PART I: Identification of the Protocol Developer

Title of the Base Protocol:

Quantification Protocol for Tillage System Management

1.2 Lead Protocol Developer

Organization:	Blue Source Canada ULC
Address:	Suite 2210, 777 – 8th Ave SW
Name:	Keith Driver
City:	Calgary
Title:	Vice-President, Operations
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1.3 Initiating Entity

Organization:	Industry Provincial Offsets Group (IPOG)
Address:	100 Stone Road West, Suite 206
Name:	Don McCabe
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Title:	IPOG Working Group Lead
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Rationale for initiating the development of the protocol (optional):

There is industry support behind the development of this protocol. Through IPOG, industry members strive to ensure that protocols are:

- Based on a complete life-cycle analysis with consideration of all relevant GHG sources and sinks
- Consistent in their treatment of cross-cutting issues
- Based on accurate and unbiased best science and best practice guidance
- Fully transparent; and
- Conservative so as to ensure that environmental integrity is maintained.

PART II: Base Protocol Applicability and Development Approach

2.1 Description of the Project Type:

This protocol provides a default methodology for quantifying carbon offsets through projects that undertake reduced tillage on agricultural land.

This protocol is applicable to annual crops grown throughout Canada. Farms must operate on the applicable land in a no-till or reduce till system as defined in this protocol. Perennial crops are not within the scope of the protocol. While some perennial row crops may involve tillage (e.g. orchards, small fruits, nuts, nurseries, woodlots, etc.), the coefficients used in this protocol are not applicable since the tillage in these scenarios only involves part of the land area (i.e. the inter-row zone).

It is recognized that farming and cropping systems are complex, often with interdependent practices. GHG emissions are potentially generated by many different specific practices, in addition to the tillage system. However, the reduction coefficients used in this protocol assume that when comparing the project and baseline scenarios for all other aspects of farm operation that there are negligible GHG impacts from the project. This assumption allows for the layering of protocols across a number of project areas.

This activity is included in Canada's Greenhouse Gas Inventory.

2.2 Description of Project-specific Technology (if applicable)

None.

2.3 GHG(s) that will be reduced:

The following GHGs will be reduced from tillage system management projects:

- CO_2 through reduced combustion emissions;
- CH_4 through reduced combustion emissions; and
- N_2O through reduced combustion emissions and reduced direct soil emissions.

The following GHGs will be removed from tillage system management projects:

- CO_2 through increased uptake in soil.

2.4 Description of how real reductions will be achieved:

The opportunity for generating carbon offsets with this protocol arises from the direct and indirect reductions of greenhouse gas (GHG) emissions associated with a change from conventional or full tillage (FT) to reduced till (RT) or no-till (NT) in Canadian agricultural soils.

All components of the protocol consider regional differences across the country. This includes emission factors, activity definitions, tillage adoption data for baseline scenario analysis, and monitoring / verification processes. In other words emission factors are regionally aggregated, and in a given region all project lands doing no-till receive the same emission factor per area.

Emission reduction and removal coefficients are based on extensive research on tillage systems across Canada, conducted by the Soil Management Technical Working Group (SMTWG) and based on the Century model of soil organic carbon (SOC) dynamics. Coefficients are based on a consistent set of activity definitions, therefore projects will essentially need to ensure that eligible activities are undertaken, and use the coefficients that are applicable for specific activities in specific regions to calculate the emission reduction or removal.

2.5 Base Protocol Flexibility (optional):

Explain optional approaches for quantifying the reductions to be achieved from the project type:

Flexibility in applying the quantification protocol is provided to project developers in two ways.

1. This protocol applies to a single component of farm operations. As such, this protocol can be combined with other protocols where multiple projects are undertaken to reduce overall greenhouse gas emission from the farming operations in question; and

2. A project operator may define and justify site-specific Soil Organic Carbon (SOC) sequestration and nitrous oxide (N_2O) coefficients adjusted for baseline considerations. These factors may be substituted for the generic emission factors indicated in this protocol document. The methodology must ensure reasonable accuracy and certainty, and be based on available principles-based guidance from Alberta Agriculture and Food. Further, these emission factors must be assessed to ensure that the project developer has properly accounted for any impact on emission factors, assumptions and assurance factor estimates stated in this protocol. These site-specific coefficients would need to be approved by Alberta Environment for use in the Alberta Offset System.

2.6 Federal, Provincial/Territorial Legal Requirements & Climate Change Incentives

List of potentially relevant requirements:

None.

