GROUND WATER DISCHARGE PERMIT UGW05004
AMENDED STATEMENT OF BASIS

Schreiber Foods, Inc. Cheese Plant
Amalga, Utah

February 13, 2013

Facility Description

Schreiber Foods, Inc. (Schreiber) operates a cheese manufacturing plant at 2180 West 6550 North in Amalga, Utah. Wastewater from the cheese plant is discharged via underground piping to a lagoon treatment system about 1.25 miles west of the plant in The Barrens area. The Barrens encompasses about 5,000 acres of wetlands, alkali mudflats, scrub grasslands, and grain fields situated in the middle of the Cache Valley. Soil surveys completed in 1913 identified over 1,500 acres of wetlands in The Barrens consisting of springs, open water, marsh, and extensive alkali mudflats. The Barrens drains into Clay Slough, which flows south into Cutler Reservoir on the Bear River.

Land Application Areas
Currently, treated wastewater is pumped from Cell 4 of the lagoon system and applied to two separate land application sites using wheel-line spray irrigation systems. The 110-acre land application site is located in Section 23, Township 13 North, Rangel West, Salt Lake Base Meridian, and is adjacent to the Schreiber wastewater treatment lagoons on the north and west. The 110-acre site is owned by Schreiber and is leased to Mr. Todd Ballard for crop production of alfalfa and wheat. The 110-acre site slopes very gradually to the west-southwest and has an elevation of approximately 4,418 feet. The 160-acre land application site is located in Section 26, Township 13 North, Range 1 West, Salt Lake Base Meridian, and is southwest of the Schreiber wastewater treatment lagoons. The 160-acre site is owned and farmed by Mr. Earl Lindley's family for crop production or alfalfa, barley, oat, and wheat. The 160-acre site slopes very gradually to the west-northwest and has an elevation of 4,415 feet.

The amount of wastewater applied annually to each land application site is determined by a nutrient management plan prepared for each area using crop nutrient uptake rates, average annual crop yields, wastewater quality, and soil and ground water monitoring results (STS, 2005; BIO-WEST, Inc., 2006). In addition, Schreiber submits annual reports for each land application area in accordance with the nutrient management plans. For the 2012 irrigation season, a total of 12,692,593 gallons of wastewater will need to be applied to 25 acres of crop for irrigation of the 110-acre site. Based on past irrigation trends, irrigation will take place over a 60-day period on the 110-acre sand application site, which equals an average daily discharge volume of 211,543 gallons. This represents the maximum amount of wastewater that would be applied to the site on any single day. Calculations in the nutrient management plan show that 25 acres of soil on the 110-acre land application site are capable of absorbing 232,968 gallons a day (STS, 2005).

For the 2012 irrigation season, a total of 50,815,095 gallons of wastewater will need to be applied to 125 acres of crop for irrigation of the 160-acre site. Based on past irrigation trends, irrigation will take place over a 70-day period, which equals an average daily discharge volume of 725,929 gallons during the irrigation season. Calculations in the nutrient management plan for the 160-acre land application site show that the soil is capable of absorbing 6,256,366 gallons a day (BIO-WEST, 2006). The BIO-WEST wastewater application database summary for the land application sites is provided in Tables A and B of Attachment 3 of the ground water discharge permit application.

<u>Proposed Upland Evaporation Wetland Area</u>
Schreiber proposes to construct three evaporation wetland areas (North, Middle, and South) on the southern 75 acres of the 110-acre land application site to provide additional wastewater storage and disposal through evaporation and infiltration. A wetland delineation conducted by BIO-WEST indicates that 35.2 acres of the 75 acres is naturally occurring wetlands. Earthen dikes will be constructed around the perimeter of each natural wetland area to prevent any wastewater from entering the natural wetlands or being discharged into any surface water. Approximately 39.8 acres of upland area will be flooded to an average depth of approximately one foot using treated wastewater from Cell 4 of the lagoon treatment system. Wastewater will be pumped from Cell 4 into the evaporation wetlands using an existing 4-inch sprinkler line with risers. An initial discharge of 12,968,870 gallons of wastewater will fill the evaporation wetlands to an average depth of one foot. Based on the average annual evapotranspiration rates calculated by BIO-WEST for the lagoons, the evaporation wetlands will lose approximately 121,769 gallons of wastewater to evapotranspiration daily, and approximately 44,445,785 gallons to evapotranspiration annually.

