

INDIRECT DISCHARGE PERMIT REVISED FACT SHEET

December, 2015

PERMIT NUMBER: ID-9-0043
PIN: BR95-0213

APPLICANT: Agri-Mark, Inc. (dba Cabot Creamery)
193 Home Farm Way
Waitsfield, VT 05673

LOCATION: The indirect discharge from the permeate spray site is located on the Winooski River in the town of Cabot, Vermont with a drainage area of 13.99 square miles at the point of compliance. The indirect discharge can be located on the USGS, Cabot, Vermont 7.5' quadrangle map at Latitude N 44⁰ 24' and Longitude W 72⁰ 19'.

The individual locations of the indirect discharges from land application of dairy processing wastewater are located on the streams listed in Attachment A-1 of the permit. The drainage area listed is at the point of compliance.

**NATURE OF
WASTE:**

The indirect discharges authorized by this permit are classified as non-sewage, non-pathogenic waste, and consist of two waste streams. Polished permeate is a non-sewage waste which results from the reverse osmosis system used to concentrate sweet whey. This permeate is sprayed at the permeate spray site. Dairy processing wastewater generated from the production process is land applied on fields in the land application program. Some fields in the Connecticut River drainage are also designated for land application of acid whey if necessary.

**DISPOSAL
VOLUME:**

Polished Permeate: 35,000 gallons per day (annual average)
Dairy Processing Wastewater: 150,000 gallons per day (annual average)

**RECEIVING
WATERS:**

Multiple receiving streams; see Attachment A-1 of the permit.

POLISHED PERMEATE

Summary of Polished Permeate Sprayed

The following are annual summaries of the volume of polished permeate sprayed in the permeate sprayfield as reported by the permittee for the period 2010 – 2015.

| Application Period | Gallons Sprayed | Average Daily Sprayed¹ | Number of Exceedances Spray Limit² | Number of Violations GW Limits³ |
|---------------------------|------------------------|--|--|---|
| April – November, 2010 | 10,506,000 | 43,057 | 8 | 0 |
| April – November, 2011 | 8,902,000 | 36,484 | 6 | 0 |
| April – November, 2012 | 2,413,715 | 9,892 | 0 | 0 |
| April – November, 2013 | 6,855,679 | 28,097 | 2 | 0 |
| April – November, 2014 | 6,290,104 | 25,779 | 3 | 0 |
| April – November, 2015 | 7,750,774 | 31,765 | 2 | 0 |

Notes:

1. April – November = 244 Days
2. Polished Permeate Spray Limit = 455,217 gallons/7 days
3. According to groundwater depths reported by permittee. No spraying permitted when groundwater levels are within 12” of ground surface.

Summary of Polished Permeate Quality

The following is a summary of the polished permeate quality which was discharged to the storage lagoons, based on 12 sampling events during the period 2010 - 2015.

| Parameter | Mean Value (mg/L) | Range (mg/L) |
|---------------------------|--------------------------|---------------------|
| Total Dissolved Solids | 61 | 21 – 165 |
| Total Suspended Solids | 1 | 1 – 2 |
| Biochemical Oxygen Demand | 62 | 5.4 – 400 |
| Chemical Oxygen Demand | 51 | 25 – 152 |

| Parameter | Mean Value (mg/L) | Range (mg/L) |
|-------------------------------|--------------------------|---------------------|
| Total Kjeldahl Nitrogen (TKN) | 69 | 50 – 87 |
| Ammonia Nitrogen | 5.8 | 4.4 – 7.8 |
| Nitrate Nitrogen | 0.09 | <0.02 - 0.28 |
| Total Phosphorus | 0.10 | 0.012 – 0.61 |
| Total Dissolved Phosphorus | 0.10 | 0.01 – 0.60 |
| Sodium | 12.8 | 3.2 – 31 |
| Chloride | 9.6 | 2.5 - 37 |
| pH | 6.89 S.U. | 6.35 – 9.90 S.U. |

