Additional site-specific information from field surveys conducted between 2006 and 2008 has also been examined (AMEC, 2006; AMEC, 2007; AMEC, 2008a, b and c).

Issues were derived from recent experience with comparable projects, consultation with the public, scientific community and individuals knowledgeable about the Study Area, and the professional expertise of the Study Team. The approach to methodology is fully described in the Phase I and Phase II document (AMEC, 2013). The spatial bounds for Phase III include all three well pads O-76, N-57 and D-48 which are encompassed by the 5 km buffer applied over F-67 in the Phase I and II document. Temporal bounds include fracture stimulation, tie-in and production activities, estimated to take three to four months during the summer/autumn of 2014.

1.4 Report Organization

This report describes:

- Baseline environmental conditions within the Study Area.
- Project-related activities and potential impacts on the receiving environment.
- Mitigative measures to be used during construction and operation to minimize or eliminate potential impacts.

This EIA report consists of the following sections, focusing on Phase III components and site-specific effects:

- Section 1.0 - Introduction;
- Section 2.0 - Project Description;
- Section 3.0 - Environmental and Socio-Economic Setting;
- Section 4.0 - Environmental Impacts and Associated Mitigation;
- Section 5.0 - Public Consultation; and
- Section 6.0 - Conclusion.

2.0 PROJECT DESCRIPTION

2.1 Phase III: Fracture Stimulation, Completion, Tie-in and Production

Phase III activities will involve fracture stimulation, completion and production at four existing wells on three of Corridor's well pads – two of which will require tie-in to the gathering system already present at each well pad. These wells will access Hiram Brook Sand and Frederick Shale formations as follows:

Well Pad O-76:

J-76 Well: The J-76 well was drilled in 2007. It has had no prior perforating or fracture stimulation operations in the wellbore. There are two Frederick Brook Shale intervals that Corridor is targeting for completion with this current work from 2870 to 3045 metres (m).

The J-76 well is not tied into production facilities but access to the Corridor gathering system is already present at this well pad. Temporary above ground piping will be used during initial inline cleanup/testing operations. A permanent tie-in will be installed once the well's production capability is determined.

Having this well full of fluid (water) upon commencement of fracture stimulation is a method being considered for this location. This is not part of the LPG fracture fluid. This column of water would be lost to the formation ahead of the frac treatment. The casing volume is 51 cubic metres (m^3) to the depth of the projected perforations; therefore the volume of water required would be approximately 51 m^3.

D-67 Well: The D-67 well is currently producing from Hiram Brook B Sand intervals, which were perforated and fracture stimulated in 2007 from 2580.5 to 2675 m.

The perforations from 2580.5 m to 2606.5 m are the target for a re-fracture operation in an effort to access previously by-passed gas and improve well production. The intervals below 2606.5 m will be isolated from the planned zone using a plug. The well will be perforated at the desired interval and the fracture stimulation completed. After cleanup, the plug will be removed and the well will produce natural gas from the commingled Hiram Brook Sands.

Well Pad N-57:

P-67 Well: The existing P-67 well was drilled in 2008, is tied-in and is currently producing from perforations between 2579 to 2742 m. A temporary isolation plug will be set above 2612 m so that a single fracture stimulation can be directed into the desired interval from 2579 to 2591.5 m. After cleanup, the plug will be removed and the well will produce natural gas from the commingled Hiram Brook Sands.

Well Pad D-48:

L-37 Well: The existing L-37 well was drilled in 2010 and cased down to 3963 m, which was cemented down to 2858 m. The non-cemented casing is perforated from 2904 to 3511.5 m. Fracture stimulations in the cemented section of the casing will involve two treatments in the Hiram Brook "G" sands located between 2430 and 2720 m. Activity will also include subsequent tie-in to the existing gathering system at the well pad leading directly to the Corridor Gas Plant for cleanup and testing.

Four Hiram Brook and two Frederick Brook LPG fracture treatments are planned in order to stimulate the existing wells as follows:

- Well Pad O-76: 2 treatments in the shale at J-76; 1 treatment in the sand at D-67;
- Well Pad N-57: 1 treatment in the sand at P-67; and
- Well Pad D-48: 2 treatments in the sand at L-37.

Fracture stimulation activities are fully described in the Phase I and Phase II EIA currently registered with the Province (AMEC, 2013). It is estimated that fracture treatments of P-67 (1 treatment), J-76 (2 treatments), D-67 (1 treatment) and L-37 (2 treatments) will take one and a half months in total to complete, scheduled between early July to Mid-August, 2014.

Corridor intends to use LPG as a fluid for this program. As with Phase II, the LPG will use only three chemical additives: a gellant; an activator; and a breaker in small dosages (4 to 10 litres (L) / 1000 L), whose components and applications are fully described in the Phase I and Phase II EIA currently under review by the Province. As per section 11.3 and appendix 19 of the *Rules for Industry* (NB Natural Gas Group (NBNGG), 2013), Corridor will submit more detailed information and a risk assessment of fracture fluid additives prior to the start of operations.

2.1.1 Well Completion and Production

Wells D-67 and P-67 have already undergone completion and tie-in and are currently producing into the field gathering system. There will be no changes to the flowlines or metering required for these wells to enter production once the re-fracture and cleanup operations have been completed. The L-37 well and J-76 well will be tied-in to produce natural gas to the field gathering system. Well L-37 has been cased and has had some perforations, while J-76 has not had any completion or stimulation operations performed previously.

As described in detail in the Phase II EIA, appropriate wellhead and frac tree equipment will be installed to facilitate the completion and fracture stimulation operations. The Frederick Brook or Hiram Brook intervals will be perforated and subsequently fracture stimulated. If more than one interval is planned for a given well, a plug will be set to separate the zones between fracture operations. After the final fracture treatment, the plug will be removed to allow flow back to evaluate the well's potential.

2.1.2 Production Tie-in

The J-76 well on well pad O-76 and the L-37 well on well pad D-48 will need to be tied-in to the gathering system present already present at these well pads in order to produce natural gas to the McCully Gas Plant and markets. These wells, as with every well in production, will be equipped with necessary safety devices to properly and safely operate the well and comply with all applicable codes and standards outlined through the NBEUB. The wells will be equipped with individual emergency shut-offs and metering devices as part of the production tie-in. To minimize flaring during testing, temporary tie-in from the production testing package will be connected to the existing gathering system until permanent production tie-ins can be installed. The construction of the tie-in piping, equipment, and installation is subject to NBEUB inspection prior to commencing production into the existing gathering system.

2.1.3 Project Schedule

The Phase III Project activities have been scheduled as follows:

- LPG fracture treatments of P-67 (1), J-76 (2), D-67 (1) and L-37 (2): Early July to Mid-August, 2014, for an estimated one and a half months.
- Run production tubing and complete wells: Late August to Mid-September 2014, for an estimated two weeks (unchanged from Phase II EIA).
- Construct and tie-in to field production gathering system: expected to be completed during the month of October 2014, for an estimated four to six weeks (unchanged from Phase II EIA).

3.0 ENVIRONMENTAL AND SOCIO-ECONOMIC SETTING

This section provides a description of the environmental and the socio-economic setting for the Project, and includes those components of the environment potentially affected by the proposed Project. The Project location and the surrounding area (the Study Area) are depicted in Figure 3.1.

