

**Proposed Project for Application to the Kansas Department of Health and Environment
for the Kansas Water Pollution Control Revolving Loan Fund.**

Applicant: City of Bern
Wastewater Treatment Plant Expansion
Biosolid removal and land application

Contact Person: Donna J. Crawford
Address: Governmental Assistance Services
905 Joseph Drive
Lawrence, KS 66049

Sent to the Kansas Geological Survey for environmental review.

Agency Review Comments:

The loan application indicates that the land application of biosolids from treated wastewater was completed in strict accordance with the rules and regulations of KDHE. Based on the proper application of the biosolids, adverse effects from the application should be offset by the benefits of appropriate disposal of treated wastewater residuals and of the soil amendments, including organic matter and nutrients.

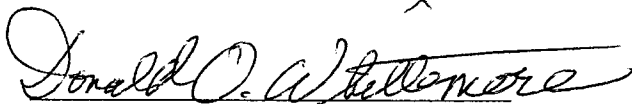
Recommended Action:

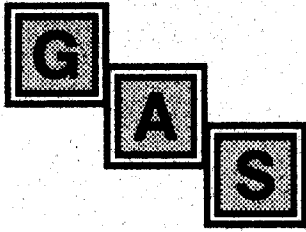
- ☒ Clearance of project should be granted
☐ Clearance of project should not be granted
☐ Clearance of project should be delayed until the issues or questions have been clarified
☐ Clearance of project should not be delayed, but the applicant (in the application) should address or clarify the questions or concerns indicated above

Donald O. Whittemore
Reviewer's Name

Geohydrology Section, Kansas Geological Survey
Division/Agency

3/31/03
Date


Reviewer's Signature



Governmental Assistance Services

905 Joseph Drive

Lawrence, Kansas 66049

785-832-2141 • Fax 785-832-1111

Toll Free 888-832-3335

e-mail: gasdonnaa@aol.com

March 12, 2003

Dr. Lee Allison
Kansas Geological Survey
University of Kansas
1930 Constant Ave. – Campus West
Lawrence, KS 66047

RE: Environmental Review – City of Bern, KS - Sewer Treatment Improvements

Dear Dr. Allison:

The City of Bern, Kansas is applying for a Kansas Water Pollution Control Revolving Loan for the purpose of paying for biosolid removal from Ponds A & B including land application on suitable farmland located adjacent to the lagoon site. All land application was completed in strict accordance to the rules and regulations of KDHE.

The project has been completed but, due to the KDHE requirement, an environmental review must be conducted to acquire the funding. I am attaching a map of the existing lagoons with Nutri-Ject's Log and approval from landowner for land application.

Please submit all your comments to my office at Governmental Assistance Services, 905 Joseph Dr., Lawrence, KS 66049.

If you should have questions, please call my office at 888-832-3335.

Sincerely,

Donna J. Crawford
Project Coordinator

Enc/ Deed
Map
Layout
Topographic Map
Biosolids Loading Log

GENERAL WARRANTY DEED

THIS INDENTURE, Made this 30th day of October A. D. 1967, between

Julia Jauken, a widow;
Illola Miller and Gale Miller, wife and husband;
Hiram Jauken and Marilyn Jauken, husband and wife; and
Jack Jauken and Arlene Jauken, husband and wife;

of the first part,

and The City of Bern, Nemaha County, Kansas, a Municipal Corporation,

of Bern, Nemaha County, in the State of Kansas of the second part.

WITNESSETH, That said parties of the first part, in consideration of the sum of --- One Dollar and other valuable consideration---and no/100---DOLLARS, the receipt whereof is hereby acknowledged, do by these presents, grant, bargain, sell and convey unto said party of the second part, its successors and assigns, all of the following described REAL ESTATE, situated in the county of Nemaha and State of Kansas to wit:

Tract 1: A tract described as follows: Beginning at a point on the East Line of the West Half of the Northwest quarter of Section 16, Township 1, Range 13, 1120 feet North of the Southeast corner of said West half of said Northwest quarter of said Section; thence West 90 degrees to the last line, 290 feet; thence North 90 degrees to the last line, 750 feet; thence East South East 60 degrees to the last line, 334.86 feet; thence South at 120 degrees to the last line, 582.55 feet to the point of beginning, containing 4.44 acres, more or less; and

Tract 2: A tract described as follows: Beginning at a point on the East Line of the West Half of the Northwest quarter of Section 16, Township 1, Range 13, which point is on the North boundary of the City of Bern, Kansas, and is 374 feet North of the Southeast corner of the West half of the Northwest quarter of said Section; thence North on said line 746 feet to the South line of Tract 1, above Described; thence West at 90 degrees from said East line 20 feet; thence South at 90 degrees from the last line 746 feet; thence East at 90 degrees from the last line 20 feet to the place of beginning, containing 0.35 acres, more or less.