List of potentially relevant climate change incentives:

None.

2.7 Building on existing protocols or proprietary information (if applicable)

Registered name of protocol:	Quantification Protocol for Tillage System Management
System for which protocol was developed:	Alberta Offset System
Date protocol was completed and approved:	February, 2008
Developer of the protocol	
Name:	Keith Driver
Organization:	Blue Source Canada ULC (formerly Baseline Emissions Management)

Explanation of how the existing protocol will be adapted:

The existing seed protocol will be adapted through an inclusive, transparent and consistent process coordinated through the Industry Provincial Offset Group's (IPOG) broad membership. In particular, work will be conducted by a protocol technical working group formed specifically to address adaptation of the protocol in question and potentially other related protocols. Cross-cutting issues groups will also be formed to address issues affecting a range of protocols, and to ensure consistency in approach.

Adaptation of the existing protocol will follow the multi-step process outlined below:

- Collection of technical and background information related to development, review and approval of the protocol to ensure transparency through the adaptation process;
- Review of the protocol to ensure consistency with Canada's "Turning the Corner" action plan and the requirements of the federal offset system. Any areas of inconsistency with the protocol documentation will be identified in this step;
- Review of existing provincial and federal regulations that could impact the surplus nature of the emission reductions from the project activity. This phase will serve to address the surplus requirement relative to applicable federal and provincial legislation;
- Review of the seed protocol's baseline condition to address the incremental nature of the project activity in the Canadian context. This review will include an assessment of the baseline's compatibility with Canadian best practices and potential alternative baseline approaches;
- Review of the protocol to ensure the quantification methodology is consistent with best practice guidance, and applicable to the range of Canadian geographical and climatic conditions;
- Review of the protocol's measurement and monitoring requirements to ensure they are reflective and reasonable in the Canadian context. This will include a review of data collection requirements and frequency of measurement and monitoring;
- Consideration of other environmental impacts and criteria air contaminants, as required by the "Turning the Corner" action plan;

- Additional analysis to address any outstanding issues identified to date that may present a significant challenge to protocol adaptation. This step will include assembly of the technical working group to drive further analysis;
- Redrafting of protocol to address technical issues identified in the previous steps and to ensure it meets the technical and format requirements of the Canadian offset system;
- Review of any material changes made to the quantification approach using project data to ensure the revised methodology is generally consistent with the original documentation;
- Cross-protocol review of the adapted protocol with other protocols adapted by IPOG, to ensure consistency in scope and approach to quantification;
- Compilation of documents required for submission of the final draft protocol to Environment Canada for approval. The results of all stages of the review and adaptation process will be summarized and compiled to support Environment Canada's review.

Given the volume of work required under short timelines, multiple agencies will be required to provide a range of technical inputs, perspectives and capacity. To accomplish required tasks and meet timelines, technical resources within IPOG will be mobilized to provide input; drawing on group member's significant experience in protocol and project development.

IPOG will draw on the experience of Climate Change Central to manage the adaptation process and to ensure broad stakeholder involvement by parties that may not be comfortable working directly with IPOG.

Explanation of the nature of the proprietary information and how it might be used in the Base Protocol:

We are anticipating full disclosure and transparency, therefore no proprietary information should be required.

PART III: Declaration / Consent / Signature

The undersigned acknowledges that the undersigned has read, understood and that the undersigned agrees to abide by all the terms, conditions, instructions, and notices set out in the Guide for Protocol Development.

The undersigned acknowledges that the review of, and comments regarding, this base protocol plan or portions thereof does not ensure that the base protocol plan or portions thereof will be used in an Offset System Quantification Protocol by Canada's Offset System for Greenhouse Gases.

The undersigned is legally authorized to use any and all proprietary (or protected) information found in and submitted with the base protocol plan.

The undersigned is duly authorized to sign this application.

The undersigned declares that the base protocol plan submitted for Canada's Offset System for Greenhouse Gases and the information provided on, with or pursuant to this application is true, accurate and complete.

The undersigned consents to the public disclosure, in any manner including, without limitation, posting on Offset System website, of all the information in the base protocol plan and the information submitted with the base protocol plan.

Signature:

By protocol developer (individual, or an organization's or a corporation's duly authorized representative, date, name, title)

_____

Name

By: ___Keith Driver___

(print name)

Title: ___Vice-President, Operations___

Signature:_____

Signed this ____day of _____, 2008