

STATEMENT OF BASIS

Applicant: City of Aberdeen
Permit Number: SDL020702
Contact Person: Mike Levsen, Mayor
Peter Hesla, Wastewater Superintendent
123 S. Lincoln St.
Aberdeen, SD 57401-4215
Phone: (605) 626-7025 (City Hall)
(605) 626-7099 (Wastewater Plant)
Permit Type: Biosolids Management Permit – Renewal

DESCRIPTION OF OPERATIONS

The city of Aberdeen operates a mechanical wastewater treatment facility (WWTF), which began operation in 1987 and serves a population of about 26,091 (2010 census). The treatment facility is located at 700 SE 135th Street, which is about one mile south of the city in the Northeast ¼ of Section 36, Township 123 North, Range 64 West, in Brown County, South Dakota (Latitude 45.428581°, Longitude -98.478499° - Navigational Quality GPS).

The WWTF has an average design flow of 4.5 million gallons per day (MGD), and a peak design flow of 8.0 MGD. Both primary and secondary treatment are provided and consist of the following processes: flow equalization, pretreatment, primary clarification, activated biofiltration, conventional activated sludge, final clarification, ultraviolet (UV) disinfection, sludge digestion, and land application of sludge.

The flow equalization system consists of a lined, mechanically mixed basin with a working capacity of 1.2 million gallons. To prevent hydraulic overload, a flow gate, located in the pretreatment building, allows only the peak design flow as the maximum flow rate through the WWTF. Any water in excess of the allowable flow is diverted to the equalization basin. This basin is also used when the city is notified of a slug load or accidental discharge by an industrial contributor. In addition to the aerated equalization basin, two shallow earthen lagoons, with surface areas of 13 and 9 acres, can provide an additional 35 million gallons of equalization volume.

Pretreatment units consist of three screw pumps, a mechanical step-screen, two parallel aerated grit chambers, a comminutor, and a 18-inch Parshall Flume, which is used for flow measurement. Conveyors are provided to deliver grit and screenings to a container for later disposal at the landfill.

Flow continues to the primary treatment system, which consists of two circular primary clarifiers, which are run in parallel. Each clarifier is 75 feet in diameter and has a depth of 8 feet. Solids are separated out and pumped to the anaerobic digestion complex. Any floating solids are skimmed off of the clarifiers, then dewatered and landfilled.

Secondary treatment is provided by a two-stage system using both fixed-film and suspended growth biological systems. Wastewater flows from the primary clarifiers to a biotreatment pumping station, which pumps flow to three plastic media biotreatment filters. Return activated sludge can be mixed

with the flow that is applied to the filters or returned directly to the aeration basins. Following the biotreatment filters, the wastewater is routed to two individual sets of four aeration basins. The capacity of the first set is 1.5 million gallons and the second set is 0.5 million gallons. Flexibility exists to use either set by itself or use both sets in series. In addition, each set of four can be operated in parallel. In the aeration basins, wastewater is mixed to maintain favorable conditions for the growth of activated sludge, which oxidizes the organic wastes. From the aeration basins, flow continues to two final clarifiers, which settle out the sludge that forms from the biological activity. These clarifiers are 90 feet in diameter, with a depth of 12 feet, and are run in parallel. The sludge blanket formed at the bottom of the clarifiers is either pumped to the sludge thickener at the digester complex or returned to the biological process.

From the final clarifiers, wastewater flows into the disinfection process, a Trojan 3000 Plus UV (ultraviolet) system. The UV system has one channel, which currently has two banks of ultraviolet bulbs. The channel has room for an additional bank if needed in the future. Each bank has 80 bulbs and is designed to meet disinfection limits at a UV water clarity transmittance of 50%. The flow is discharged into Moccasin Creek following disinfection.

DESCRIPTION OF BIOSOLIDS TREATMENT AND DISPOSAL

Biosolids treatment consists of a dissolved air flotation (DAF) sludge thickener, a two-stage anaerobic process with two circular digesters operated in series, and a 220,000 gallon holding tank. The primary digester can hold 550,000 gallons and the secondary digester can hold 225,000 gallons. Secondary sludge is thickened through the DAF unit, which separates solids from the liquid portion of the sludge. The supernatant flows to the biological portion of the plant to receive treatment. The thickened secondary sludge is pumped to the anaerobic digester along with the primary sludge. After heating and mixing of the sludge in the primary digester, the sludge is transferred to the secondary digester, where it is stored and concentrated. Any supernatant obtained from the secondary digester is sent to the biological portion of the plant. The holding tank is available for biosolids storage during inclement weather.