In the event that there should ever be seepage or overflow from the Sewer Ponds to be located upon the above premises, second party agrees to pipe such seepage or overflow around the present pond located upon the West half of the Northwest quarter of said Section 16, all at the expense of second party.

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, forever.

And said grantors, for themselves, their heirs, executors or administrators, do hereby covenant, promise and agree, to and with said party of the second part, that at the delivery of these presents they are lawfully seized in their own right, of an absolute and indefeasible estate of inheritance, in fee simple, of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear, discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments, taxes, assessments and incumbrances, of what nature or kind soever:

and that they will WARRANT AND FOREVER DEFEND the same unto said party of the second part, its successors and assigns, against said parties of the first part, their heirs, and all and every person or persons whomsoever, lawfully claiming or to claim the same.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands, the day and year first above written.

Julia A. Jauken
Julia Jauken

Jack Jauken
Jack Jauken

Arlene Jauken
Arlene Jauken

Illola Miller
Illola Miller

Gale E. Miller
Gale E. Miller

Hiram Jauken
Hiram Jauken

Marilyn Jauken
Marilyn Jauken

STATE OF KANSAS, NEMAHA COUNTY, ss.

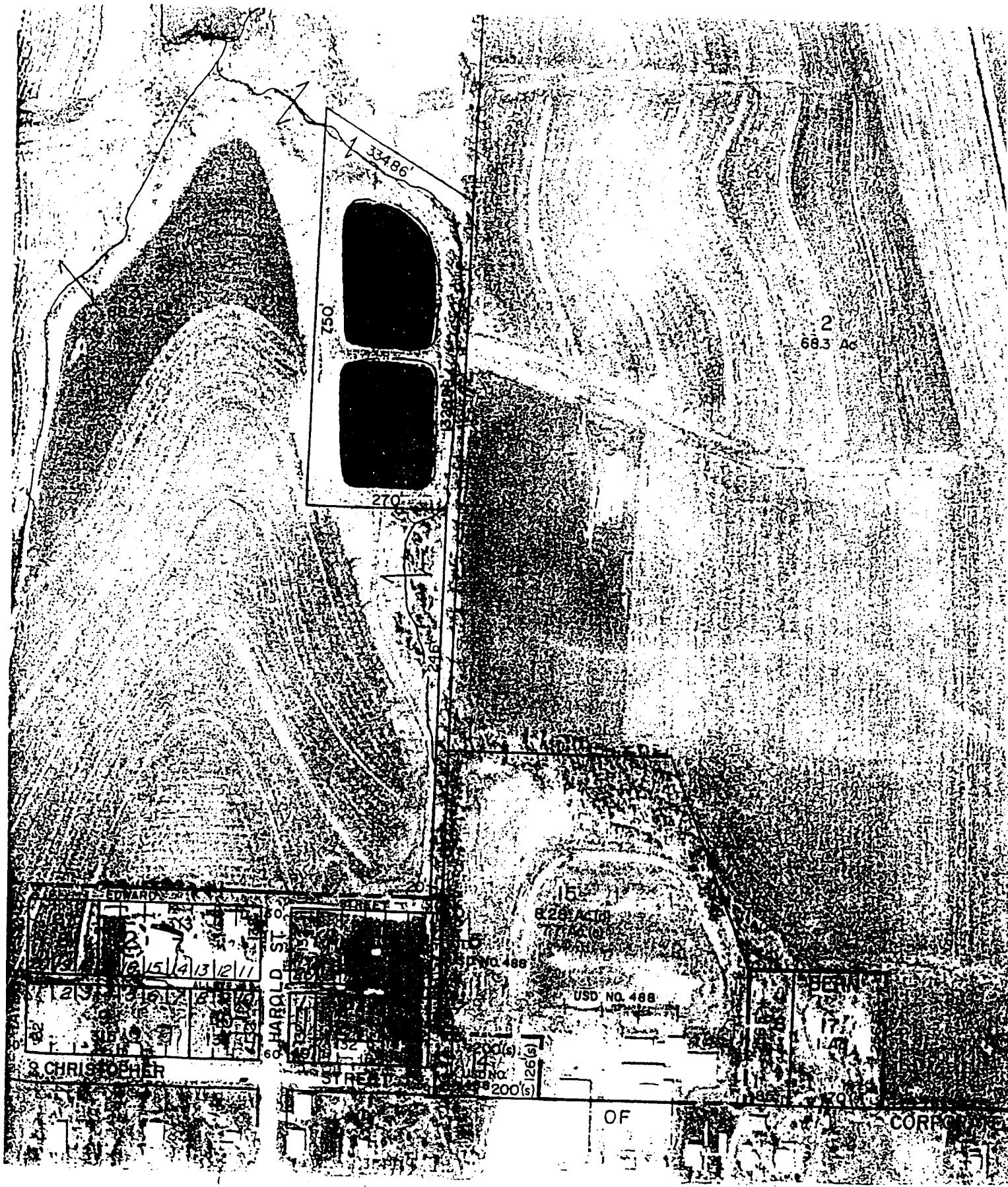
BE IT REMEMBERED, That on this 30th day of October A.D. 1967, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Julia Jauken, a widow; Illola Miller and Gale Miller, wife and husband; who are personally known to me to be the same persons who executed the within instrument of writing and such persons duly acknowledged the execution of the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial seal, the day and year last above written.

