

# Groundwater Protection Program

## 1997/98 Annual Report

The Groundwater Protection Program (GPP) was initiated in the fall of 1995 with the completion of an on-farm conveyor system built to reduce the high costs associated with transporting manure longer distances. This first year was dedicated to testing the workings of the conveyor and the feasibility of a program to ship manure directly from poultry farms to distant markets.

After much success in the first year, the focus for the second and third year was the expansion of the Groundwater Protection Program. Building on the successes reached by the end of year 1, a significant expansion was possible (see Table 1). This expansion happened in the following ways:

- increase in the number of poultry and crop producers involved in shipping and purchasing manure
- increase in the volume of manure shipped
- increase in the capacity of the hauling system through expansion of contacts with manure hauling (trucking) contractors and construction of a new conveyor (two conveyors now in operation)
- increase in the flexibility and efficiency of the loading system through some minor equipment alterations

In the first two years, manure hauling arrangements were made with little advance notice and were generally seasonal, with the majority of manure hauling occurring in the late fall and winter periods.

**Table 1 Increase in Manure Shipments from Year 1 (1995/96) to Year 3 (1997/98)**

<i>Year of Operation</i>	<i>Shipment Volume</i>	<i>Shipment Period</i>	<i>Increase (adjusted)*</i>
Year 1 (1995/96)	6,200 yd <sup>3</sup>	8 months	NA
Year 2 (1996/97)	18,200 yd <sup>3</sup>	12 months	+ 96 %*
Year 3 (1997/98)	24,930 yd <sup>3</sup>	12 months	+ 37 %

\* Increase adjusted to reflect the increased Shipment Period from Year 1 to Year 2

Later this year (January 1998), the Sustainable Poultry Farming Group began a membership drive for the GPP with the following objectives:

- increase manure hauling activity in the spring and summer to reduce the strain on the system from trying to haul large volumes of manure during the fall and winter – 6 – 8 month – period
- Reduce hauling cost to poultry producers which make a commitment to the GPP
- Provide manure supply stability to the hauling system.

As part of this drive, a membership program was developed. Since inception six farms have committed year round to supply their farm's manure production for shipment to distant markets.

## Manure Hauling Activity

### **Year 3 - Period of April 1, 1997 - March 31, 1998**

This year, a total of 85 poultry farm hauling events to distant markets were coordinated. The average shipment for these events was 293 cubic yards, with shipments ranging in size from 40 to 1100 cubic yards. Another service offered to poultry producers involves connecting poultry producers with local manure markets. In such cases, manure is usually too heavy (wet) to transport cost-effectively to distant markets. This year, a total of eight farm hauling events for a total of 3200 cubic yards was coordinated in this manner. In many cases, poultry manure was shipped off the Abbotsford Aquifer to the Sumas

Prairie, or to alternate markets such as the topsoil industry. This manure volume was not included in the total for manure hauled to distant markets.

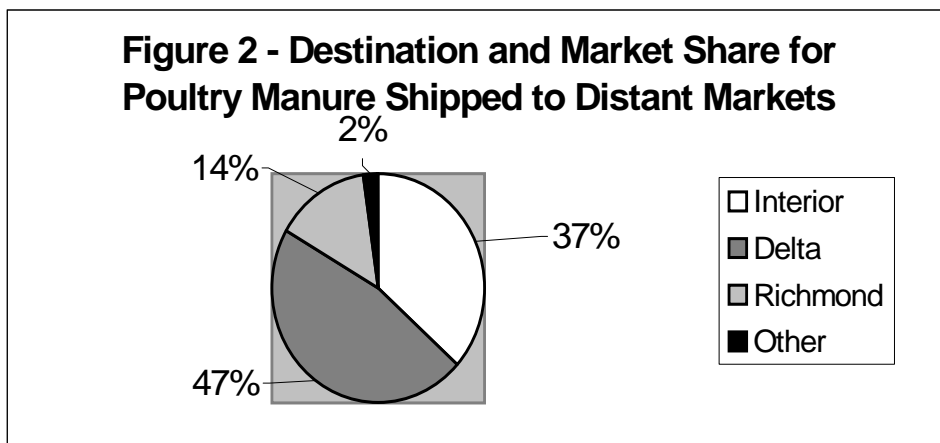
In Figure 1, 1996/97 and 1997/98 GPP shipments are identified and compared cumulatively by their area of origin. Two geographic areas are represented: Abbotsford Aquifer (generally recognized boundaries with slight modification to conform to road locations) and Central Fraser Valley (defined as the City of Abbotsford plus eastern Langley to 258<sup>th</sup> St. to 272<sup>nd</sup> St. including the area represented by the Abbotsford Aquifer).

Most of the poultry farms within the Central Fraser Valley area were located near the Abbotsford Aquifer area. Therefore, due to the close proximity of these poultry farms with the Abbotsford Aquifer area, shipments originating from the Central Fraser Valley likely affect the amount of poultry manure spread on the aquifer area. As well, manure shipped to distant markets from these Central Fraser Valley farms should be considered as contributing to reducing the overall amount of poultry manure spread over the Abbotsford Aquifer.