The description of the environmental setting typically encompasses the 1 kilometre (km) Study Area surrounding the Project. In this case, the Study Area will be a 5 km area centrally located over the three well pads included in this Phase of the Project, which includes a minimum of 1 km beyond the outer-most well pads. This description has been prepared to provide information on environmental and socio-economic components which may potentially be affected by this Phase, or which may influence or place constraints on the execution of project-related activities.

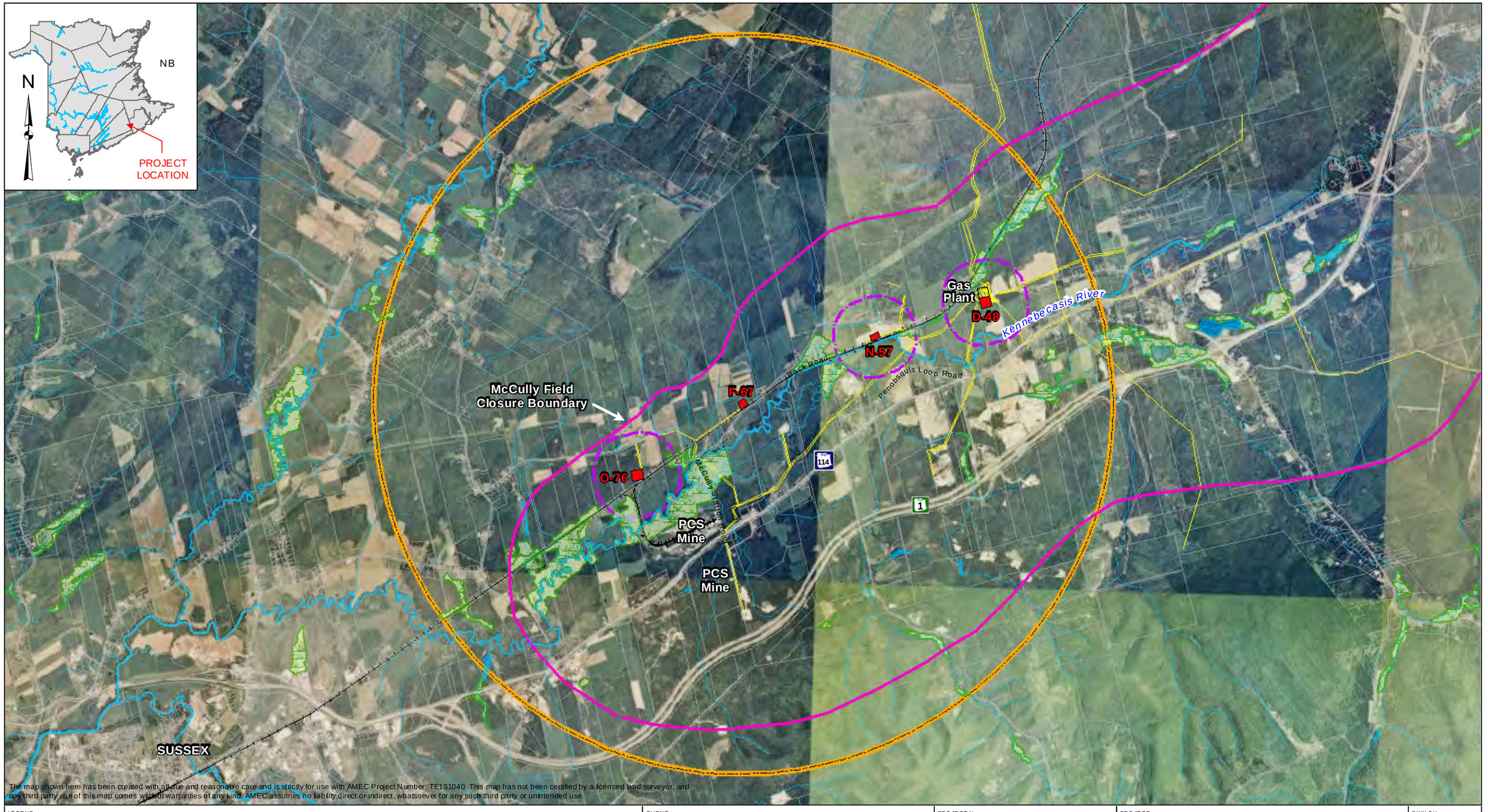
The following subsections describe the site-specific aspects of the environmental (bio-physical) setting of the Phase III Study Area that were not examined in the Phase I and Phase II document (AMEC, 2013) including its physiography, hydrology and hydrogeology, fauna and archaeological and heritage resources.

3.1 Study Area Definition

The Study Area was based on:

- locations, distribution and sizes of the well pads; and
- biophysical setting.

Spatial bounds for the Study Area are covered by a radius of 5 km applied over the F-67 well pad described in the Phase I and II document (AMEC, 2013), which is central to Phase III well pad distribution. This 5 km radius encompasses all three well pads O-76, N-57 and D-48. The outermost well pad within this area is D-48, which has a minimum 1.4 km radius around it within these spatial bounds (Figures 3.1 to 3.4). Downstream areas of the airshed and watershed are also included, with increasing priority placed on those areas in close proximity to the Project. The Study Area is centralized over the Footprint assessed in the Phase I and II document (AMEC, 2013).



LEGEND:

- Gathering System
- McCully Field Closure Boundary
- Study Area
- Water Testing Boundary (500m Buffer)
- Well Pad
- NB DNR Watercourse
- NB DNR Railway
- NB DNR Waterbody
- NB DNR Wetland
- SNB Property Boundaries (Kings County)

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AMEC Environment & Infrastructure, a Division of AMEC Americas Ltd.
495 Prospect St., Suite 1
Fredericton, NB E3B 9M4
Tel. 506-458-1000 Fax 506-450-0829
www.amec.com