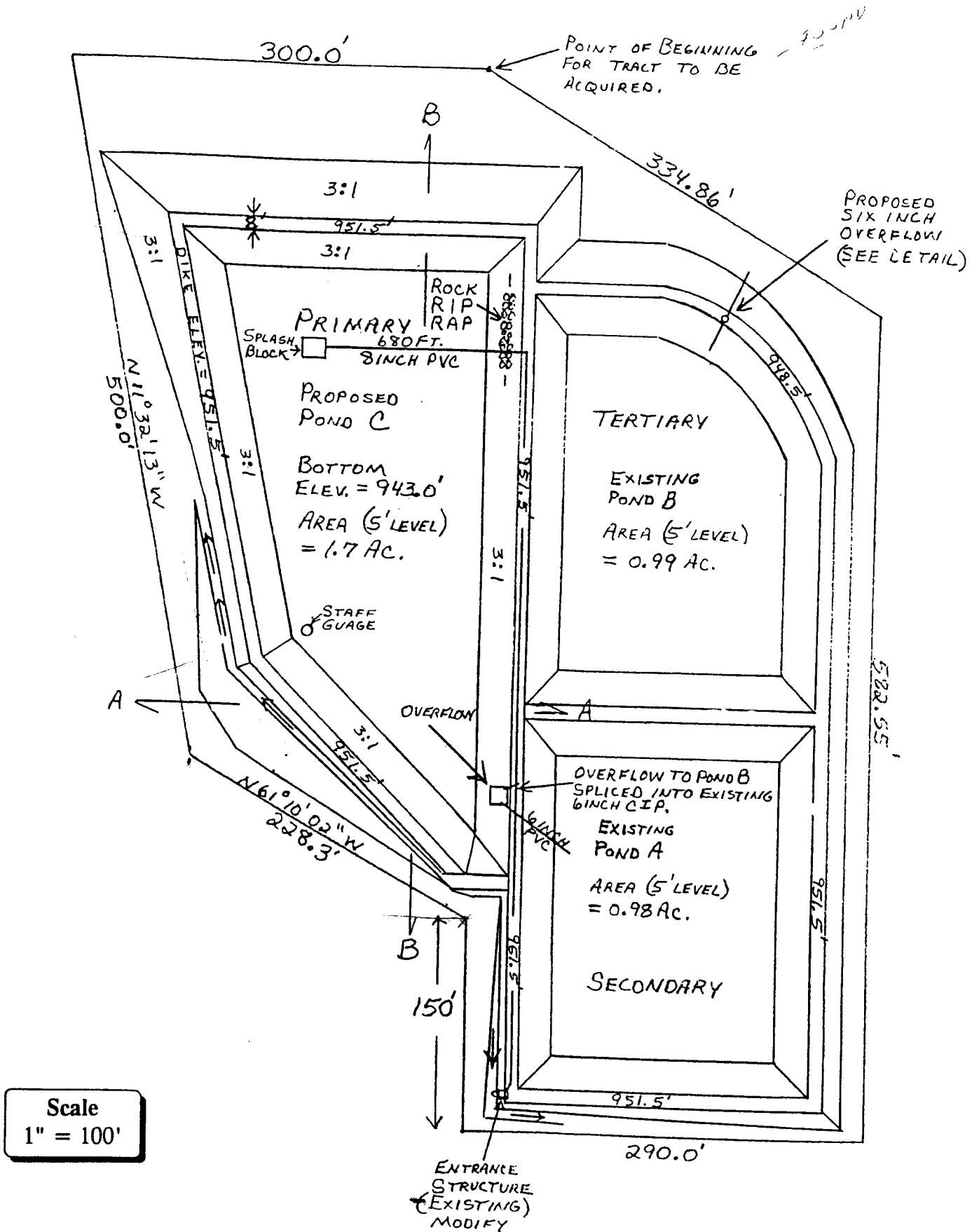
(SEAL) Jay Fankhauser

Notary Public.
Term expires My commission expires Jan. 24, 1971 19__

AERIAL MAP

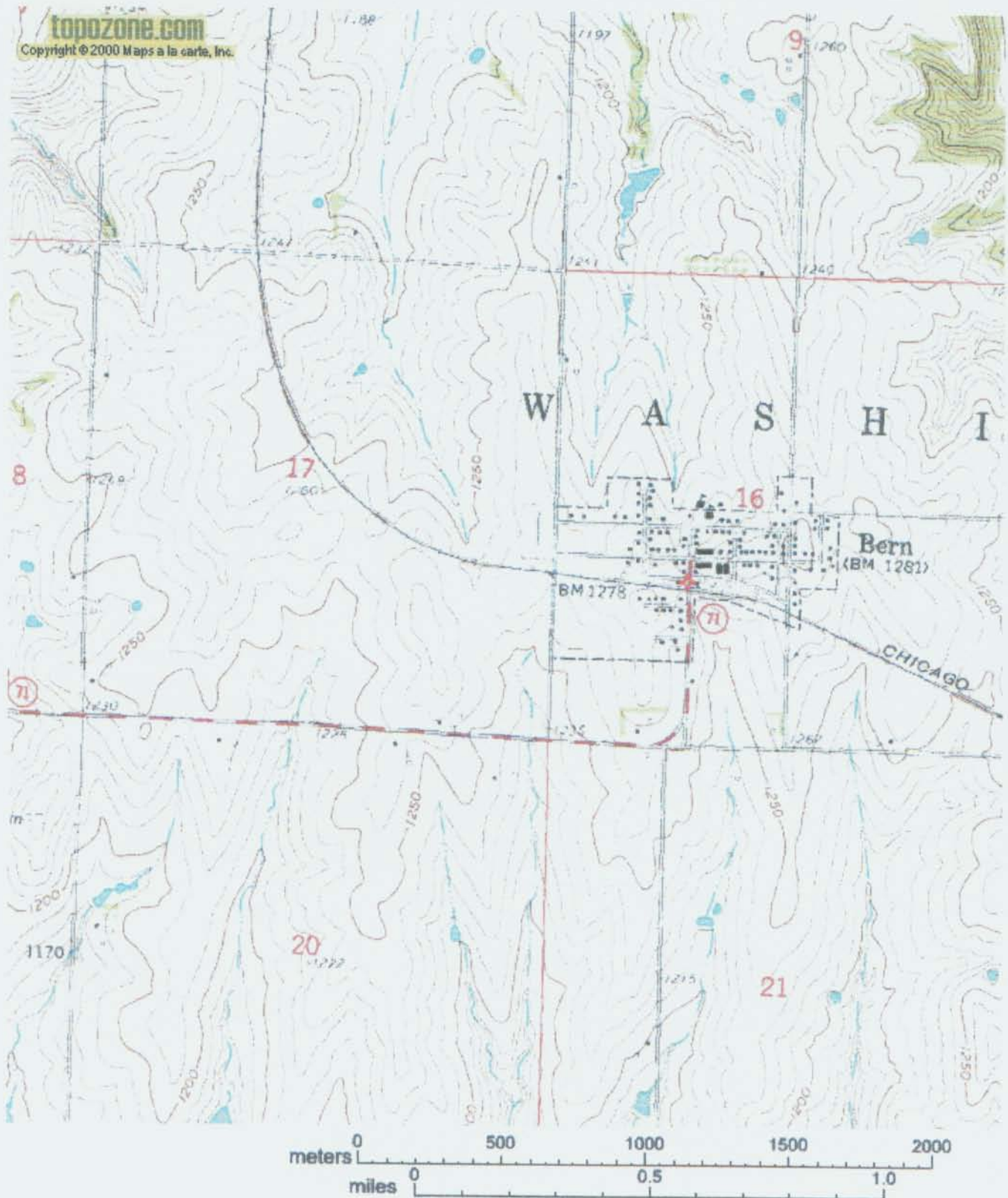


FACILITY PLAN LAYOUT W/TOPOG OVERLAY



TopoZone.com

Target is UTM 15 246168E 4427580N - **BERN** quad [Quad Info]



BIOSOLIDS LOADING LOG

Prepared For
City of Bern, KS
Lagoon Project Cell 1 & Cell 2

Removal Hauling & Land Application
8-20-02 to 9-6-02



BOX 398
HUDSON, IOWA 50643

Contractor.