The city has approximately 11,000 acres of crop and rangeland available for biosolids application and uses about 400 acres annually. These acreages are broken up into separate parcels and application to each parcel is rotated as needed to ensure appropriate agronomic rates are not exceeded. The city land applied the following amounts of biosolids to these sites:

- 398.3 dry metric tons (dmt) in 2010
- 537.0 dmt in 2009 (increase was due to the facility emptying the holding tanks)
- 381.0 dmt in 2008
- 313.0 dmt in 2007
- 309.45 dmt in 2006
- 275.21 dmt in 2005

The authorization to land apply treated biosolids provided under this permit is limited to those biosolids produced from the treatment works owned and operated by the city of Aberdeen specifically designated as follows.

Outfall Number	Description of Biosolids Sources
201	Biosolids produced at the city of Aberdeen's treatment works are anaerobically digested and then applied to agricultural land.

MONITORING DATA

Chemical

The permittee has been submitting metal analyses as required under the current biosolids permit. As shown in Attachment 1, the facility has not exceeded the ceiling concentration limits or the pollutant concentration limits in the current permit. The city of Aberdeen typically calculates cumulative pollutant loading rates for all of their land application sites. The data shows the facility should meet the metal limits in the proposed permit.

Pathogen Reduction

The city of Aberdeen has been submitting certification statements, and digester time/temperature data in their annual reports as required under the current permit. The city has been meeting the Pathogen Reduction requirements for the generation of a Class B biosolids through Alternative 2 - Biosolids Treated in a Process to Significantly Reduce Pathogens listed in Appendix B of Title 40 of the Code of Federal Regulations (40 CFR) Part 503. The South Dakota Department of Environment and Natural Resources has adopted these federal regulations by reference (a.b.r.) in the Administrative Rules of South Dakota (ARSD) Chapter 74:52:09.

There are several process options to meet there process to significantly reduce pathogens requirements of Alternative 2. The facility meets these requirements through anaerobic digestion. Anaerobic digestion as a process to significantly reduce pathogens requires the biosolids to be treated in the absence of air for a specific mean cell residence time (MCRT) at a specific temperature. Values for the MCRT and temperature shall, at a minimum, be between 35° C - 55° C for 15 days and 20° C for 60 days.

The facility meets this requirement through anaerobic digestion of biosolids for an average of 45 days at temperatures between 34 and 37° C.

Vector Attraction Reduction

The city has been meeting Vector Attraction Reduction requirements through Option 1 listed in 40 CFR Part 503.33(b) (a.b.r. in ARSD Chapter 74:52:09). Option 1 states the facility must have at least 38% reduction in volatile solids content. The city has provided volatile solids reduction information as required in their annual report and averages about 61% volatile solids reduction.

INSPECTIONS

Personnel from SDDENR conducted an inspection of the city of Aberdeen's wastewater treatment facility on June 4, 2010. Biosolids management was evaluated during this inspection. No deficiencies in the city's biosolids handling were noted during that inspection.

BIOSOLIDS LIMITS

Effective immediately and lasting through the life of this permit, all biosolids generated by this facility to be used for land application shall meet the requirements listed below based on 40 CFR 503.13 (a.b.r. in ARSD Chapter 74:52:09) and Best Professional Judgment (BPJ). The city is currently generating Class B Biosolids. **Class B biosolids cannot be sold or given away in bags or other containers or applied on lawns or home gardens.**

Chemical

If the biosolids are to be land applied to agricultural land, forest land, a public contact site, or a reclamation area, the biosolids shall meet at all times:

- 1) The ceiling concentration pollutant limits listed in Table 1 and the cumulative pollutant loadings in Table 2; or
- 2) The ceiling concentration pollutant limits listed in Table 1 and the monthly average pollutant concentrations in Table 3.

If the biosolids do not meet either of the above requirements, the biosolids shall not be land applied.

Chemical Pollutant Limits

<i>Pollutant</i>	<i>Table 1</i>	<i>Table 2</i>	<i>Table 3</i>
	Daily Maximum mg/Kg^{1, 2, 3}	Cumulative Loading Kg/Ha^{1, 4}	Monthly Average mg/Kg^{1, 2, 4, 5}
Total Arsenic	75	41	41
Total Cadmium	85	39	39
Total Copper	4300	1500	1500
Total Lead	840	300	300
Total Mercury	57	17	17
Total Molybdenum	75	N/A	N/A
Total Nickel	420	420	420
Total Selenium	100	100	100
Total Zinc	7500	2800	2800

¹ See definitions in proposed permit.

² All limits are on a dry weight basis and are based on 40 CFR 503.13 (a.b.r. in ARSD Chapter 74:52:09).