From Figure 1, observations regarding monthly shipments from each area are as follows:

- shipment volumes from the Abbotsford Aquifer area are apparently more consistent throughout the year, than from the Central Fraser Valley;
- Total Fraser Valley shipments appear to be increasingly consistent and less subject to seasonality;
- Total 1997/98 shipments for Central Fraser Valley and Abbotsford Aquifer have increased by 37% and 40%, respectively;
- Abbotsford Aquifer shipments have increased proportional to Central Fraser Valley shipments;
- major increases in shipments occurred from May to July, 1997 and February and March, 1998.

Figure 2 shows the destination market area for GPP shipments of poultry manure during 97/98. Destinations are Delta and Richmond while Interior shipments include Merritt, Cawston, Naramata, and Ashcroft. Shipments for the Other Category went to Sechelt and Pitt Meadows. This year, more manure was hauled to the organic production industry in Cawston. This increase in shipment is due primarily to SPFG sales efforts over the last two years with the organic industry, as well as an increase in the size of the industry in Cawston.



Generally, seasonal trends favour greater volumes of manure shipped to interior markets during late summer to early fall due largely to interior weather and road situations causing difficult hauling conditions. This year, however, weather and road conditions were not unduly restrictive to access year round. As in previous years, late fall to mid-winter, shipments increased to Delta and Richmond. Thus, maximal future shipment of manure to distant markets will likely involve the coordination and optimization of product flow to each market area based on demand and weather conditions at the time of shipment both locally and in distant markets.

From Figure 3, 1997/98 shipments were largest for turkey manure at 59% of manure hauled to distant markets, then chicken broiler manure at 23%. Similar amounts were hauled for Broiler Breeder (layer) and Commercial Egg Layer manure types. Interestingly, both layer manure types while lower in terms of volumes shipped, actually commands a higher delivered price in some markets, which in turn provides significant income to the GPP.

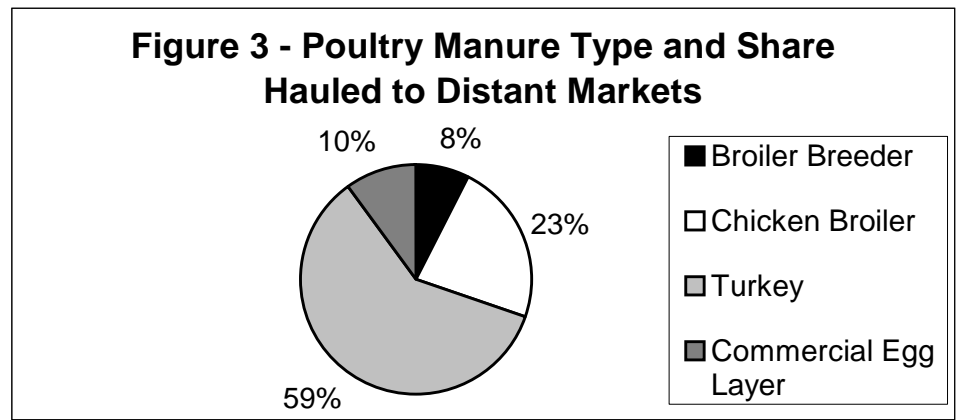


Table 2 below, shows the tonnes of total nitrogen shipped from the volumes shown in Figure 1.

**Table 2** Amounts and Share of Total Nitrogen for each Area of Shipment Origin

<i>Area of Shipment Origin</i>		
----- Tonnes Total N <sup>1</sup> -----		
Abbotsford Aquifer	Central Fraser Valley	<b>Total</b>
118.6	113.7	<b>232.3</b>
---- Share of Total N in Shipments (%) <sup>2</sup> ----		
51	49	<b>100</b>

<sup>1</sup> Assuming nutrient content and density estimates as identified in report Standardizing Measures of Nutrient Content and Density of Poultry Manure in Resource Binder, SustainablePoultry Farming Group, Abbotsford, B.C.

<sup>2</sup> Percentages for each area may not total 100 due to rounding

The variable with the greatest impact in the amount of nitrogen shipped is the proportion of chicken broiler manure in the total. Since chicken broiler manure has the highest level of total nitrogen per volume (about 30% higher), greater amounts of nitrogen removal can be attained if broiler manure shipments are increased relative to the total amount of manure shipped.

### Projections for 1998/99

Since Year 1, manure hauling to distant markets has expanded sizably, both in terms of the number and size of markets, and the number of poultry producers and/or farms involved. While still in its' infancy, the GPP membership program has created a greater security for manure supply. With further expansion in this program, servicing distant markets will be easier and more flexible through being able to supply markets all year.

A new trucking connection has been made for hauls to Delta and Richmond. Along with previous trucking connections, this should expand our ability to match poultry farms to distant markets. One concern which became apparent at the end of this season was a need for a third conveyor. I feel that at this point in the development of the GPP, a third conveyor will be necessary in the fall of 1998. Without another conveyor, it will be difficult to expand the GPP. At peak shipping periods, increasing conveyor demand may result in lost opportunity when conveyors are previously booked, or are in need of repair.