PROJECT No: TE131040 Phase III

DATUM: NAD 83 CSRS

PROJECTION: New Brunswick Stereographic

SCALE: 0 500 1,000 2,000 Metres

1:50,000

PROJECT: ENVIRONMENTAL IMPACT ASSESSMENT: NATURAL GAS PRODUCTION IN McCULLY FIELD

TITLE: STUDY AREA

DWN BY: TM

CHK'D BY: CT/JB

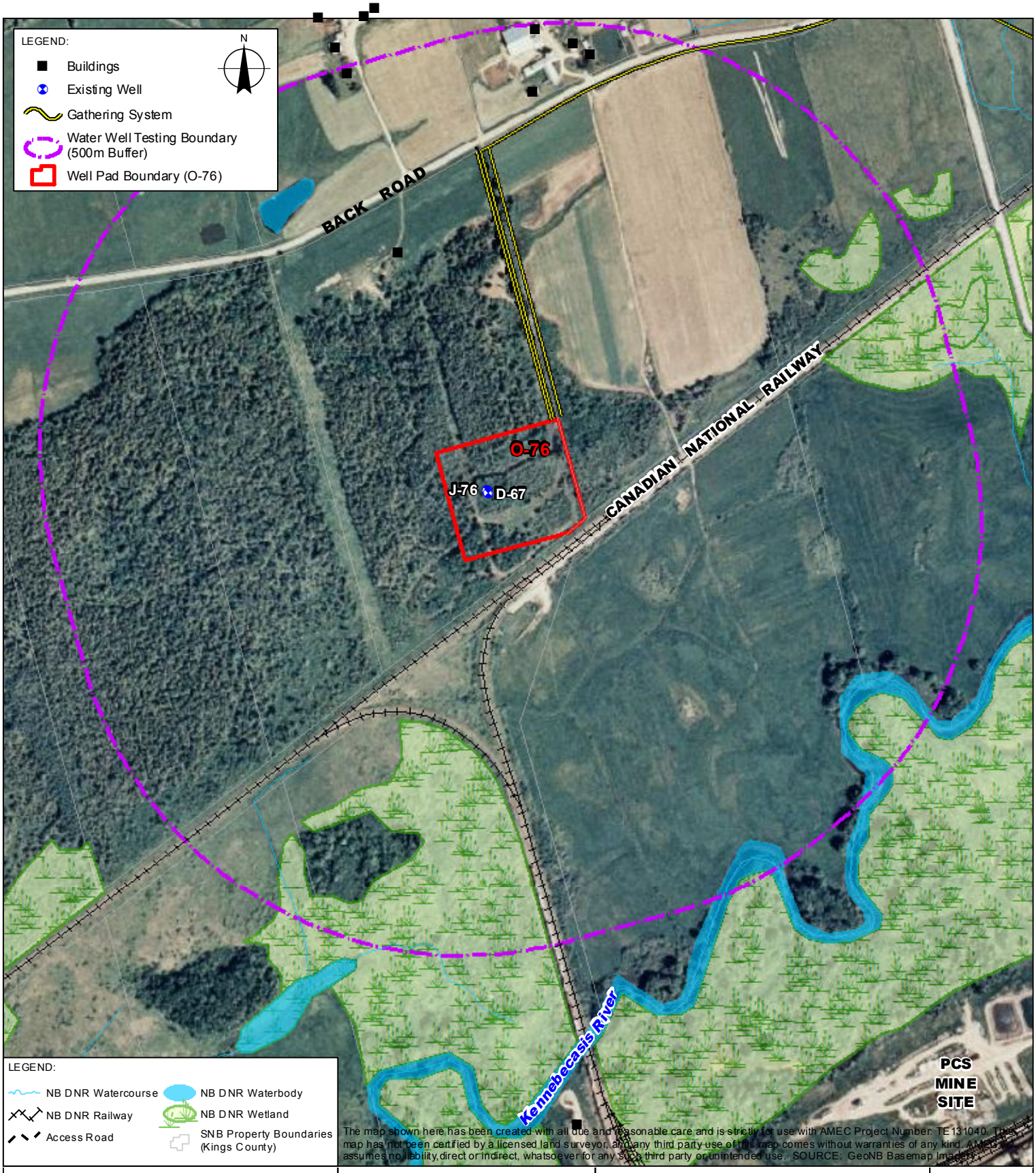
DATE: Feb 3, 2014

REV NO:

FIGURE: 3.1

Path: G:\GIS\PROJECTS\TE131040_Corridor_Resourses_EIA\MXD\20140131_PhaseIII_StudyArea_Fig4_1.mxd User: tanya.morehouse, Date: 03/02/2014

SOURCE: NBDNR Digital Map Files Rcvd 2014, GeoNB Basemap Imagery



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SCALE: 0 25 50 100 150 200 250 300 Metres — 1:6,500

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DATE: Feb 3, 2014

REV. NO:

FIGURE NO: 3.2

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Fredericton, NB E3B 9M4
Tel. 506-458-1000 Fax 506-450-0829
www.amec.com

DATUM: NAD 83 CSRS

PROJECTION: New Brunswick Stereographic

PROJECT NO: TE131040 Phase III

TITLE: WELL PAD O-76 ENVIRONMENT

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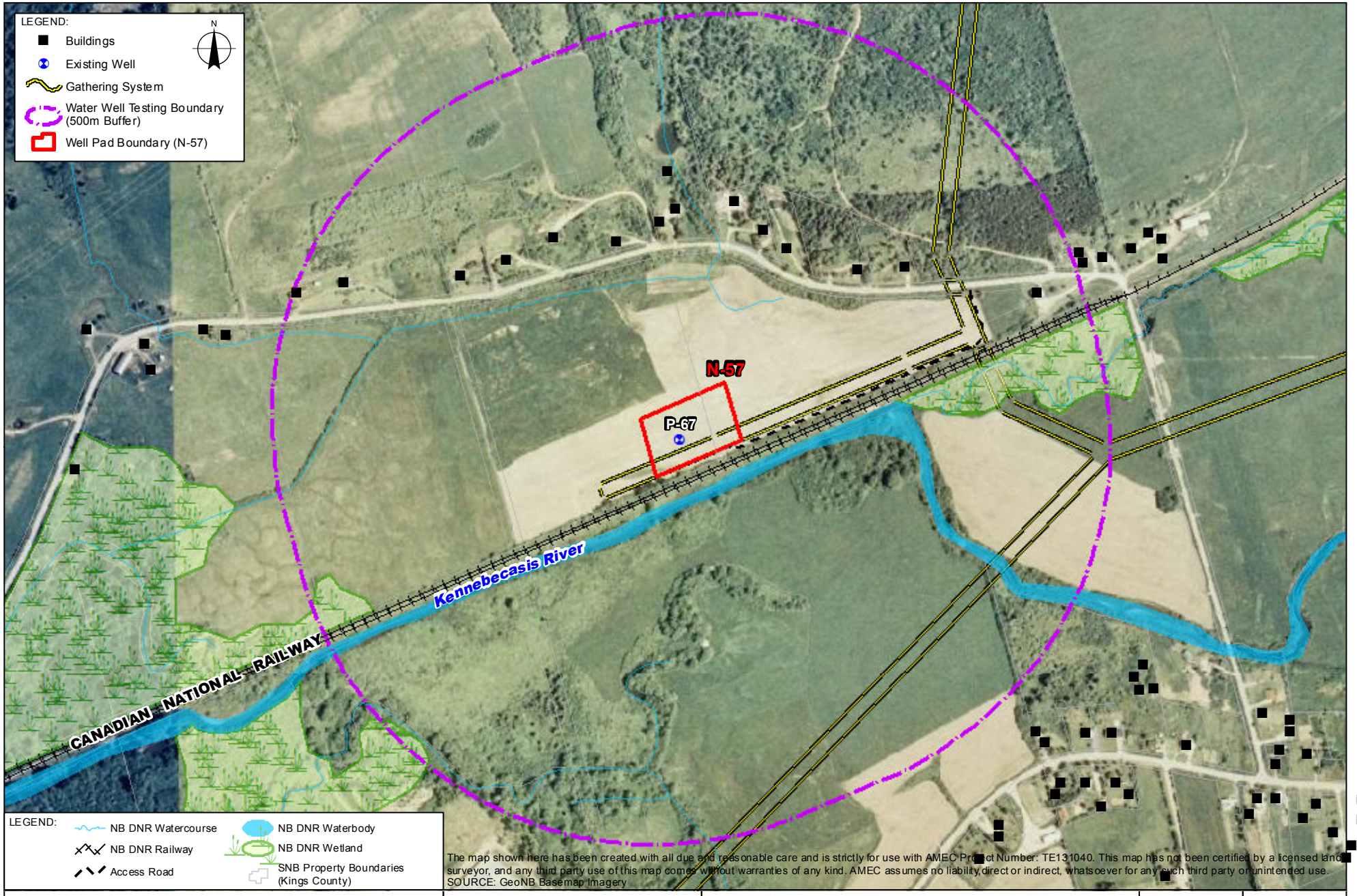