³ All biosolids used for land application must meet the ceiling concentrations for pollutants listed in this table.

⁴ If biosolids that exceed Table 3 values are land applied to a site, that site thereafter is subject to the cumulative pollutant loading rates in Table 2.

⁵ These limits represent the maximum allowable levels of pollutants for land application of any biosolids generated by the facility based on an average of all samples taken during a calendar month.

Pathogens – Class B

If the biosolids are to be land applied to agricultural land, forest land, a public contact site, or a reclamation site, the biosolids shall be either Class A or Class B (including the site restrictions) as described below. If the biosolids does not meet Class A or Class B requirements, the biosolids cannot be land applied.

If the biosolids is to be sold or given away in a bag or similar enclosure for application to land or for use on a lawn or home garden it shall be Class A. The permittee is currently generating Class B biosolids as defined by 40 CFR 503.32(b) (a.b.r. in ARSD Chapter 74:52:09). **Class B biosolids cannot be sold or given away in bags or other containers or applied on lawns or home gardens.**

The permittee shall meet either a process requirement or numeric microbiological limit to demonstrate pathogen reduction based on 40 CFR 503.32(b):

- Process requirement: anaerobically digest biosolids between: 15 days at 35°C - 55°C and 60 days at 20°C¹; or
- Microbiological limit of less than 2,000,000 fecal coliform/gram of total solids (based on a geometric mean of 7 representative biosolids samples).

There are additional approved pathogen reduction alternatives available in 40 CFR 503.32 (a.b.r. in ARSD Chapter 74:52:09) for both Class A and Class B biosolids. If the permittee intends to use one of these alternatives, SDDENR must be informed at least 30 days prior to its use. ***This change may be made without additional public notice.***

Vector Attraction Reduction

The permittee is required by 40 CFR 503.33 (a.b.r. in ARSD Chapter 74:52:09) to reduce the potential for attracting vectors such as mosquitoes. For land application to agricultural land, forest land, a public contact site or a reclamation area, the biosolids shall meet one of the following alternatives for vector attraction reduction (VAR):

- The mass of volatile solids in the biosolids shall be reduced by a minimum of 38 percent prior to land application; or

¹ For minimum digestion temperatures between 35°C and 20°C, determine the minimum mean cell residence time using the following equation: $\theta = -3T + 120$, where θ is the required minimum mean cell residence time in days ($15 \leq \theta \leq 60$) and T is the minimum temperature (°C) during anaerobic digestion time. For temperatures greater than 35°C, use θ equal to 15 days. The actual mean cell residence time during anaerobic digestion shall be calculated using the appropriate method described in *Environmental Regulations and Technology, Control of Pathogens and Vector Attraction in Sewage Sludge (Including Domestic Septage) Under 40 CFR Part 503*, EPA Publication EPA/625/R-92/013, Revised October 1999 or latest revision thereof. If annual monitoring, sampling is to be performed during the most restrictive time of the year (this is usually during the winter).

- Biosolids applied to the land surface shall be injected into the soil so that no biosolids are present on the land surface after injection.

There are additional approved alternatives for reducing vector attraction available in 40 CFR 503.33 (a.b.r. in ARSD Chapter 74:52:09). If the permittee intends to use one of these alternatives, SDDENR must be informed in writing at least 30 days prior to its use. ***This change may be made without additional public notice.***

Site Restrictions

The permittee shall comply with **all** site restrictions listed below based on 40 CFR 503.32(b) (a.b.r. in ARSD Chapter 74:52:09):

- Food crops with harvested parts that contact the biosolids/soil mixture and are totally above the land surface, such as melons, tomatoes, etc., shall not be harvested for 14 months after application.
- Food crops with harvested parts below the land surface, such as potatoes, onions, etc., shall not be harvested for 20 months after application if the biosolids remain on the land surface for *four months or more* prior to incorporation into the soil or 38 months after application if the biosolids remain on the land surface for *less than four months* prior to incorporation into the soil.
- Other food, fiber, and feed crops, whose edible parts do not touch the surface of the soil, such as apples, corn, soybeans, etc., shall not be harvested from the land within 30 days after application.
- Animals shall not be allowed to graze on the land within 30 days after application.
- Turf grown on land where biosolids are applied shall not be harvested for at least one year after application if the harvested turf is placed on either a lawn, or an area with a high potential for public exposure.
- Public access to land with a high potential for public exposure shall be restricted for one year after application.
- Public access to land with a low potential for public exposure shall be restricted for 30 days after application.