Wastewater Quality

Currently, treated wastewater is pumped from Cell 4 of the lagoon system and spray irrigated on the 110-acre and 160-acre land application sites. The evaporation wetland area will only receive wastewater from Cell 4. Wastewater from Cell 4 is sampled monthly during the irrigation season as specified in the current nutrient management plans. Each sample is analyzed for biological oxygen demand, total suspended solids, total dissolved solids (TDS), nitrate + nitrite as N, total Kjeldahl nitrogen, total phosphorus, and pH. Table 1 summarizes 2011 wastewater analytical results from Cell 4.

Table 1
Cell 4 Wastewater Analytical Results
All units in milligrams per liter except pH

Sample Date	pH	BOD	Nitrate + Nitrite as N	TKN	TP	TDS	TSS
7/13/11	8.72	25	<0.1	21	12	1,840	56.7
9/02/11	9.41	20	0.2	22	12	1,920	54.7
9/28/11	9.01	121	2.2	28	13	2,220	263

BOD Biological oxygen demand
TDS Total dissolved solids
TKN Total Kjeldahl nitrogen
TP Total phosphorus

Hydrogeology

Regional Hydrogeology

Cache Valley is a 70-mile by 25-mile mountain valley straddling the Utah-Idaho border and was the bed of ancient Lake Bonneville during Pleistocene time. Cache Valley is filled with alluvial fan and pluvial lake deposits and is bordered by the Bear River Range to the east and the Wellsville Range, Junction Hills, and Malad Range to the west (Hintze, 1988). The Schreiber property is covered by Holocene to Uppermost Pleistocene sedimentary deposits of silt, clay, and minor sand from alluvial (flowing water), lacustrine (lake), or paludal (marsh) processes younger than Lake Bonneville deposits (Solomon, 1999). These younger deposits commonly overlay, grade into, and consist of older reworked Lake Bonneville deposits. Typical thickness of these fine-grained deposits is three (3) to 10 feet (Solomon, 1999). The underlying Lake Bonneville sediments consist of silt, clay, and minor fine-grained sand. The estimated maximum thickness of this layer is approximately 50 feet (Solomon, 1999). Underlying the Lake Bonneville sediments are 600 to over 1,000 feet of fluvial and lacustrine sediments (Robinson, 1999). These deposits consist mostly of silt and clay, but do contain some layers of sand and fine gravel (Robinson, 1999). These sediments contain the major aquifers of the Cache Valley (Bjorkland and McGreevy, 1971).

Bjorkland and McGreevy (1971) indicate that groundwater occurs in confined, perched, and unconfined aquifers in Cache Valley. The confined portion of the principal aquifer is typically overlain by a shallow unconfined aquifer (Bjorkland and McGreevy, 1971). Robinson (1999) identified eight distinct hydrostratigraphic units within Cache Valley, four of which are important to this investigation. The upper confining layer, identified as B-l, is an aquitard composed primarily of clay, silt, and sand of Lake Bonneville deposits less than 100 feet thick. Underlying the B-1 aquitard is the upper confined aquifer (A-1), which is about 30 feet thick and composed of gravel to cobbles interbedded with sand and silt with discontinuous clay lenses. Water from this aquifer is typically high in iron and not used for domestic supply. The third underlying layer is the lower confining layer, (B-2), which is an aquitard approximately 30 feet thick composed of thickly bedded clay and thin gravel lenses near the valley margins (Robinson, 1999). Underlying B-2 aquitard is the lower confined aquifer (A-2), which is up to 1,340 feet thick and composed of gravel and sand with discontinuous silt and clay lenses. Ground water from this aquifer is typically good, and this layer is the major aquifer in Cache Valley (Robinson, 1999) usually identified as the principal aquifer.