Summary of Polished Permeate Pond Quality

The following is a summary of the polished permeate pond quality, based on 47 sampling events during the period 2010 - 2015.

| Parameter | Mean Value (mg/L) | Range (mg/L) |
|----------------------------|--------------------------|---------------------|
| Total Suspended Solids | 22 | 2 – 83 |
| Nitrite Nitrogen | 0.25 | <0.02 – 1.9 |
| Nitrate Nitrogen | 0.43 | <0.02 – 4.7 |
| Total Phosphorus | 0.61 | 0.093 – 3.2 |
| Total Dissolved Phosphorus | 0.24 | 0.012 – 2.3 |
| Chloride | 27 | 8.1 – 170 |
| pH | 7.43 S.U. | 6.67 – 9.39 S.U. |

Summary of Groundwater Quality at Polished Permeate Sprayfield

The following is a summary of groundwater quality upgradient and downgradient of the polished permeate sprayfield, based on sampling events from 5 monitoring wells during the period 2010 – 2015.

| Parameter | Mean Value (mg/L) | | Groundwater Standards (mg/L) | | |
|----------------------------|-------------------------|---------------------------|------------------------------|------------------|-----------------|
| | Upgradient ¹ | Downgradient ² | ES ³ | PAL ⁴ | IP ⁵ |
| Nitrite/Nitrate | 3.2 | 2.5 | 10 | 5 | - |
| Total Dissolved Phosphorus | 0.016 | 0.018 | - | - | - |
| Chloride | 16 | 9.2 | 250 | 125 | - |
| Total Dissolved Solids | 173 | 231 | 500 | 250 | - |
| pH | 6.54 S.U. | 7.12 S.U. | - | - | +1 S.U. |

Notes:

1. Upgradient monitoring wells = MW 402 (30 samples) and MW 403 (28 samples)
2. Downgradient monitoring wells = MW-S-1 (17 samples), MW-S-2 (18 samples) and MW-S-3 (18 samples)
3. Enforcement Standards
4. Preventative Action Limits
5. Indicator Parameter

Groundwater quality data from the sprayfield site for the period 2010 – 2015 shows that total dissolved solids (TDS) concentrations are higher in the downgradient monitoring wells than in the upgradient wells, indicating that the spraying of polished permeate is contributing to the increase. Indeed, the average concentration of TDS in the polished permeate is 61 mg/L, with a range of 21 – 165 mg/L. Many of the results from the downgradient monitoring wells exceeded the TDS preventative action limit of 250 mg/L. However, the average concentration of TDS upgradient of the sprayfield is 173 mg/L, which is attributed to the land application of washwater on Field 40A upgradient of the sprayfield.

The 2010 – 2015 results also show that elevated nitrite/nitrate nitrogen concentrations upgradient of the sprayfield, attributed to land application of washwater on Field 40A, are being observed downgradient of the sprayfield in lower concentrations, indicating that the nitrogen is being further attenuated as it passes through the subsurface of the sprayfield. Polished permeate results show that the sprayfield does not contribute much nitrite/nitrate to groundwater.

WASHWATER

Summary of Washwater Sprayed on Fields or Discharged to Manure Pits

The following are annual summaries of the volume of washwater sprayed on agricultural fields or discharged to manure pits as reported by the permittee for the period October 1, 2009 thru September 30, 2015.

| Application Period | Gallons Sprayed Approved Fields | Gallons to Approved Manure Pits | Gallons Sprayed Z-Fields | Total Gallons | Average Daily Gallons |
|---------------------------|--|--|---------------------------------|----------------------|------------------------------|
| 10/01/09 – 9/30/10 | 27,913,600 | 1,735,200 | 5,651,200 | 35,300,000 | 96,712 |
| 10/01/10 – 9/30/11 | 30,984,400 | 1,383,200 | 5,887,200 | 38,254,800 | 104,808 |
| 10/01/11 – 9/30/12 | 26,218,800 | 1,761,200 | 6,064,000 | 34,044,000 | 93,271 |
| 10/01/12 – 9/30/13 | 30,100,000 | 1,376,000 | 4,656,000 | 36,132,000 | 98,992 |
| 10/01/13 – 9/30/14 | 28,448,000 | 1,784,000 | 4,536,000 | 34,768,000 | 95,255 |
| 10/01/14 – 9/30/15 | 31,844,000 | 1,540,000 | 4,472,000 | 37,856,000 | 103,715 |