SELF MONITORING REQUIREMENTS

Biosolids Monitoring

40 CFR 503.16(a)(1) (a.b.r. in ARSD Chapter 74:52:09), requires facilities, such as Aberdeen that land apply greater than or equal to 290 dmt, but less than 1,500 dmt of biosolids per year to monitor the biosolids for metals, pathogens, and applicable vector attraction reduction requirements on a **quarterly** basis.

Parameter	Frequency ¹	Reporting Values	Sample Type
Total Arsenic, mg/kg	Quarterly	Actual Value	Composite ²
Total Cadmium, mg/kg	Quarterly	Actual Value	Composite ²
Total Copper, mg/kg	Quarterly	Actual Value	Composite ²
Total Lead, mg/kg	Quarterly	Actual Value	Composite ²
Total Mercury, mg/kg	Quarterly	Actual Value	Composite ²
Total Molybdenum, mg/kg	Quarterly	Actual Value	Composite ²
Total Nickel, mg/kg	Quarterly	Actual Value	Composite ²
Total Selenium, mg/kg	Quarterly	Actual Value	Composite ²
Total Zinc, mg/kg	Quarterly	Actual Value	Composite ²
Total Solids, %	Quarterly, prior to land application	Percent	Grab or Composite
Total volatile solids, raw sludge	Quarterly, prior to land application ³	Percent of Total Solids	Grab
Total volatile solids, digested sludge	Quarterly, prior to land application ³	Percent of Total Solids	Grab
Total volatile solids, % reduction ⁴	Quarterly, prior to land application ³	Percent Reduction	Calculate
pH, s.u.	Quarterly, prior to land application	Actual Value	Instantaneous

¹ Facilities that land apply greater than or equal to 290 dmt, but less than 1,500 dmt of biosolids per year must sample the biosolids at a frequency of once per quarter for the parameters listed. If the city land applies more than 1,500 dmt of biosolids per year, the sampling frequency will increase. ***This change will be made without additional public notice.***

² Subsamples of material shall be taken from several locations and time periods and combined to provide a representative composite sample. The sample shall be analyzed for the specified parameters using the methods approved in 40 CFR 503 (a.b.r. in ARSD Chapter 74:52:09).

³ Sampling for the amount of volatile solids in the raw sludge and the digested sludge is necessary to verify that the sludge meets the requirements for a VAR of at least 38% volatile solids reduction. If a different VAR option is selected, such as incorporation into the soil within 6 hours, this sampling protocol is not applicable.

⁴ If a batch process is used, determine the volatile solids reduction for each batch. If a continuous process is used, determine the volatiles solids reduction for material being put in and withdrawn.

Parameter	Frequency¹	Reporting Values	Sample Type
Ammonia as N, mg/kg	Quarterly, prior to land application ⁵	Actual Value	Grab or Composite
Total Kjeldahl Nitrogen, mg/kg	Quarterly, prior to land application ⁵	Actual Value	Grab or Composite
Organic Nitrogen, mg/kg	Quarterly, prior to land application ⁵	Actual Value	Calculate ⁶
Nitrates as N, mg/kg	Quarterly, prior to land application ⁵	Actual Value	Grab or Composite
Total Phosphorous as P, mg/kg	Quarterly, prior to land application	Actual Value	Grab or Composite
Fecal Coliform, MPN/gram ⁷	Quarterly	Geometric Mean	Grab
Mean cell residence time, days ⁸	Daily	Days Digesting	Calculate
Digester temperature, °C	Continuously or twice daily ⁹	Actual Value	Instantaneous
Total amount of biosolids generated, dry metric tons	Quarterly	Actual Value	Calculate

⁵ The biosolids must be sampled quarterly and analyzed for these parameters if land applying that quarter. These parameters shall be used to calculate an agronomic loading rate. If using a contract hauler, this information must be presented to the contractor so the agronomic rate is not exceeded. The permittee is ultimately responsible for ensuring that any contract haulers comply with the permit requirements.

⁶ Organic nitrogen is the Total Kjeldahl Nitrogen (TKN) less the Ammonia.

⁷ Seven individual representative biosolids samples shall be taken each quarter within a two-week time period and analyzed for fecal coliform bacteria. The sample shall be analyzed using standard method 9221C as required by the EPA Region VIII Biosolids Management Handbook. Fecal coliform monitoring is only required if the microbiological limit is used as the pathogen reduction method.

⁸ Mean cell residence time is only required if the minimum mean cell residence time process requirement is used as the pathogen reduction method.

⁹ Temperature in the digesters must be monitored continuously or at least twice daily, with the readings being taken at least 8 hours apart. A log showing temperature is maintained for a sufficient period of time shall be kept. This frequency shall only be required if the minimum mean cell residence time process requirement is used as a pathogen reduction method.