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Suite 1 - 495 Prospect Street
Fredericton, NB E3B 9M4
Tel. 506-458-1000 Fax 506-450-0829 www.amec.com

PROJECTION: New Brunswick Stereographic

PROJECT NO: TE131040 Phase III

TITLE: WELL PAD N-57 ENVIRONMENT

SCALE: 1:7,000 | FIGURE NO: 3.3

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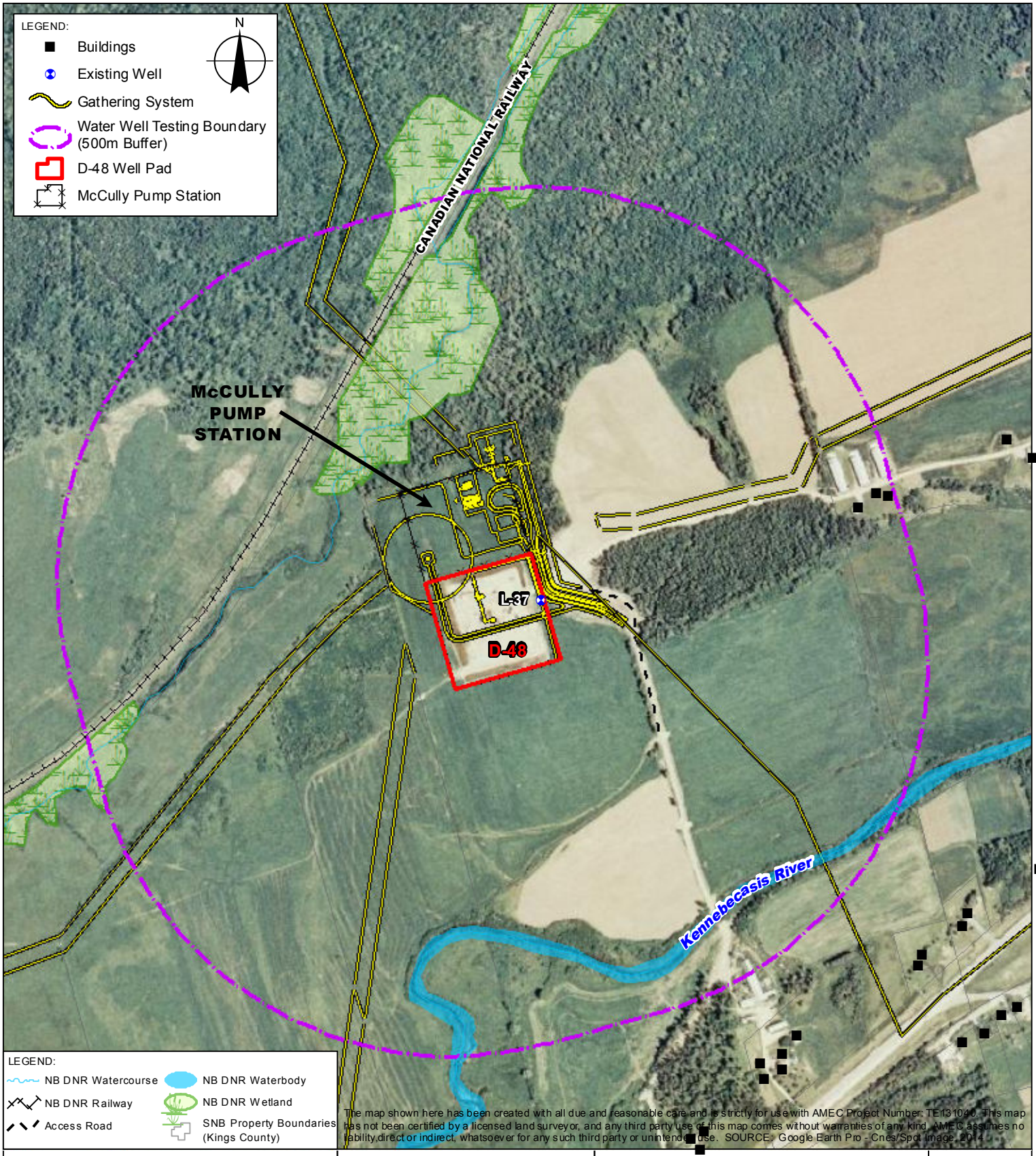

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SCALE: 0 25 50 100 150 200 250 Metres
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PROJECT: ENVIRONMENTAL IMPACT ASSESSMENT: NATURAL GAS PRODUCTION IN McCULLY FIELD

DWN BY: TM

CHK'D BY: CT/JB

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REV. NO:

FIGURE NO: 3.4

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DATUM: NAD 83 CSRS

PROJECTION: New Brunswick Stereographic

PROJECT NO: TE131040 Phase III

TITLE: WELL PAD D-48 ENVIRONMENT

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3.2 Visual Landscape

The Study Area lies within the Anagance Ridges sub-division of the Caledonian Highlands physiographic division (Rampton *et al*., 1984). All three well pads are located in low-lying areas adjacent to agricultural fields and/or swaths of mixed forest. Well pads O-76 and D-48 are not visible from the public road due to stands of trees. Phase III of the Project will take approximately three to four months to complete, after which all equipment will be removed, leaving all three well pads unchanged in appearance. No new drilling will take place as part of Phase III.

3.3 Hydrology and Hydrogeology

This Project Footprints are located within the Kennebecasis River flood plain between long parallel ridges. Surface run-off in the Study Area drains into the Kennebecasis River, which eventually drains into the Saint John River and then into the Bay of Fundy. There are no protected watersheds located within the Study Area (New Brunswick Department of the Environment and Local Government (NBDELG), 2013a), the closest being Turtle Creek which is approximately 37 km from well pad D-48. Loch Lomond is located 42 km south of O-76.

NBDELG requires a permit under the Watercourse and Wetland Alteration (WAWA) Regulation for any alteration within 30 m of the bank of a watercourse or wetland. The *Rules for Industry* require that well heads be located a minimum of 100 m from watercourses and wetlands and that neither well pads or access roads are to be located within 30 m of a watercourse or wetland (NBNGG, 2013). Surface water monitoring is required for watercourses located within 150 m of a well pad. It is important to note that all wells subject to activity under Phase III are existing facilities that have been in place for a number of years.

Table 3.1 illustrates the distances between waterbodies and well pads or the nearest well head on those pads.

Table 3.1 Well Pad and Well Head Setbacks from Surface Water Bodies

Well Pad	Distance of Watercourse to Nearest Well Head (m)	Distance of Wetland to Nearest Well Head (m)	Distance to Watercourse from Well Pad Edge (m)
O-76	400	300	300
N-57	73	300	37
D-48	295	250	225

3.3.1 Wetland Resources

Wetlands in NB have been given specific protection under the *Clean Environment Act* and the *Clean Water Act*. The NB EIA Regulation requires registration of “all enterprises, activities, projects, structures, works, or programs affecting two hectares (ha) or more of bog, marsh, swamp, or other wetland”.