At the maximum annual application rate of 27,152 gallons per acre, the dairy processing wastewater contributed an average of 13.3 pounds of total phosphorus and 59.9 pounds of total nitrogen per acre per year based on washwater sampling results from 2010 – 2015.

Summary of Land Application Compliance

The following is a summary of compliance for the land application of washwater on agricultural fields or discharged to manure pits for the period October 1, 2009 thru September 30, 2015.

| Application Period | Number of Exceedances Approved Field Limits¹ | Number of Exceedances Manure Pit Limits | Number of Exceedances Z-Field Limits^{2,3} | Number of Violations GW Limits⁴ |
|---------------------------|--|--|---|---|
| 10/01/09 – 9/30/10 | 2 | 0 | 0 | 0 |
| 10/01/10 – 9/30/11 | 1 | 0 | 1 | 0 |

| Application Period | Number of Exceedances Approved Field Limits ¹ | Number of Exceedances Manure Pit Limits | Number of Exceedances Z-Field Limits ^{2,3} | Number of Violations GW Limits ⁴ |
|--------------------|--|---|---|---|
| 10/01/11 – 9/30/12 | 1 | 0 | 0 | 0 |
| 10/01/12 – 9/30/13 | 2 | 0 | 0 | 0 |
| 10/01/13 – 9/30/14 | 1 | 0 | 0 | 0 |
| 10/01/14 – 9/30/15 | 0 | 0 | 1 | 0 |

Notes:

1. Annual limits, counted if 1,000 gallons or more over limit. Daily limits were exceeded on 9 fields for a total of 15 days in 2013, and on 2 fields in 2014.
2. Seasonal limits, counted if 1,000 gallons or more over limit. Number of exceedances of Z-field limits reported above is based on estimated acreages and disposal volumes as reported by permittee. Subsequent mapping resulted in revisions to many field acreages, which changed daily and seasonal limits.
3. Exceeded daily limit on 2 fields on one day in 2013. Exceeded the 2 week spraying limit on 3 fields in one day in 2013, and on 2 occasions in 2011.
4. According to groundwater depths reported by permittee. No spraying permitted on well-verified fields when groundwater levels are within 36" of ground surface.

Results of Toxic Scan of Dairy Processing Wastewater

Samples of dairy processing washwater were collected by The Johnson Company on December 3, 2014 from the six trucks used for land application. The samples were delivered to the Endyne Inc. Environmental Laboratories in Williston, Vermont. Endyne, Inc. used the Toxicity Characteristic Leaching Procedure (TCLP) and then analyzed the samples for the presence of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, herbicides and metals. The results indicated that none of the toxic compounds were present in concentrations above their detection limits.

Another consulting firm, Stone Environmental, reviewed the results of the toxic scan chromatograms to determine whether measurable compounds were present in the washwater. Their review found that only two organic compounds, 3&4-methylphenol (known as m/p cresol) and chloroform, were measurable, but at concentrations well below regulatory limits. Other chromatographic peaks were noted, indicating the presence of other compounds tentatively identified as breakdown products of surfactants or disinfectants, and fatty acids found in plants and animals. Barium was also calculated as being present but at a concentration well below TCLP reporting limits.

These toxic scan results are consistent with results from previous toxic scans conducted in 2011 (surprise sampling by the State), 2010, 2005, 1999 and 1994.