Soil Sampling

Since the permittee applies biosolids to the land, soil sampling is required for all land application sites. The soil samples shall be taken and analyzed for the parameters listed below.

Parameter	Frequency ¹	Sample Depth	Sample Type
Phosphorus as P, mg/kg ²	Annually	0-6 inches	Composite ³
Shallow Nitrate as N, mg/kg	Annually	0-1 foot and 1-2 feet	Composite ³
Deep Nitrate as N, mg/kg	Annually ⁴	2-5 feet ⁵	Composite ³
pH, s.u.	Annually	Actual Value	Composite ³

¹ Soil samples shall be taken yearly from fields prior to land application. If the field is not being used for biosolids application that calendar year, soil sampling is not required.

² Phosphorus shall be analyzed using either the sodium bicarbonate extraction Olsen method or the AB-DPTA extraction analytical method for soils with a pH greater than 6.5 s.u. or the Bray Kurtz I method for soils with pH less than or equal to 6.5 s.u. as outlined in the 1999 version of the EPA Region VIII Biosolids Management Handbook.

³ A minimum of six representative samples for each 320 (or less) acre area are to be collected, composited, and analyzed.

⁴ At the request of the permittee, SDDENR will evaluate each land application site on a case-by-case basis to determine if the deep nitrate soil monitoring frequency can be reduced to once every five years. SDDENR will evaluate whether or not the site is located over a shallow aquifer or if deep soil monitoring is warranted. This will be done using the published South Dakota Geological Survey county studies, precipitation data, number of years biosolids were applied to the field, irrigation records, hydrologic reports, first occurrence of aquifer materials maps, and well log information located near the fields. ***This change will be made without additional public notice.***

⁵ Samples are to be collected down to either 5 feet or to the confining layer, whichever is shallower. Each foot increment is to be composited with the other samples from the site and one analysis for nitrate is to be conducted for each increment e.g. 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.

BEST MANAGEMENT PRACTICES

The permittee is currently generating a Class B biosolids. Therefore, the facility shall operate and maintain the land application site operations in accordance with the following requirements:

1. Within 180 days of the permit effective date, the permittee shall submit a current Biosolids Management Plan to SDDENR. At a minimum, this plan shall include the elements found in Attachment 2 of the Statement of Basis. After approval of the Biosolids Management Plan by SDDENR, the plan becomes an enforceable part of the permit.

If the permittee would like to add or remove field application sites from its Biosolids Management Plan, it must notify SDDENR in writing at least 30 days prior to the change for site review and approval.

2. Application of biosolids shall be conducted in a manner that will not contaminate groundwater. The Secretary will determine on a case-by-case basis if the land application sites are located over a shallow aquifer. This will be done by using published South Dakota Geological Survey county studies, hydrologic reports, first occurrence of aquifer materials maps, and well log information located near the fields. If the land application site is located over a shallow aquifer, additional deep soil monitoring may be required.
3. There shall be no runoff of biosolids from land application sites. Biosolids shall not be applied to land within 100 feet of waters of the state.
4. Application of biosolids shall not exceed the agronomic rate for available nitrogen of the crops grown on the site. At a minimum, the permittee is required to follow the methods for calculating agronomic rate outlined in the 1999 version of the Region VIII Biosolids Management Handbook (other methods may be approved by SDDENR on a case-by-case basis). The permittee shall notify the applicator of the total nitrogen content (as N on a dry weight basis) in the biosolids.
5. Biosolids shall not be applied to frozen, ice-covered, or snow-covered sites if the slope of the land is greater than six percent.
6. Biosolids shall not be applied to frozen, ice-covered, or snow-covered sites if the slope of the land is between 3 and 6 percent, unless one of the following requirements is met:
 - a) There is 80 percent vegetative ground cover; or
 - b) SDDENR has approved a plan demonstrating adequate runoff containment measures.
7. Biosolids shall not be land applied to sites where the available phosphorous content of the soil exceeds the following levels:
 - a) For soil pH greater than 6.5 s.u.
 1. 100 ppm based on sodium bicarbonate extraction method (e.g. Olsen); or
 2. 50 ppm based on AB-DPTA extraction analytical method;
 - b) For soil pH 6.5 s.u. or less:
 1. 170 ppm based on the Bray P1 extraction method.

The city may request these limits be modified if different limits are justified based on local conditions. The alternative limits are required to be developed in cooperation with the local agricultural extension office or university and must be approved by SDDENR. ***This change may be made without additional public notice.***

8. Biosolids shall not be applied to waters of the state or to any site with standing water.
9. The specified cover crop shall be planted during the next available planting season. If this does not occur, the city shall notify SDDENR in writing. Additional restrictions may be placed on the application of the biosolids on that site on a case-by-case basis to control

nitrate movement. Deep soil monitoring is required and may be increased under the discretion of SDDENR.