Provincially-mapped wetlands are present within the Study Area, though none are inside the minimum 100 m buffer stipulated by the *Rules for Industry* (Figures 3.1 to 3.4). The wetlands nearest each of the wells on the three well pads proposed for use are as follows:

- The well nearest a wetland on O-76 is D-67, which is located 300 m northeast of a wetland located on the opposite side of two Canadian National Railway (CNR) tracks (Figure 3.2).
- The wetland nearest well P-67 on well pad N-57 is located 300 m east (Figure 3.3).
- The wetland nearest well L-37 on well pad D-48 is located 250 m northwest, surrounding Stone Brook (Figure 3.4).

3.3.2 Watercourses

The proposed Project is located within the Kennebecasis River Valley which is fed by numerous second and third-order tributaries (Figure 3.1). The Kennebecasis River itself is the dominant watercourse in the Study Area, located south of all three well pads O-76, N-57 and D-48, draining an approximate area of 1100 square kilometres (km^2) to the Saint John River (Environment Canada, 1986). Many watercourses in the Study Area were assessed in 2006 for the Gathering Line EIA (AMEC, 2006).

Watercourse information is as follows:

- The well nearest a watercourse on O-76 is D-67, which is located 400 m northeast of an unnamed tributary located on the opposite side of the CNR line (Figure 3.2) and 500 m north of the Kennebecasis.
- The watercourse nearest well P-67 on well pad N-57 is the Kennebecasis River, located 73 m south on the opposite side of the CNR line (Figure 3.3).
- The watercourse nearest well L-37 on well pad D-48 is Stone Brook, located 295 m north (Figure 3.4). The Kennebecasis River is located 450 m south of L-37.

Although the distance from well P-67 on the N-57 well pad is within the 100 m setback from the Kennebecasis River, the CNR track forms a barrier between them. Surface water monitoring requirements are discussed in section 6.2 of the Phase II document (AMEC, 2013).

3.3.3 Groundwater Quality

Numerous well water sampling programs have been conducted by Corridor during the Stage II Gathering System Development, which took place between 2006 and 2008. In May 2008, a summary report was compiled for the NB Department of the Environment (NBENV) which reviewed survey results for 76 properties in the region, some of which were sampled repeatedly for overlapping programs (AMEC, 2008a). Sampling was conducted for properties within 200 m of the McCully and Portage Vale seismic programs, within 300 m of wells drilled at the O-76, G-48 and L-38 well pads and pipeline installations. In May 2008, another report was submitted for the well water quality results of a survey conducted for properties within 300 m of the N-57 well pad.

Table 3.2 illustrates the averages determined for parameters during baseline ("pre") and follow-up ("post") surveys for programs conducted 2006 to 2008, compared against Provincial data available for Penobsquis at that time (J. Bowers, pers. comm., 2008) as well as historical NB data (Boyle, 1994). Despite the fact that many of properties surveyed were using springs and shallow dug wells, well water quality was comparable to that of Provincial data obtained from wells drilled since 1994. Results are assessed against Health Canada's Guidelines for Canadian Drinking Water Quality which are recognized by the Province (NB Department of Health, 2013).

Prior to the commencement of Phase III Project activities, updated water quality sampling may be required for all drinking water wells within 500 m of the edge of each of the three well pads proposed to undergo fracture stimulation (O-76, N-57 and D-48) as per the *Rules for Industry* (NBNGG, 2013) due to the extended period of time that has passed since drilling, though these wells are all existing facilities that have been in place for some time. The Rules also stipulate that no well pad shall be located within 250 m of any private water well. The well pads that are the subject of this EIA were approved for construction prior to the *Rules for Industry* coming into force and are therefore exempt from these setbacks.

Figures 3.2 to 3.4 illustrate the 500 m buffer applied around the edge of each well pad and the following building estimates within that buffer expected to use private drinking water wells:

- Well Pad O-76: 6 buildings, the nearest of which is 258 m;
- Well Pad N-57: 15 buildings, the nearest of which is 200 m; and
- Well Pad D-48: 3 buildings, the nearest of which is 440 m.

Collection and analysis would be performed as described in appendix 9 in the *Rules for Industry* document. Analyses are conducted by the NBDELG Analytical Services Laboratory in Fredericton, NB, and to include the parameters listed under the "Drilling and Completions Water Well Testing Parameter List" (AMEC, 2013). Further details regarding a groundwater survey are provided in section 6.1 of the Phase I and II document (AMEC, 2013).

3.4 Species at Risk

The majority of the Study Area is comprised of edge and agricultural lands and the Project Footprints are located on existing natural gas well pads (Figures 3.1 to 3.4). There are no areas designated as Old Spruce Fir Habitat (OSFH) located within the Study Area.

An information request was submitted to the Atlantic Canada Conservation Data Centre (ACCDC) September 3, 2013 for a list of occurrences of rare and endangered flora and fauna within the proposed Phase I and II Study Area by applying a radius of 5 km over the F-67 well pad, which is central to Phase III well pad distribution (Figure 3.1). The outermost well pad within this area is D-48, which has a minimum 1.4 km radius around it within these spatial bounds. The response to this request was fully assessed and documented within the Phase I and II EIA document currently registered with the Province (AMEC, 2013).

Table 3.2 Corridor Well Water Quality Survey Results 2006 - 2008

Parameter	Guideline	Southeastern NB	Penobsquis 1994 - 2008	McCully Pre	McCully Post	PV Pre	PV Post	O-76 Pre	L38 Drill Pre	L38 Cons Pre	F58 Pre	G48 Post	N-57 Pre
Sodium (mg/ml)	200	127.2	48.058	29.22	33.34	7.13	6.68	4.31	8.47	5.74	21.67	8.8	42.8
Potassium (mg/ml)		1.401	3.913	2.17	2.33	0.88	0.82	0.65	0.9	1.2	2.2	1.47	
Calcium (mg/ml)		33.417	78.44	68.6	69.63	55.38	47.78	42.18	48.94	50.43	32.1	50.87	34.3
Magnesium (mg/ml)		3.802	5.061	3.25	3.49	2.17	1.94	1.45	2.42	3.59	1.06	1.63	1.12
Iron (mg/ml)	0.3	0.23621	**0.327**	0.03	0.02	0.07	0.11	0.05	0.04	0.06	< 0.02	0.04	0.03
Manganese (mg/ml)	0.05	0.13944	0.022	0.01	0.03	< 0.001	< 0.001	< 0.005	0.04	0.03	< 0.001	0	
Copper (mg/ml)	1	0.10165	0.01089	0.17	0.03	0.01	0.09	0.05	0.5	0.06	0.02	0.31	0.014
Zinc (mg/ml)	5	0.09499	0.03386	0.03	0.01	0.02	0.01	< 0.005	0.02	0.01	0.01	0.02	0.042
Alkalinity (mg/ml)		127.259	93.098	102.28	102.08	69.33	70.5	99.6	110.33	109.55	102.57	105.57	83.3
Chloride (mg/ml)	250	64.563	61.085	34.88	36.7	4.94	3.75	5.77	20.78	24.86	13.33	20.57	60.8
Sulfate (mg/ml)	500	18.092	141.468	104.04	112.4	91.08	75.82	3.81	3.59	3.2	7.43	7.29	16
Nitrogen (mg/ml)	45	0.7471	0	1.17	1.07	0.17	0.16	2.54	1.9	1.6	1.47	4.07	0.74
Turbidity (NTU)	1		**3.70**	**1.24**	0.41	0.96	**2.46**	**1.65**	0.14	0.48	0.18	0.53	0.845
Hardness (mg/ml)	500	100.84	217.713	184.7	478.04	147.2	127.2	111	131.98	140.7	84.5	134	90.2
pH	6.5-8.5	7 - 8.5	7.84	7.33	8.01	7.98	7.66	7.44	7.62	7.56	8.11	6.88	7.6
Total Coliform (counts/100mL)	0		36.7%	50%	50%	50%	25%	50%	57.6%		42.8%	85.7%	33%
***E.coli* (counts/100mL)**	0		4.1%	30%	30%	17%	0%	50%	15.2%		14.3%	28.6%	17%