Summary of Dairy Processing Washwater Quality

The following is a summary of washwater quality which was sprayed on agricultural fields or discharged to manure pits, based on 25 sampling events during the period 2010 - 2015. These are not effluent limits and occasional values outside of the range are to be expected.

| Parameter | Mean Value (mg/L) | Range (mg/L) |
|-------------------------------------|-------------------|------------------|
| Total Dissolved Solids (TDS) | 3,655 | 415 – 6,270 |
| Total Suspended Solids (TSS) | 1,234 | 460 – 7,800 |
| Biochemical Oxygen Demand (BOD) | 4,544 | 2,900 – 6,300 |
| Chemical Oxygen Demand (COD) | 6,916 | 1,600 – 9,700 |
| Total Kjeldahl Nitrogen (TKN) | 228 | 14 – 650 |
| Ammonia Nitrogen (NH ₃) | 24 | 11 – 94 |
| Nitrite Nitrogen (NO ₂) | 2.4 | <0.2 – 21 |
| Nitrate Nitrogen (NO ₃) | 36 | 13 – 69 |
| Total Phosphorus (TP) | 59 | 29 – 150 |
| Total Dissolved Phosphorus (TDP) | 50 | 26 – 99 |
| Sodium (Na) | 517 | 50 – 970 |
| Chloride (Cl ⁻) | 478 | 240 – 970 |
| pH | 4.89 S.U. | 4.15 – 9.88 S.U. |

Summary of Results for Fields in Monitoring Program

The following tables summarize the data collected to date for groundwater and receiving stream water quality on the three fields in the land application program which are monitored.

Each field in the monitoring program is divided into two sections, a land application area and a non-land application area. The dairy processing wastewater was applied only on the land application portion of the fields. By monitoring the non-land application portion also, the impacts to groundwater quality due to farming activities can be examined.

Field 40A

1. Groundwater Quality

The following is a summary of groundwater quality mean values upgradient and downgradient of Field 40A, based on sampling results from 6 monitoring wells during the period 2010 – 2015.

| Parameter (mg/L) | Non-Application Area | | Land Application Area | | Groundwater Standards | | |
|------------------|----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------|-----------------|
| | Up Mean ¹ | Down Mean ² | Up Mean ³ | Down Mean ⁴ | ES ⁵ | PAL ⁶ | IP ⁷ |
| TDS | 75 | 59 | 92 | 173 | 500 | 250 | - |
| TKN | 0.28 | 0.27 | 0.21 | 0.68 | - | - | - |
| NH3 | 0.09 | 0.07 | 0.07 | 0.22 | - | - | - |
| NO2/NO3 | 0.09 | 0.32 | 0.17 | 3.10 | 10 | 5 | - |
| TP | 0.51 | 0.42 | 0.35 | 0.35 | - | - | - |
| TDP | 0.023 | 0.008 | 0.032 | 0.033 | - | - | - |
| Na | 2.8 | 4.2 | 2.7 | 26 | - | - | +10 |
| Cl- | 2.7 | 2.5 | 2.5 | 16 | 250 | 125 | - |
| pH (S.U.) | 6.47 | 6.16 | 6.63 | 6.55 | - | - | +1 |

Notes:

1. Upgradient monitoring wells: MW-404 (16 samples) and MW-405 (24 samples)
2. Downgradient monitoring well: MW-406 (26 samples)
3. Upgradient monitoring well: MW-401 (23 samples)
4. Downgradient monitoring wells: MW-402 (29 samples) and MW-403 (27 samples)
5. Enforcement Standards
6. Preventative Action Limits
7. Indicator Parameter

From October 1, 2010 – September 30, 2015, 1,363,600 gallons of washwater was applied to Field 40A. This equates to an average annual application rate of 272,720 gallons per year. Based on 2010 – 2015 washwater sampling results, an average of 134 pounds of total phosphorus and 605 pounds of total nitrogen was applied to this field annually.