10. The biosolids or the application of the biosolids shall not cause or contribute to the harm of a threatened or endangered species or result in the destruction or adverse modification of critical habitat of a threatened or endangered species during or after application.
11. Biosolids shall not be applied on the site when weather and/or soil conditions prohibit proper application procedures.
12. Biosolids shall not be applied to agricultural land, forest, a public contact site, or a reclamation site if any of the cumulative pollutant loading rates have been reached. Prior to land applying biosolids that are subject to the cumulative pollutant loading rates, the permittee must submit a request to SDDENR to apply these biosolids.
13. Prior to land application of biosolids which meet the cumulative pollutant loading rates, the following conditions must be met:
 - a) Determine if biosolids subject to cumulative pollutant loading rates have been applied to the site since July 19, 1993.
 - b) If biosolids have not been applied to the site since July 19, 1993, the biosolids may be applied to the site.
 - c) If biosolids have been applied to the site and the cumulative amount of each pollutant applied to date is known, this can be used to determine if additional amounts can be applied.
 - d) If biosolids have been applied to the site and the cumulative amount of each pollutant applied to date is not known, biosolids shall not be applied to the site.
14. If the permittee applies the biosolids to land not owned by the permittee, the owner or lease holder of the land on which the biosolids is applied shall be provided notice and necessary information to comply with the site restrictions. The permittee is ultimately responsible for ensuring that these site restrictions are followed.
15. If biosolids, or material derived from biosolids such as compost, is to be stockpiled for 30 days or longer, measures must be taken to prevent erosion (by wind or water) from occurring. Best management practices should also be used if stockpiles are used for treatment of biosolids (i.e. composting). If a stockpile used for treatment is considered to have caused a problem, best management practices may be added as a requirement in the next permit renewal.
16. The city shall inspect the application of the biosolids to active sites **daily** when land applying. An inspection notebook shall be kept which includes the following:
 - a) name of inspector;
 - b) date and time of biosolids application,
 - c) weather conditions at time of application and for 24 hours prior to and following application;
 - d) the method used to apply the biosolids;
 - e) observations made; and

- f) the date and nature of any corrective actions required or taken.

In the future, if biosolids generated by the city meets Class A requirements, the city may request SDDENR remove some or all of the management practices. If approved, this change would be made following proper administrative procedures under the reopener provision of the permit.

REQUIRED RECORDKEEPING

The permittee is to retain the following records for at least five years as required in 40 CFR 503.17 (a.b.r. in ARSD Chapter 74:52:09). These recordkeeping requirements are dependent upon the quality of biosolids produced by the permittee. At a minimum, the following records shall be kept:

1. Concentration of: Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc;
2. A description of how the pathogen reduction requirements were met;
3. A description of how the vector attraction reduction requirements were met;
4. A description of how the best management practices were met;
5. A description of how the site restrictions were met;
6. Yearly certification statements for pathogen reduction and vector attraction reduction requirements, best management practices, and site restrictions followed. This statement shall be as follows:

I certify under penalty of law that the pathogen requirements in Part 1.3.2 of the permit, one of the vector attraction reduction alternatives in Part 1.3.3 of the permit, the best management practices in Part 1.5 of the permit, and the site restrictions in Part 1.3.4 of the permit have been met. This determination has been made under my direction and supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements, the vector attraction reduction requirements, the management practices and the site restrictions have been met. I am aware that there are significant penalties for false certification including the possibility of imprisonment.

7. For each land application site where biosolids are land applied during the reporting year the following information shall be maintained:
 - a) Site name;
 - b) Site owner and/or operator;
 - c) Person or entity that applies the biosolids to the land;
 - d) Latitude and longitude of site;
 - e) Street address or Section, Township, and Range;
 - f) Size (hectares);

- g) Crop to be grown or harvested on application site;
- h) Application rate (metric tons/hectare); and
- i) Cumulative pollutant loading rate (Kg/Ha), if applicable.
- j) Cumulative pollutant loading rate certification statement, if applicable.