Anderson and others (1994), Kariya and others (1994), and Bjorkland and McGreevy (1971) indicate that ground water flow in the principal aquifer near the subject properties is to the southwest. This flow direction matches the overall topography in the area. Recharge occurs from infiltration of precipitation, seepage from streams, and subsurface inflow from both consolidated and unconsolidated deposits. Recharge occurs mainly as runoff from the adjacent mountains infiltrates into the coarse unconsolidated deposits (i.e., alluvial fans) at the margins of the valley (Kariya and others, 1994). Anderson and others (1994) show the subject property is located within a discharge zone of the principal aquifer.

Local Hydrogeology

There is scant information published for the shallow, unconfined aquifer in Cache Valley. This aquifer may be comprised of the B-l aquitard of Robinson (1999) or younger post-Lake Bonneville deposits. Based on numerous wells drilled in the shallow unconfined aquifer in Cache Valley, the direction of ground water flow typically follows the topographic gradient of the land surface and the flow direction in the principal aquifer. Based on water levels measured in site monitoring wells in June 2012, depth to ground water ranges from 2.76 to 4.92 feet below ground surface. Based on a ground water elevation map provided in Figure 3 of the August 20, 2012 Hydrogeological Investigation report, ground water flows toward the west-southwest.

Based on soil classification samples collected during monitoring well installations on the 160-acre land application site, sediments in the area are composed primarily of clay and silt. The typical porosity of silt ranges from 35 to 50% and the porosity of clay ranges from 33 to 60% (Fetter, 1994). However, the hydraulic conductivity of clay ranges from 10^{-9} to 10^{-6} centimeters per second (cm/s) and the hydraulic conductivity of silt ranges from 10^{-6} to 10^{-4} cm/s (Fetter, 1994).

Robinson (1999) considered the B-l layer to be a very low-permeability aquitard. Because of the very low permeability of this aquitard layer, there is probably little to no hydraulic connection between the shallow, unconfined aquifer in the area and the deeper aquifers. If there is a connection between the shallow, unconfined aquifer and the deeper aquifers, it is probably an upward flow of ground water from the deeper aquifers to the shallow, unconfined aquifer due to its location within the regional ground water discharge area. This is supported by numerous flowing wells and springs in this area.

The proposed evaporation wetlands are expected to contribute very little infiltration to ground water based on the clay-rich lithology of the subsurface. Recently, monitoring wells have been installed on the perimeter of the proposed evaporation wetlands to monitor changes in ground water levels after water is added to the wetlands. Based on the results of slug tests in these wells, infiltration will be extremely low with a hydraulic conductivity on the order of 1×10^{-7} to 1×10^{-8} centimeters per second. These recent aquifer tests show a much lower infiltration rate than published by Brown and Caldwell in 2004. The recent slug test data indicate that approximately five gallons of water per day would migrate from the perimeter of the evaporation wetlands. The calculated horizontal ground water velocity is 0.06 feet per year. Based on these data, significant changes to ground water levels are not expected to occur in agricultural fields adjacent to the evaporation wetlands.

Ground Water Quality

Deep Aquifer

Ground water in the deep confined principal aquifer for most of Cache Valley has TDS concentrations below 500 milligrams per liter (mg/L). Ground water in the deep confined principal aquifer in the northwestern part of Cache Valley has TDS concentrations between 500 and 750 mg/L, and the area southwest of Amalga has ground water TDS concentrations between 750 and 1,000 mg/L (Lowe and others, 1994). Robinson (1999) identified TDS concentrations as high as 1,200 mg/L in the deep confined principal aquifer near The Barrens. The deep confined principal aquifer is protected from surface contaminants by the thick clay-rich confining layer and the corresponding upward vertical hydraulic gradient.

Shallow Aquifer Pre-Operational Ground Water Quality

BIO-WEST could not locate published information on typical TDS concentrations in the shallow unconfined aquifer in the area. However, as shown in Tables 2 and 3 below, BIO-WEST has documented pre-land application concentrations for pH, TDS, and nutrients in 2006.