Guideline: Health Canada Guidelines for Canadian Drinking Water Quality, 2012
PV: Portage Vale Seismic Program average values
McCully: McCully Seismic Program average values
Southeastern NB: Boyle, 1994
Penobsquis Since 1994: J. Bowers pers. comm., 2008

The ACCDC identified migratory bird Species at Risk as occurring within the 5 km radius Study Area, most of which are song birds that typically nest during the "sensitive nesting window", which occurs between May 1 and August 31 in New Brunswick (J. Mailhiot, pers. comm., 2013). Though many, such as bank swallows or barn swallows, would not be anticipated to be found breeding in the Study Area, those that prefer grassy habitats may be present in the agricultural fields that surround each well pad. Prior to well pad construction, several pairs of bobolink were seen exhibiting mating behaviour within the gathering system right-of-way between the present locations of N-57 and D-48 during field surveys conducted in 2006, though no nests were found (AMEC, 2006).

The *NB Species at Risk Act* (NBSRA) designates the peregrine falcon (*Falco peregrinus anatum*) as Endangered and the bald eagle (*Haliaetus leucocephalus*) as Regionally Endangered in NB. The bald eagle is listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as "Not At Risk" and the peregrine falcon is listed by the *Canadian Species at Risk Act* (SARA) Schedule 1 as "Special Concern" (Species at Risk Public Registry (SARPR), 2013). An aerial raptor survey conducted by AMEC in May of 2006 documented two sightings within 1 km of O-76, one of which was identified as a Northern Harrier (the other being unidentified, but suspected to be another Northern Harrier). Raptor nests were not, however, observed within the Corridor gathering system region (AMEC, 2006).

The Project will be conducted on existing well pads and access roads. Migratory bird or wildlife habitat, therefore, will not be altered during Phase III.

3.4.1 Wood Turtles

The wood turtle (*Glyptemys insculpta*), whose status is "Threatened", are colonial in nature and gather in large numbers when nesting. The species nests next to permanent, fast-moving watercourses on open sandy areas, such as high riverbanks, roadsides, rail embankments, and in wetlands. Wood turtle populations are threatened by human capture, as well as nest destruction and water contamination (SARPR, 2013). The ACCDC has reported a range rank of "1" for the wood turtle in the Study Area, which indicates a "possible occurrence" according to predictive range mapping (AMEC, 2013).

It is typically mid to late spring when the wood turtles emerge from hibernating within the watercourses to bask and feed on the vegetation along the banks. The Field Assessment Report for the McCully gathering system (AMEC, 2006) included wood turtle surveys, where watercourses were assessed for wood turtle habitat and presence. The Kennebecasis River and Stone Brook were identified through desktop analysis as high potential habitat for the wood turtle. Surveys were conducted May 10th and 11th, 2006, when riparian vegetation had just begun to flourish. Surveys involved searching for wood turtles in the watercourses, tracks along all sand and gravel bars as well as an area 50 m adjacent to each watercourse bank. Further searches for signs of wood turtles were held during the summer of 2006 in conjunction with other summer surveys, such as fish and fish habitat as well as bird surveys. No signs of wood turtle were found during these surveys. There was, however, an incidental sighting of wood

turtles on the access road for the B-67 well pad, crossing McLeod Brook, which is central to the Study Area for the Phase III Project.

Of the three well pads being assessed, N-57 is closest to a watercourse (Figures 3.1 and 3.3). The Kennebecasis River is approximately 35 m from the southern edge of the well pad, though separated from it by the CNR line. The access road does not cross the watercourse, so wood turtles would not be anticipated on the north side of the track where operations will occur. There is another stream approximately 150 m from the north edge of N-57 which follows Back Road, but it's a small, intermittent stream which was excluded from wood turtle surveys due to low potential (AMEC, 2006).

3.5 Socio-economic Setting

The *Rules for Industry* (NBNGG, 2013) stipulate that well heads shall not be within 250 m of a dwelling or 500 m of a school, hospital or nursing home. The wells and well pads proposed for Phase III, however, pre-existed the publication and there will be no new drilling as part of Phase III.

Using NB Department of Natural Resources (NBDNR) topographic data, the following buildings were detected within 500 m from the edges of each well pad (Figures 3.1 to 3.4):

- O-76: Six buildings, the closest of which is 500 m from well J-76;
- N-57: Fifteen buildings, the closest of which is 280 m from well P-67; and
- D-48: Three buildings, the closest of which is 450 m from well L-37.

There are no schools in Penobsquis. There are no cultural or institutional land uses in the form of hospitals or nursing homes, museums, or theatres in the Study Area.

Route 114 is the primary route of transportation through the Study Area, which may be accessed via Exit 211 from Route 1. One well pad, D-48, is accessed by an access road to the Gas Plant, running 770 m from Route 114. The two remaining well pads, N-57 and O-76, are accessed from Back Road, which connects to Route 114 via both McCully Station Road and Penobsquis Road. All three well pads are located adjacent to a section of the CNR line which runs through the entire length of the Study Area.

There are no electrical generating facilities in or near the Study Area. There is one NB Power corridor extending through the Study Area, north of all three well pads. Sewer needs for the area are provided by individual septic systems. The Penobsquis Municipal Water System extends along Route 114 as far as McCully Station Road. All three well pads, O-76, N-57 and D-48, are connected to the Corridor gathering system.

3.6 Heritage and Archaeological Resources

Well pads O-76, N-57, and D-48 have already been constructed and are the sites of operating wells. The following is a brief statement of the results from the heritage and archaeological investigations conducted prior to the construction of these well pads.

In 2006, a complete Heritage Resource Impact Assessment (HRIA) was conducted for the proposed McCully Natural Gas System under Archaeological Field Research License (AFRL) 2006NB20 (AMEC, 2007). The HRIA included a desktop review, visual field survey, field evaluation, and a construction monitoring program for the McCully Lateral pipeline and gathering system. Additional wells and connecting lines have been added to the gathering system since the initial assessment in 2006 (AMEC, 2009; AMEC, 2008b; AMEC 2008c). The locations of well pads O-76, N-57 and D-48 were assessed in 2006 (AMEC, 2007) and 2007 (AMEC, 2008b).

Initially, for AMEC study purposes, well pads O-76, N-57 and D-48 were labelled WP#202, WP#204, and WP#210, respectively. As indicated in the HRIA reports previously submitted for these well pad locations and connecting lines, archaeological and heritage resources were identified within the Study Area, but not within the Footprint of any of these development areas (AMEC 2007; AMEC, 2008b).