REPORTING REQUIREMENTS

The permittee is required to monitor, collect, and provide the following information for each reporting year:

1. The total amount of biosolids, in dry metric tons, that is generated by the facility during the reporting year;
2. A summary of any biosolids received from other facilities:
 - a) Summary of total amount of biosolids received, in dry metric tons;
 - b) Summary of amount of biosolids received from each individual facility, in dry metric tons;
 - c) Name of each facility sending biosolids; and
 - d) Location of each facility.
3. A summary of any biosolids sent to other facilities/operations:
 - a) Summary of total amount of biosolids sent to other facilities, in dry metric tons;
 - b) Summary of amount of biosolids sent to each individual facility, in dry metric tons;
 - c) Name of each facility receiving biosolids; and
 - d) Location of each facility.
4. The amount of biosolids, in dry metric tons, placed in storage during the reporting year and the total amount of biosolids already in storage and how long it has been stored.
5. The amount of biosolids land applied during the reporting year.

The city of Aberdeen shall develop an annual biosolids report in accordance with 40 CFR 503.18 (a.b.r. in ARSD Chapter 74:52:09). This report shall include the results of all monitoring performed in accordance with the self-monitoring requirements of the permit, information on best management practices, land application sites, site restrictions, and certifications. This report shall be submitted to SDDENR no later than **February 19th of each year**. Each report is for the previous calendar year.

SPECIAL CONDITIONS ON BIOSOLIDS STORAGE

Permanent storage of biosolids is prohibited. Biosolids shall not be temporarily stored for more than two years. Written permission to store biosolids for more than two years must be obtained from SDDENR. Storage of biosolids for more than two years will only be allowed if it is determined that significant treatment is occurring.

CHANGE IN TREATMENT SYSTEM OR USE/DISPOSAL PRACTICES

The permittee must inform SDDENR at least 180 days prior to any significant change in the biosolids generation and handling processes at the plant and any major change in use/disposal practices. This includes but is not limited to: the addition or removal of biosolids treatment units (e.g. digesters, drying beds, etc.) and/or any other change that would require a modification of the permit (e.g. changing from land application to surface disposal).

ENDANGERED SPECIES

This is a renewal of an existing permit. No listed endangered species are expected to be impacted by activities related to this permit. However, the table below shows the species that may be present in the city of Aberdeen's geographic area.

COUNTY	GROUP	SPECIES	CERTAINTY OF OCCURRENCE
BROWN	BIRD	CURLEW, ESKIMO	EXTREMELY RARE
		CRANE, WHOOPING	KNOWN
	FISH	SHINER, TOPEKA	KNOWN

This information was accessible at the following US Fish and Wildlife Service website as of January 12, 2012: <http://www.fws.gov/southdakotafieldoffice/SpeciesByCounty.pdf>.

PERMIT EXPIRATION

A five-year permit is recommended.

PERMIT CONTACT

Any questions pertaining to this statement of basis can be directed to Tina Piroutek, Engineer II for the Surface Water Quality Program, at (605) 773-3351.

January 12, 2012

Attachment 1 – Metals Monitoring Data

	Arsenic, mg/kg dry	Cadmium, mg/kg dry	Copper, mg/kg dry	Lead, mg/kg dry	Mercury, mg/kg dry	Molybdenum, mg/kg dry	Nickel, mg/kg dry	Selenium, mg/kg dry	Zinc, mg/kg dry
Ceiling Concentrations	75	85	4,300	840	57	75	420	100	7,500
Pollutant Concentrations	41	39	1,500	300	17	N/A	420	36	2,800
03/10/2005	8.45	2.39	742	60.8	1.68	16.7	21.3	10.6	1170
07/21/2005	5.27	2.62	734	86.5	2.62	17.9	16.3	11.0	1140
08/18/2005	5.22	2.92	686	85.0	2.30	18.8	26.0	12.8	1090
12/08/2005	5.34	2.67	827	92.8	1.13	20.2	24.6	12.8	1200
03/27/2006	3.48	2.25	596	61.2	1.12	16.0	25.3	9.66	961
07/13/2006	7.05	2.90	1240	94.5	1.50	16.2	25.6	14.0	1840
10/24/2006	4.71	2.19	695	63.1	2.10	17.6	21.0	9.20	1050
12/30/2006	5.19	2.54	801	63.0	1.10	21.2	22.0	12.6	1130
03/28/2007	5.30	2.43	730	57.3	1.62	19.3	24.3	8.92	1160
06/12/2007	5.64	2.97	774	88.7	2.26	14.2	32.1	14.2	1080
08/08/2007	6.58	2.24	587	67.3	2.55	11.7	28.2	16.1	776
10/10/2007	7.89	2.15	753	70.4	0.90	18.7	27.0	16.7	986
03/12/2008	4.75	1.67	662	62.3	6.86	13.4	21.5	10.7	750
04/29/2008	7.00	1.79	508	48.8	1.25	12.0	21.2	9.75	613
08/27/2008	5.84	1.65	647	66.3	0.99	12.5	25.3	12.0	706
08/27/2008	5.62	1.58	610	72.4	2.57	12.3	24.3	11.1	709
11/03/2008	5.76	1.76	684	70.4	1.63	12.5	29.5	13.4	690
02/04/2009	5.12	1.45	641	43.9	0.81	14.7	26.5	11.8	698
06/17/2009	6.87	1.58	551	95.0	1.90	11.7	27.8	12.1	690
08/26/2009	6.32	1.34	561	69.2	2.18	10.1	28.0	12.8	667
10/29/2009	6.35	1.16	584	53.5	1.22	7.96	28.4	12.8	669
02/23/2010	6.21	1.14	589	46.1	0.46	11.3	26.9	14.2	607
06/01/2010	7.33	1.24	442	62.2	0.80	9.16	32.7	12.0	554
07/13/2010	8.17	1.67	564	71.8	0.82	9.59	32.3	13.6	644
11/01/2010	8.29	1.4	564	67.7	1.95	11.5	31.0	14.1	724