Table 2
Pre-Operational Ground Water Quality for the 110-Acre Land Application Site
October 12, 2006

All units in milligrams per liter except pH

Well	pH	Nitrate + Nitrite as N	TKN	TP	TDS
MW-1	7.79	1.40	2.80	0.740	12,000
MW-2	7.19	0.1	4.8	0.130	39,000

TDS Total dissolved solids
TKN Total Kjeldahl nitrogen
TP Total phosphorus

Table 3
Pre-Operational Ground Water Quality for the 160-Acre Land Application Site
March 22, 2006

All units in milligrams per liter except pH

Well	pH	Nitrate + Nitrite as N	TKN	TP	TDS
MW-1	7.61	0.014	16.0	0.280	8,500
MW-2	7.48	0.025	13.0	0.210	3,300
MW-3	7.47	0.014	10.0	0.098	2,500

TDS Total dissolved solids
TKN Total Kjeldahl nitrogen
TP Total phosphorus

As shown in Tables 2 and 3 above, pre-operational TDS concentrations ranged from 12,000 to 39,000 mg/L on the 110-acre land application site, and up to 8,500 mg/L in monitoring well MW-1 on the 160-acre site. Pre-operational ground water concentrations for TKN ranged from 2.80 to 4.8 mg/L on the 110-acre land application site and from 10 to 16 mg/L on the 160-acre land application site. Nitrate + nitrite as N was very low on both sites and ranged over two orders of magnitude from 0.014 to 1.40 mg/L. Although there is no ground water quality standard for phosphorus, total phosphorus concentrations ranged from about 0.1 mg/L to 0.7 mg/L across both land application sites.

110-Acre Land Application Site

Recent ground water quality data for the 110-acre area are summarized in Table 4 below. Data collected from monitoring wells MW-1 and MW-2 indicate that TDS increased slightly but did not change the pre-existing concentrations that were already well above the Class IV Saline Ground Water threshold of 10,000 mg/L. Monitoring wells MW-3 through MW-8 were recently installed in April 2012 for the proposed evaporation wetland area. It is interesting to note that TDS concentrations are lowest in the two wells closest to the wastewater lagoons (MW-7 and MW-8). The other four new wells have TDS concentrations well over the Class IV TDS threshold of 10,000 mg/L. This suggests that seepage from the lagoons is diluting the naturally elevated TDS concentrations in the shallow aquifer. Based on a comparison of TKN, nitrate/nitrite, and total phosphorus data, nutrient concentrations have not increased significantly in ground water between 2006 and 2011. Although nitrate/nitrite increased from 1.40 to 5.72 mg/L in MW-1, total phosphorus concentrations decreased from 0.740 mg/L to 0.450 mg/L in MW-1, and from 0.130 mg/L to 0.066 mg/L in MW-2.

Table 4
Ground Water Quality for the 110-Acre Land Application Site
October 18, 2011 and April 3, 2012
All units in milligrams per liter except pH

Well	pH	Nitrate + Nitrite as N	TKN	TP	TDS
MW-1[(a)]	7.64	5.72	6.16	0.450	13,700
MW-2[(a)]	7.10	<0.01	5.78	0.066	42,000
MW-3[(b)]	7.52	0.0694	6.24	0.229	25,700
MW-4[(b)]	8.07	0.9950	4.59	0.248	14,200
MW-5[(b)]	8.08	1.9800	2.88	1.480	11,000
MW-6[(b)]	8.29	0.2710	3.31	1.210	11,800
MW-7[(b)]	8.11	0.7820	3.79	0.962	7,780
MW-8[(b)]	7.97	0.0842	2.84	1.030	3,060

(a) Sampled on October 18, 2011
(b) Sampled on April 3, 2012

160-Acre Land Application Site

Recent ground water quality data for the 160-acre area are summarized in Table 5 below. Although TDS concentrations have increased significantly since 2006 in monitoring wells MW-2 and MW-3, TDS concentrations have decreased in MW-1. Similarly, nitrate/nitrite concentrations have increased slightly in MW-2 and MW-3, but have decreased slightly in MW-1, and TKN concentrations have stayed relatively the same. Total phosphorus concentrations have increased but are still below 1.5 mg/L in all three wells. There is no EPA or Utah ground water quality standard for phosphorus.