For Field 40A, both downgradient monitoring wells MW-402 and MW-403 continued to reflect the effects of the land application of dairy processing wastewater on groundwater quality. Consistent with results from the previous permitting periods 1999 - 2009, both wells have higher concentrations of total dissolved solids, nitrite/nitrate nitrogen, sodium and chloride compared to the upgradient monitoring well MW-401 and all the monitoring wells (MW-404, MW-405, and MW-406) in the non-land application area of Field 40A. With the addition of the 2015 water quality data, total kjeldahl nitrogen and ammonia mean values are also higher in the downgradient monitoring locations. No discernible difference was noted for total phosphorus, total dissolved phosphorus and pH in the downgradient monitoring wells compared to all the other wells in Field 40A.

While the concentrations of total dissolved solids, nitrite/nitrate nitrogen and chloride are higher in the monitoring wells downgradient of the land application area, the average concentrations were below the Groundwater Protection Rule and Strategy's Enforcement Standards and Preventative Action Limits. Individual results from the downgradient monitoring wells did not exceed any enforcement standard, but some parameters did exceed preventative action limits (2 out of 56 total dissolved solids results exceeded 250 mg/L, and 12 out of 56 nitrite/nitrate results exceeded 5.0 mg/L). All of the downgradient sodium results were above the Groundwater Rule's maximum allowable increase of 10 mg/L as an indicator parameter.

2. Surface Water Quality

No receiving stream monitoring was required in the previous permit as the receiving stream is the Winooski River and no effects on the water quality of the River due to land application on Field 40A were expected based on 1) the size of the receiving water relative to the volume of dairy processing wastewater applied annually, 2) the dilution provided by groundwater, and 3) the attenuation provided in more than 2,000 feet to the River.

Field 75A

1. Groundwater Quality

The following is a summary of groundwater quality mean values upgradient and downgradient of Field 75A, based on sampling results from 6 monitoring wells during the period 2010 – 2015.

| Parameter (mg/L) | Non-Application Area | | Land Application Area | | Groundwater Standards | | |
|------------------|----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------|-----------------|
| | Up Mean ¹ | Down Mean ² | Up Mean ³ | Down Mean ⁴ | ES ⁵ | PAL ⁶ | IP ⁷ |
| TDS | 238 | 126 | 135 | 170 | 500 | 250 | - |
| TKN | 2.7 | 2.0 | 1.8 | 1.1 | - | - | - |
| NH3 | 0.22 | 0.74 | 0.12 | 0.13 | - | - | - |
| NO2/NO3 | 0.06 | 0.04 | 0.27 | 0.27 | 10 | 5 | - |
| TP | 4.3 | 1.2 | 10.6 | 2.5 | - | - | - |
| TDP | 0.046 | 0.024 | 0.028 | 0.025 | - | - | - |
| Na | 9.6 | 9.0 | 3.6 | 7.1 | - | - | +10 |
| Cl- | 6.1 | 8.0 | 2.5 | 10.9 | 250 | 125 | - |
| pH (S.U.) | 7.77 | 6.45 | 7.14 | 6.95 | - | - | +1 |

Notes:

1. Upgradient monitoring well: MW-751 (20 samples)
2. Downgradient monitoring wells: MW-753 (22 samples) and MW-756 (22 samples)
3. Upgradient monitoring well: MW-754 (23 samples)
4. Downgradient monitoring wells: MW-755 (24 samples) and MW-757 (24 samples)
5. Enforcement Standards
6. Preventative Action Limits
7. Indicator Parameter

From October 1, 2010 – September 30, 2015, 784,400 gallons of washwater was applied to Field 75A. This equates to an average annual application rate of 156,880 gallons per year. Based on 2010 – 2015 washwater sampling results, an average of 77 pounds of total phosphorus and 348 pounds of total nitrogen was applied to this field annually.

For Field 75A, monitoring began in 2007. Both downgradient monitoring wells MW-755 and MW-757 exhibit higher concentrations of total dissolved solids, sodium and chloride

compared to the upgradient monitoring well MW-754 and all the monitoring wells (MW-751, MW-753 and MW-756) in the non-land application area of Field 75A. No discernible difference is noted for total kjeldahl nitrogen, ammonia, nitrite/nitrate nitrogen, total phosphorus, total dissolved phosphorus and pH in the downgradient monitoring wells compared to all the other wells in Field 75A.