Since HRIAs have previously been conducted for the well pad locations, and well pads O-76, N-57, and D-48 have already been constructed (with operating wells), there will be no impact to subsurface materials within potential cultural layers. Therefore, heritage/archaeology is not considered to be a VEC for this activity.

4.0 ENVIRONMENTAL IMPACTS AND ASSOCIATED MITIGATION

Spatial bounds for the Study Area are covered by a radius of 5 km applied over the F-67 well pad described in the Phase I and II document (AMEC, 2013), which is central to Phase III well pad distribution. This 5 km radius encompasses all three well pads O-76, N-57 and D-48. The outermost well pad within this area is D-48, which has a minimum 1.4 km radius around it within these spatial bounds. Temporal bounds are limited to the time of fracture stimulation, completion and tie-in to production. The anticipated Phase III Project schedule is as follows:

- LPG Fracture Treatments of P-67 (1 treatment), J-76 (2 treatments), D-67 (1 treatment) and L-37 (2 treatments): Early July to Mid-August, 2014, for an estimated one and a half months.
- Run production tubing and complete well: Late August to Mid-September 2014, for an estimated two weeks (unchanged from Phase II EIA).
- Construct and tie-in to field production gathering system: expected to be completed during the month of October 2014, for an estimated four to six weeks (unchanged from Phase II EIA).

There are no wetlands and only one watercourse within 150 m of the Phase III Project Footprints (the Kennebecasis River at N-57 – which is barricaded from the well pad by means of the CNR track). No unique or critical habitat for migratory birds or raptors was observed or reported. A summary of the potential environmental impacts and the associated mitigation to address any potential impacts is provided in Table 4.1.

Corridor will conduct its operations in accordance with all applicable regulations and guidelines prescribed by the NB Department of Energy and Mines (NBDEM), the NBDELG and all other applicable agencies, including the *Rules for Industry* (NBNGG, 2013). Key requirements are outlined in the Approval to Operate and the Certificate of Determination for the Phased EIA issued by NBDELG.

Corridor has developed a comprehensive HSE Management System that includes the following manuals: Health and Safety Manual; Waste Management Manual; Environmental Management Manual; and an Emergency Response Manual. Corridor will also develop other Management Plans described in the *Rules for Industry* document in consultation with NBDELG. Corridor requires that all its well site personnel (employees, vendors and visitors) adhere to the health, safety and environmental policies and procedures outlined in these Manuals. The Corridor site supervisor has a copy of these manuals on site.

Table 4.1 Issues Scoping/Pathway Analysis Summary Matrix - Valued Environmental Components (VECs): Development and Production in McCully Field

Environmental Resources	Environmental Components of Concern (Biophysical and Socio-Economic)	Pathway of Concern		Possible Pathway	VEC		Project Activity		
		Yes	No		Yes	No	Fracture Stimulation	Tie-in and Production	Inclusion/Exclusion as VEC
Atmospheric Environment	Ambient Air Quality	X		• Overburden disturbance. • Accidental release of hazardous materials.	X		X	X	Included as a VEC – Protected by statute/regulation.
	Climatology		X	No possible pathway identified.		X			Excluded as a VEC – No pathway of concern identified.
Terrestrial Environment	Physiography	X		• Alteration in visual aesthetics.	X		X		Included as a VEC – Protected by statute/regulation.
	Hydrology and Hydrogeology	X		• Fracture stimulation activities. • Accidental release of hazardous materials.	X		X	X	Included as a VEC – Protected by statute/regulation
	Mineral Resources		X	No possible pathway identified.		X			Excluded as a VEC – No pathway of concern identified.
Biological Environment	Species at Risk	X		• Accidental release of hazardous materials. • Noise. • Lighting.	X		X	X	Included as a VEC – Protected by statute/regulation.
	Wildlife	X		• Accidental release of hazardous materials. • Noise. • Lighting.	X		X	X	Included as a VEC – Protected by statute/regulation.
	Migratory Birds	X		• Habitat or population disturbance. • Accidental release of hazardous materials. • Noise. • Lighting.	X		X	X	Included as a VEC – Protected by statute/regulation.
	Fish, Fish Habitat, and Fishery Resources		X	No possible pathway identified.		X			Excluded as a VEC – No possible pathway.
	Designated Areas and Other Critical Habitat Features		X	No possible pathway identified.		X			Excluded as a VEC – No possible pathway.
	Population and Labour Force	X		Size of project precludes a significant impact to labour force.		X			Excluded as a VEC – No pathway of concern identified.
Socio-Economic Setting	Industry and Commerce	X		Size of project precludes significant impact.		X			Excluded as a VEC – No pathway of concern identified.
	Residential	X		• Traffic. • Noise. • Lighting.		X	X		Included as a VEC – Temporary changes to residential environment
	Existing Land Use		X	No possible pathway identified.		X			Excluded as a VEC – No pathway of concern identified
	Community and Emergency Services	X		• Size of project precludes significant impact.		X			Excluded as a VEC – No pathway of concern identified.
	Heritage and Archaeological Resources	X		• Avoided using existing wells.		X			Excluded as a VEC – Avoided by site selection

In addition to the mitigation outlined in Table 4.2, the following are standard mitigation measures that Corridor utilizes for all its programs:

- All personnel entering a Corridor well site must receive a Field HSE Orientation each calendar year. In addition, Corridor ensures that adequate environmental training is provided for personnel who will be responsible for transportation, storage, handling, or use of any hazardous materials. This training includes spill prevention and response and covers proper clean-up procedures for accidental spills to minimize the extent and magnitude of adverse effects to the environment.
- A sign will be posted to notify all visitors and contractors or personnel new to the site that they must immediately check-in at the Corridor on-site security building, located at the entrance, upon arrival at the location. This is to ensure that only authorized personnel are onsite and that each person receives a site-specific Corridor Field HSE Orientation.
- Corridor will notify nearby residents if there is a significant event which could result in environmental impacts or disturbance.
- In the event that Corridor receives a complaint from the public regarding unfavourable environmental impacts, Corridor will investigate the complaint, take corrective action, and report the complaint to the NBDELG within one business day of receiving the complaint.
- Environmental management and monitoring methods are fully described in the Phase I and Phase II document currently registered with the Province (AMEC, 2013).

Based on the nature of Phase III activities, the planned mitigation outlined in Table 4.2 and the application of the management plans that will be developed as per the *Rules for Industry* (NBNGG, 2013), no significant interaction with any environmental component is anticipated.

Table 4.2 Summary of Potential Environmental Effects

Environmental Components of Concern (ECC)	Possible Pathway	Potential Impact	Mitigation
Air Quality	Overburden disturbance Equipment Operation Flaring	Reduction in localized air quality Noise	• Control dust with the use of water. • Cover piles of soil to prevent particulate release. • Maintain equipment to limit particulate exhaust releases. • Control speed of vehicles. • Corridor will prepare emissions management documents as per section 7.0 of the *Rules for Industry* document and Regulator consultation. See section 6.0 of the Phase II EIA (AMEC, 2013). • Corridor will employ mitigation measures for emission reduction for petroleum facilities, such as those listed in appendix 11 of the *Rules for Industry* document (NBNGG, 2013). • Corridor will adhere to noise regulations in the *Rules for Industry* and employ mitigation techniques for noise impacts, such as the examples listed in appendix 15 of the *Rules for Industry* document (NBNGG, 2013). • Plan to conduct work activities that are likely to result in an increase in noise emissions during daytime hours (7am – 7pm) wherever possible, as described in section 6.0 of the Phase II EIA (AMEC, 2013). • Minimize heavy truck traffic and associated noise where possible. • If a noise complaint is received, Corridor will report the complaint to the Regulator as per the *Rules for Industry*, section 9.5 (NBNGG, 2013).
Physiography	Heavy equipment and increased truck traffic	Visual Aesthetics	• Existing well pads will be used. • Natural terrain will not be altered. • Mitigation measures, such as those examples provided in appendix 16: Visual Impact Mitigation Measures of the *Rules for Industry* document (NBNGG, 2013) will be implemented. See section 6.0 of the Phase II EIA (AMEC, 2013).