Table 5
Ground Water Quality for the 160-Acre Land Application Site
October 18, 2011
All units in milligrams per liter except pH

Well	pH	Nitrate + Nitrite as N	TKN	TP	TDS
MW-1	7.43	<0.010	17.3	1.410	7,500
MW-2	7.55	0.302	16.0	0.424	10,000
MW-3	7.62	0.257	10.9	0.497	9,200

TDS Total dissolved solids
TKN Total Kjeldahl nitrogen
TP Total phosphorus

Ground Water Quality Class
The uppermost shallow ground water at the site is naturally high in TDS. In accordance with UAC R317-6-3.5, ground water in the 110-acre land application area is Class IV Saline Ground Water and ground water in the 160-acre land application area ranges from Class III Limited Use Ground Water Class IV Saline Ground Water.

As required in Part I.G.2 of the permit, an accelerated background monitoring program will be completed by Schreiber to collect data for calculating well-specific background ground water quality concentrations. After securing Director approval for the Accelerated Background Monitoring Report, background concentrations will be adjusted in accordance with the reopener provision in Part IV.N.2 of the permit.

Protection Levels
In accordance with UAC R317-6-4.5, Class IV Saline Ground Water will be established to protect human health and the environment at the discretion of the Director.

Compliance Monitoring Program
Based on the ground water velocity calculations provided in Table 8, compliance monitoring will commence on an annual frequency when use of the evaporation wetlands is approved. The following parameters were selected for compliance monitoring:

- Ammonia as N,
- Chloride,
- Nitrate + nitrite as N,
- Total dissolved phosphorus,
- TDS, and
- Total phosphorous.

In addition, samples will be analyzed for the following major ions: bicarbonate, carbonate, calcium, magnesium, potassium, and sodium.

Surface Water

The Amalga Barrens encompasses about 5,000 acres of wetlands, alkali mudflats, scrub grasslands, and grain fields situated in the middle of the ground water discharge area of Cache Valley. Soil surveys completed in 1913 identified over 1,500 acres of wetlands in the Barrens area, consisting of springs, open water, marsh, and extensive alkali mudflats. The Barrens area drains into the ephemeral flowing Clay Slough, which flows south into Cutler Reservoir. The shallow, unconfined aquifer is probably hydraulically connected to surface waters in the area. Recharge of the shallow, unconfined aquifer in the area occurs primarily from infiltration of precipitation and unconsumed irrigation water and seepage from canals and streams (Kariya and others, 1994).

A surface water sample was collected from the natural wetland area located on the southern portion of the 110-acre land application property. The sample was analyzed for TDS, TKN, nitrate + nitrite as N, and total phosphorus. Analytical results are summarized in Table 6 below.

Table 6
Surface Water Quality for the 110-Acre Land Application Site
April 3, 2011
All units in milligrams per liter except pH

BOD	pH	Nitrate + Nitrite as N	TKN	TP	TDS
<5.0	8.16	0.0169	3.85	3.81	2,720

TDS Total dissolved solids
TKN Total Kjeldahl nitrogen
TP Total phosphorus

Total Maximum Daily Load for Cutler Reservoir

A total maximum daily load (TMDL) study was completed for Cutler Reservoir in February 2010 (SWCA Environmental Consultants, 2010). Based on the results of the TMDL study, total phosphorus was listed as a pollutant of concern for Cutler Reservoir with associated low dissolved oxygen as a consequence of nutrient loading. The total phosphorus load distribution to the northern Cutler reservoir from Clay Slough was reported as 4% in summer and 3% in winter. Although no site specific data were provided, the TMDL indicated that nonpoint sources in Clay Slough include runoff from land application of wastewater by Schreiber Foods. The TMDL report also indicated that the average annual phosphorus load reduction for the total Clay Slough drainage is 30%. As shown in Table 7 below, a 34.7% TP reduction in Cell 4 has occurred since 2009.