While concentrations of total dissolved solids, sodium and chloride are elevated downgradient of the land application area, all of the 2010 – 2015 groundwater results were below Groundwater Protection Rule and Strategy’s Enforcement Standards and Preventative Action Limits.

2. Surface Water Quality

The following is a summary of surface water quality mean values for Cold Brook upstream and downstream of the land applied area of Field 75A, based on 24 sampling events during the period 2010 – 2015.

| Parameter (mg/L) | Upstream Mean | Downstream Mean | Water Quality Standards (mg/L) |
|--|---------------|-----------------|--------------------------------|
| Total Kjeldahl Nitrogen | 0.44 | 0.36 | - |
| Ammonia Nitrogen | 0.13 | 0.10 | EPA April 2013 criteria |
| Nitrate Nitrogen | 0.07 | 0.05 | 5.0 max |
| Total Phosphorus | 0.021 | 0.024 | 0.012 – 0.027 max. |
| Total Dissolved Phosphorus | 0.011 | 0.013 | - |
| Sodium | 2.5 | 2.5 | - |
| Chloride | 2.5 | 2.5 | 230 |
| Total Alkalinity (as CaCO ₃) | 44 | 43 | - |
| Dissolved Oxygen | 8.53 | 8.82 | 6.0 mg/L min. cold water |
| pH (S.U.) | 7.00 | 7.07 | within 6.5 – 8.5 S.U. |

Monitoring of the receiving stream, Cold Brook, upstream and downstream of Field 75A, indicates that the land application of dairy processing wastewater, even when combined with farming activities, shows that the average downstream concentration of most parameters are unchanged or slightly less than the upstream concentration. The results do show a slight increase in total phosphorus and total dissolved phosphorus at the downstream location. Cold Brook is a high-low gradient stream for which there is no total phosphorus criteria established yet. One ammonia result may have approached the EPA’s chronic criteria, but the pH probe was not working the day of sampling, so the chronic value cannot be calculated. For all the

other parameters, there were no violations of the Vermont Water Quality Standards.

Field 99A

1. Groundwater Quality

The following is a summary of groundwater quality mean values upgradient and downgradient of Field 99A, based on sampling results from 6 monitoring wells during the period 2010 – 2015.

| Parameter (mg/L) | Non-Application Area | | Land Application Area | | Groundwater Standards | | |
|------------------|----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------|-----------------|
| | Up Mean ¹ | Down Mean ² | Up Mean ³ | Down Mean ⁴ | ES ⁵ | PAL ⁶ | IP ⁷ |
| TDS | 164 | 93 | 66 | 74 | 500 | 250 | - |
| TKN | 0.66 | 0.35 | 0.81 | 0.57 | - | - | - |
| NH3 | 0.11 | 0.06 | 0.09 | 0.09 | - | - | - |
| NO2/NO3 | 0.11 | 0.05 | 0.04 | 0.05 | 10 | 5 | - |
| TP | 2.3 | 1.43 | 2.48 | 1.98 | - | - | - |
| TDP | 0.015 | 0.011 | 0.009 | 0.008 | - | - | - |
| Na | 10 | 4.2 | 7.1 | 5.0 | - | - | +10 |
| Cl- | 3.1 | 2.5 | 4.2 | 3.2 | 250 | 125 | - |
| pH (S.U.) | 7.28 | 6.87 | 6.47 | 6.48 | - | - | +1 |

Notes:

1. Upgradient monitoring well: MW-992 (18 samples)
2. Downgradient monitoring wells: MW-993 (11 samples) and MW-994 (24 samples)
3. Upgradient monitoring well: MW-991 (11 samples)
4. Downgradient monitoring wells: MW-995 (19 samples) and MW-996 (15 samples)
5. Enforcement Standards
6. Preventative Action Limits
7. Indicator Parameter

From October 1, 2010 – September 30, 2015, 248,000 gallons of washwater was applied to Field 99A. This equates to an average annual application rate of 49,600 gallons per year. Based on 2010 - 2015 washwater sampling results, an average of 24 pounds of total phosphorus and 110 pounds of total nitrogen was applied to this field annually.