Environmental Components of Concern (ECC)	Possible Pathway	Potential Impact	Mitigation
Hydrology and hydrogeology	Construction work near surface water supply Disturbance of underlying aquifer	Effects on surface water quality Effects on groundwater quality	• Suspend construction activities during high water flow periods and extreme weather events. • Runoff, erosion and sediment controls in the existing well pad design to be maintained for the life of the Project. • Develop Water Management Plan as described in the *Rules for Industry* document section 6.0 (NBNGG, 2013). • Employ proper well casing and cementing techniques, as described in section 2.0 of the *Rules for Industry* (NBNGG, 2013). • Conduct baseline water quality survey for all drinking water wells within 500 m of Project Footprint as described in the *Rules for Industry* document's section 5.0 (NBNGG, 2013). Conduct water quality sampling after fracture treatment process is complete. See section 6.0 of the Phase II EIA (AMEC, 2013). • Develop a surface water quality baseline and monitoring plan, if required, as per the *Rules for Industry* Section 5.2 and appendix 10 (NBNGG, 2013) in consultation with NBDELG.
Migratory Birds and Wildlife	Presence of equipment Presence of people Lighting	Noise / physical disturbance of nesting birds Behavioural changes Mortality	• No on-site employees will harass wildlife. • No migratory bird or its nest shall be disturbed or destroyed without a permit. • Report the discovery of any nests encountered during activities to the Canadian Wildlife Service, Sackville, NB. • Corridor will employ mitigation techniques for noise such as those examples listed in appendix 15 of the *Rules for Industry* document (NBNGG, 2013). See section 6.0 of the Phase II EIA (AMEC, 2013). • Corridor will employ mitigation techniques for Project lighting, such as those examples listed in appendix 16 of the *Rules for Industry* document (NBNGG, 2013). See section 6.0 of the Phase II EIA (AMEC, 2013).

Environmental Components of Concern (ECC)	Possible Pathway	Potential Impact	Mitigation
Species at Risk	Presence of equipment Presence of people	Noise / physical disturbance of wildlife Behavioural changes Mortality	• Report the discovery of any ground nests of Threatened species encountered during activities. • Corridor will employ mitigation techniques for noise such as those examples listed in appendix 15 of the *Rules for Industry* document (NBNGG, 2013). See section 6.0 of the Phase II EIA (AMEC, 2013).
Residential	Onsite activities Equipment/product transportation	Noise Lights Traffic	• Corridor will employ mitigation techniques for noise such as those examples listed in appendix 15 of the *Rules for Industry* document (NBNGG, 2013). See section 6.0 of the Phase II EIA (AMEC, 2013). • Corridor will employ mitigation techniques for traffic such as those examples listed in appendix 14 of the *Rules for Industry* document (NBNGG, 2013). • Corridor will employ mitigation techniques for Project lighting, such as those examples listed in appendix 16 of the *Rules for Industry* document (NBNGG, 2013). See section 6.0 of the Phase II EIA (AMEC, 2013).
Accidental Spills and Malfunctions	Accidental release of hazardous materials and contaminant migration	Contamination of local and downstream environment	• Adherence to maintenance schedules and daily pre-work inspection for vehicles and equipment on-site. • Adequate training must be provided for personnel responsible for transportation, storage, handling, or use of hazardous material. • Mobile equipment must be serviced and refueled at dedicated refueling / service stations. • Appropriately sized spill kits must be available on-site for clean-up efforts. • Adherence to contingency plans developed by Corridor.

5.0 PUBLIC CONSULTATION

Corridor is committed to stakeholder consultation and community and public engagement. Corridor will implement a strategy consistent with that of Phase I and Phase II (AMEC, 2013). As per the NB EIA Regulation, the availability of this Phased EIA for review will be advertised in the local newspaper, the Kings County Record, and posted in public areas such as the Penobsquis Fire Hall, the Town of Sussex Office, the NBDELG offices and the Corridor office. Corridor will work with NBDELG to determine the appropriate publications and timing.

In addition, Corridor will take the same personalized approach to engaging landowners within an 1800 m radius of the three well pads. Corridor representatives will visit the residences within the radius to explain the proposed activities, hear their concerns and answer their questions. Information sheets with contact information will be left during these visits and Corridor representatives will make every reasonable effort to make themselves available to every resident.

Corridor's Public Engagement Strategy also includes:

- Briefing of the long-standing Community Liaison Committee (CLC).
- Distribution of a Corridor Newsletter Update which will entail a brief overview of planned activities, as well as contact information. Additional updates will be provided in future newsletters in advance of the Program.
- An update of planned activities on the Corridor Website, as well as a mechanism for posting questions and concerns directly to Corridor, to become available on the date of the EIA Registration.
- Briefing of local officials to provide them with information sheets and contact information for questions and concerns.

Corridor will also comply with any additional requirements that result from the NBDELG review of the Phase III document.

6.0 CONCLUSION

The EIA has been conducted for the proposed Phase III activities to be conducted on three well pads: O-76, N-57 and D-48. This assessment consisted of a consideration of potential effects on the environment resulting from the activities as described in Section 2.0. A description of the existing environment in the Study Area has been presented in the Phase I and Phase II document (AMEC, 2013) and supplemented as necessary in this Phase III document (Section 3.0) based on available information and results of field surveys conducted from 2006 to 2008. The VECs identified by issue scoping and pathway analysis (Section 4.0) for which potential effects may be a concern included:

- ambient air quality;
- hydrology / hydrogeology;
- Species at Risk and wildlife;
- migratory birds; and
- residential environment.

The potential for environmental effects has been discussed in Section 4.0. Significant negative residual effects are not anticipated during Phase III based on:

- Available mapping information and results of previous field investigations in the Study Area presented in Section 3.0.
- Previous projects of this nature conducted in NB, as described in Section 2.0.
- Observation of the *Rules for Industry for Responsible Environmental Management of Oil and Natural Gas Activities in New Brunswick* (NBNGG, 2013), including the baseline and environmental monitoring and management plans that will be developed and conducted, some of which are discussed in section 6.0 of the Phase I and II EIA document (AMEC, 2013).
- Corridor's existing HSE Management System.
- The Public Communication Strategy described in Section 5.0.
- The mitigation measures outlined in this EIA.

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Contact List

Contact Name	Organization/Agency	Contacted Regarding
Bowers, Jason	NBENV	Water Quality Results in Penobsquis
McLeod, Malcolm	NBDNR	Bedrock (2007)
Mailhiot, Joshua	Environment Canada, Canada Wildlife Service	Sensitive Nesting Window dates