Table 7
Cell 4 Wastewater Outlet Total Phosphorus (TP) Concentrations

Sample Date	TP (mg/l)	
7/27/06	18.6	
8/24/06	17.26	
5/1/07	21.90	
6/26/07	23.8	
7/25/07	27.3	
8/23/07	25	
9/27/07	19.2	
6/30/08	21.6	
7/17/08	24	
8/28/08	21.3	
9/17/08	17.3	
7/16/09	23.5	
8/27/09	14.5	**2006-2009 average = 21.2 mg/l**
6/25/10	14.9	
7/29/10	17	
8/31/10	14	
7/13/11	12	
9/2/11	12	
9/28/11	13	**2010-2011 average = 13.8 mg/l or a 34.7% reduction**

Discharge Control

The proposed evaporation wetlands are designed to provide additional wastewater storage while preventing any impacts to ground water, surface water, or wetlands. Earthen dikes will be constructed on the perimeter of each natural wetland area to prevent wastewater from entering the natural wetlands or being discharged to any surface water. Based on the average annual wastewater lagoons evapotranspiration rate calculated by BIO-WEST and the seepage rates for the lagoons, approximately 130,415 gallons of wastewater will be added to the evaporation wetland area daily to maintain an approximate one-foot water level. The earthen perimeter dikes will be constructed from native material excavated at the project site and will be two feet high and 10 feet wide with a hydraulic conductivity less than or equal to 1.0×10^{-7} cm/sec. Schreiber has submitted engineering design plans and specifications to DWQ for construction of the dikes. After DWQ has reviewed and approved these plans, the Director will issue a Construction Permit for the dikes.

The area is covered by a layer of Holocene to Uppermost Pleistocene sedimentary deposits of silt, clay, and minor sand from alluvial, lacustrine, or paludal processes younger than Lake Bonneville deposits (Solomon, 1999). These younger deposits are typically three to 10 feet thick, and overlay, grade into, or and consist of older reworked Lake Bonneville deposits. This is demonstrated by the boring logs of the monitoring wells, which shows the entire lithology to be composed entirely of fat impermeable clay. The underlying Lake Bonneville sediments consist of silt, clay, and minor fine-grained sand approximately 50 feet thick. This clay-rich low-permeability Lake Bonneville sediment layer will act as a liner for the proposed evaporation wetland areas. Because of the impermeability of this layer, there is little to no hydraulic connection between the shallow unconfined aquifer and the deeper confined aquifers. If there is any connection between the shallow and deep aquifers, it would be the upward flow of ground water from the deep confined aquifers into the shallow unconfined aquifer. This is demonstrated by the numerous springs and flowing wells in the Amalga Barrens area.

BIO-WEST estimated the rate of ground water flow from the proposed evaporation wetlands to the adjacent natural wetlands using the average linear velocity equation, which is a derivative of Darcy's Law: $V=Ki/n_e$

where: V = ground water velocity in feet per year
K = hydraulic conductivity in feet per day
i = hydraulic gradient
n_e = effective porosity in percent.

Ground water velocities were calculated for a 20-foot flow path for four different flow scenarios; three utilized literature values of hydraulic conductivity, and one scenario used site-specific hydraulic conductivity measured in the field from slug tests. The hydraulic gradient was calculated based on site-specific data, and the effective porosity was based on published literature for the upper range of silty clay (McWorter and Sunada, 1977). Table 8 below summarizes the results of the average linear velocity calculations.