Attachment 2 – Biosolids Management Plan

BIOSOLIDS MANAGEMENT PLAN

The permittee is responsible for the safe land application of biosolids. A Biosolids Management Plan (Plan) must be submitted to SDDENR within 180 days of the permit effective date. The Plan shall include current biosolids practices and a 5-year biosolids operating plan that includes the following elements:

- A. A description of the permittee's biosolids production and any current and known future land application sites. This includes a legal description and GPS coordinates of all fields to be used for land application, the crop to be planted on each field, the number of acres in each field, whether the land is leased or owned by the city and whether the field is irrigated. Land identified or classified as wetlands, lakes, rivers, or streams, farmsteads, tree belts, or other buffer zones that cannot or will not be used for biosolids application shall not be included in the total number of acres available.
- B. A detailed map showing the outline of each field and all buffer zones and separation distances shall be included. Buffer zones to be identified and included are between biosolids application sites and: surface waters, drinking water wells, drainage ditches, property lines, residences, schools, playgrounds, airports, public roadways, and any necessary site-specific buffer zones for current sites; and source of operating procedures (*e.g.*, qualified soils consultant, Soil Conservation Service, State Extension Service) for making annual adjustments and for setting buffer zones for future sites.
- C. A soils map for the land application field(s) and a description of the predominate soil type(s) for each field.
- D. Site management practices relating to, at a minimum: floodplain, slope, depth to ground water, weather conditions, soil conditions (compaction, permeability, saturated, frozen, snow-covered), site access, protection of surface waters, wetlands, endangered species, and wells at current sites.
- E. A list of the counties (and states if applicable) where the permittee may want to market or distribute its biosolids over the life of the permit (5 years minimum). A copy of the Plan must be submitted to the appropriate State Health Department, and should be submitted to the State Extension Service Office in the counties where biosolids may be marketed.
- F. Site selection criteria to be used when identifying new land application sites.
- G. Storage provision or alternate disposal provision for biosolids during periods when biosolids cannot be land applied.
- H. Contingency plans that describe disposal options for any biosolids that do not meet the requirements for land application or exceed storage capacity.
- I. Alternative Pollutant Limits or maximum acceptable annual and total cumulative application rates, expressed as kilograms per hectare (kg/ha), for arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc; any other pollutants regulated by the 40 CFR Part 503 rules (a.b.r. in ARSD Chapter 74:52:09).
- J. Maximum acceptable biosolids application rate to assure that the amount applied does not exceed the nutrient requirements of the particular crop grown on the application site (agronomic rates) for current year crops, and operating procedures (*e.g.*, qualified soils consultant, Soil Conservation Service, State Extension Service) for making annual agronomic rate adjustments and for setting agronomic rates for future sites.

- K. A description of the pathogen treatment, vector attraction control, record keeping, monitoring, certifications, and notifications as required by the permit.
- L. Procedures the permittee intends to use to ensure that biosolids practices and limits outlined in the permit are followed.
- M. Public notice procedures and procedures for advance (at least 30 days) notice to SDDENR of proposed new land application sites.
- N. Procedures or copies of documents specifying procedures (*e.g.*, contracts) that will be used to ensure compliance with this permit and applicable regulations if the permittee contracts with others for assistance to select and/or manage the land application sites.
- O. A statement (*e.g.*, city ordinance) that the permittee will comply with the Biosolids Management Plan, as approved by SDDENR.
- P. A statement that the Plan will be amended to reflect any applicable practices or limits EPA or SDDENR requires.
- Q. A description of the sample collection, preservation and analysis methods used for sampling and monitoring of parameters.
- R. Other nutrient applications to the fields *e.g.* manure, commercial fertilizer.