For Field 99A, monitoring began in 2006. Both downgradient monitoring wells MW-995 and MW-996 exhibit slightly higher concentrations of total dissolved solids compared to the upgradient monitoring well MW-991 and all the monitoring wells (MW-992, MW-993 and MW-994) in the non-land application area of Field 99A. No increase is noted for ammonia, total kjeldahl nitrogen, nitrite/nitrate nitrogen, total phosphorus, total dissolved phosphorus, sodium, chloride and pH in the downgradient monitoring wells compared to all the other wells in Field 99A.

While concentrations of total dissolved solids are slightly elevated downgradient of the land application area, all of the 2010 – 2015 groundwater results were well below Groundwater Protection Rule and Strategy’s Enforcement Standards and Preventative Action Limits.

2. Surface Water Quality

The following is a summary of surface water quality mean values for Flagg Brook upstream and downstream of the land applied area of Field 99A, based on 24 sampling events during the period 2010 – 2015.

| Parameter (mg/L) | Upstream Mean | Downstream Mean | Water Quality Standards (mg/L) |
|--|---------------|-----------------|--------------------------------|
| Total Kjeldahl Nitrogen | 0.57 | 0.48 | - |
| Ammonia Nitrogen | 0.12 | 0.14 | EPA April 2013 criteria |
| Nitrate Nitrogen | 0.07 | 0.09 | 5.0 max |
| Total Phosphorus | 0.019 | 0.009 | 0.012 max. |
| Total Dissolved Phosphorus | 0.021 | 0.007 | - |
| Sodium | 1.6 | 1.8 | - |
| Chloride | 2.5 | 2.5 | 230 |
| Total Alkalinity (as CaCO ₃) | 40 | 41 | - |
| Dissolved Oxygen | 7.15 | 8.63 | 6.0 mg/L min. cold water |
| pH (S.U.) | 6.90 | 6.91 | within 6.5 – 8.5 S.U. |

Monitoring of the receiving stream, Flagg Brook, upstream and downstream of Field 99A, indicates that the land application of dairy processing wastewater, even when combined with farming activities, reveals that the average downstream concentration of most parameters are unchanged or less than the upstream concentrations. The results do show a slight increase in nitrate nitrogen at the downstream location, which may be due to the conversion of ammonia nitrogen to nitrate-nitrogen on the farm fields and its transport as nitrate to the stream. One

ammonia result may have approached or exceeded the EPA's chronic criteria, but the pH probe was not working the day of sampling, so the chronic value cannot be calculated. Flagg Brook is classified as a small high gradient stream, although not biologically, so the total phosphorus criteria is 0.012 mg/L. The average downstream concentration of total phosphorus met this standard, but there were 10 results upstream and 6 results downstream, many on the same dates, that exceeded 0.012 mg/L during the 2010 – 2015 period. For all the other parameters, there were no violations of the Vermont Water Quality Standards.

Chemicals Used

The permittee has notified the Agency on four occasions since March 2011 about changes in chemical usage. One request was withdrawn after the permittee was informed that a permit amendment was necessary.

Attached to the August 2015 Revised Fact Sheet was a list of the chemicals used at the Cabot Creamery facility, including amounts and frequency of use.

FINAL ACTION:

This December 2015 Revised Fact Sheet is being issued with the final indirect discharge permit with all of the 2015 polished permeate, dairy processing wastewater, groundwater and surface water data incorporated into all the discharge and water quality summaries included herein. The previous fact sheets issued for this permit renewal relied on 2010 – 2014 data.