Table 8
Average Linear Ground Water Velocity and Travel Time Calculations

Aquifer Lithology	K (ft/day)	i (ft/ft)	n_e (%)	Velocity (ft/yr)	20-ft Travel Time (yrs)
Silty Clay, High K	0.001	0.1025	18	0.000569	96.2
Silty Clay, Med K	0.00032	0.1025	18	0.065727	304.3
Silty Clay, Low K	0.0001	0.1025	18	0.020785	962.2
Site Measured K	0.00027	0.1025	18	0.055495	360.4

These travel times are the fastest possible ground water travel times from the evaporation wetlands to the natural wetlands since the majority of the proposed evaporation wetlands are located further than 20 feet from natural wetlands containing surface water. Based on the large travel time, the proposed evaporation wetlands would have a negligible impact on the adjacent natural wetlands, and therefore would not affect Cutler Reservoir.

In addition to the dikes, Schreiber will monitor and adjust the irrigation spray nozzles accordingly to prevent any direct application onto wetland surface waters that discharge into Clay Slough.

Compliance Monitoring

Compliance monitoring will be conducted annually using the 8 monitoring wells at the project site. Protection levels will be established after the completion of the accelerated background monitoring program described below.

Compliance Schedule

<u>Accelerated Background Ground Water Monitoring Report</u>
Schreiber shall submit an accelerated background ground water monitoring report for Director approval 60 days after the accelerated background monitoring program has been completed in accordance with the following requirements:

a) At least eight (8) samples will be collected for each compliance monitoring well and parameter over a one year period at a quarterly sampling frequency utilizing the procedures outlined in the approved Sampling and Analysis Plan.

b) Each sampling event will include independent grab samples for each compliance monitoring well.

c) Samples will be analyzed for all parameters listed in Part I.G.1 of the permit.

d) All data for each well and parameter will be validated and the following statistical calculations will be performed and reported:

- Mean concentration,
- Standard deviation, and
- Mean concentration plus 2 standard deviations.

Permit Application Documents and References

The following documents are considered part of the ground water quality discharge permit application and will be kept as part of the administrative file.

1. Schreiber Foods, Inc. Groundwater Discharge Permit Application, March 14, 2012, prepared and submitted by BIO-WEST, Inc. (DWQ-2012-001395).

2. Schreiber Foods, Inc. Proposed Evaporation Wetlands Predesign Report, March 21, 2012, prepared and submitted by BIO-WEST, Inc. (DWQ-2012-001379).

3. Schreiber Foods, Inc. Groundwater Discharge Permit Application Completeness Review Comments Response Letter, May 14, 2012, prepared and submitted by BIO-WEST, Inc. (DWQ-2012-001719).

4. Public Comments submitted to DWQ by Sidney J. Hansen, David Hansen, Douglas Hansen, and Paul Hansen on July 16, 2012 regarding draft Ground Water Discharge Permit UGW050004 for the Schreiber Foods, Inc. proposed evaporation wetlands, Amalga, Utah (DWQ-2012-002341).

5. Schreiber Foods, Inc., Construction Permit application, August 7, 2012, prepared by Cartwright Engineers and submitted by BIO-WEST, Inc. (DWQ-2012-002596).

6. Schreiber Foods, Inc. Hydrogeological Investigation of the Shallow Aquifer at the Proposed Schreiber Wastewater Wetland Land Application Site, August 10, 2012, prepared and submitted by BIO-WEST, Inc. (DWQ-2012-002631).

7. DWQ Response to Hansen Comments on draft Ground Water Discharge Permit UGW050004 for the Schreiber Foods, Inc. proposed evaporation wetlands, Amalga, Utah (DWQ-2012-002605), August 15, 2012.

8. Schreiber Foods, Inc. Response to Construction Permit Letter on Schreiber Foods, Inc. Upland Evaporation Wetlands (DWQ-2012-003685), November 5, 2012.

9. SWCA Environmental Consultants, 2010. Middle Bear River and Cutler Reservoir Total Maximum Daily Load, February 2010.

10. BIO-WEST, Inc., 2006. Land Application/Nutrient Management Plan, Schreiber Foods Cheese Plant 160-acre land application site, Earl Lindley property on 6200 North Street, Smithfield, Utah, 12 p.

11. STS Consultants, Ltd., 2005. Wastewater Irrigation System Nutrient Management Plan (110-acre property), Smithfield, Utah, 6 p.