Nutri-Ject Systems Inc.
515 5th Street PO Box 398
Hudson, Iowa 50643-0398
www.nutriject.com
ph: 319-988-4205
fax: 319-988-3506



BOX 398
HUDSON, IOWA 50643

515 FIFTH STREET
BOX 398
HUDSON, IOWA 50643
PHONE (319) 988-4205

Councilman Larry Grose
City of Bern, KS
P.O. Box 66
Bern, KS

Larry,

I am sending the field report for the removal and land application of the biosolids from the lagoon cells. There are extra copies of the agronomic loading and soil samples for the land owners. Also, I have sent a copy to Jeff Lamfers of the KDHE. If you have any questions please contact me.

Thank you for the opportunity to work for your city.

Sincerely,

Bruce Jensen
Operations Manager
Nutri-Ject Systems

NUTRI-JECT SYSTEMS, INC.

Po Box 398 - Hudson, IA 50643

(319) 988-4205 / (319) 988-3506 Fax

CITY OF BERN, KS

Lagoon Cell 1 & 2

EQUIPMENT LIST	LAND OWNER	EMPLOYEE LIST
Rental cat D6X	Field 1 - Eldon Kaster	C. Dibben
8970 NH	25 acres corn	J. Latzke
52' Houle		D. Allen
6" load stand	Field 2 - Morris Leuthold	B. Beck
300' lay flat	50 acres corn	J. Straus
Semi 33 / 249		
Semi 222 / 263	Field 3 - Gary Lortscher	
Semi 111 / 261	30 acres wheat	

DATE	DAY	WEATHER	FIELD CONDITION	SEMI UNIT #	APPLI. LOADS	APPLI. SIZE	GALLONS
08/18/02	Sunday		mobilized equipment				
08/19	Monday		mobilized equipment				
08/20	Tuesday		dry - field 1	33	15	6000	90,000
08/20				111	16	6000	96,000
08/20				222	4	6000	24,000
08/21	Wednesday		wet - field 1	33	2	6000	12,000
08/21				111	3	6000	18,000
08/21				222	2	6000	12,000
08/22 → 08/24		rain	wet				0
08/26	Monday	85	dry - field 1	33	10	6000	60,000
08/26				111	11	6000	66,000
08/26				222	12	6000	72,000
08/27	Tuesday	80	dry - field 2	33	17	6000	102,000
08/27				111	16	6000	96,000
08/27				222	17	6000	102,000
08/28	Wednesday	90	dry - field 2	33	18	6000	108,000
08/28				111	18	6000	108,000
08/28				222	15	6000	90,000
08/29	Thursday	85	dry - field 2	33	13	6000	78,000
08/29				111	13	6000	78,000
08/29				222	10	6000	60,000

Date	Day	Weather	Field Condition	Semi Unit #	Appli. Loads	Appli. Size	Gallons
08/30	Friday	81	cleaned out tanker clay rock				0
09/03	Tuesday	85	dry - field 1	33	8	6000	48,000
09/03			dry - field 2	33	3	6000	18,000
09/03			dry - field 1	222	4	6000	24,000
09/03			dry - field 2	222	4	6000	24,000
09/04	Wednesday	90	dry - field 2	33	13	6000	78,000
09/04			field 2	111	11	6000	66,000
09/04			field 3	111	10	6000	60,000
09/04			dry - field 3	222	16	6000	96,000
09/05	Thursday	87	dry - field 3	111	23	6000	138,000
09/05			dry - field 3	222	27	6000	162,000
09/06	Friday	90	dry - field 3	111	10	6000	60,000
09/06			dry - field 3	222	13	6000	78,000
							2,124,000

	TOTALS	FIELD 1	FIELD 2	FIELD 3
Total gallons	2,124,000	522,000	1,008,000	594,000
Total loads	354	87	168	99
Total dry ton	619.99	152.37	294.23	173.38
Total solids	7%	7%	7%	7%
Total acres	105	25	50	30
Dry ton/acre	5.90	6.1	5.88	5.77
Lbs/acre	11,809	12,189.7	11,769.4	11,559.2
Gallons/acre	20,228.6	20,880	20,160	19,800

Customer Contacts:

NUTRI-JECT SYSTEMS, INC.

Po Box 398
Hudson, Iowa 50643

FIELD REPORTS

City:	Bern, KS - lagoon cell 1 & 2		
Farmer:	Eldon Kaster - 119 Spring - Bern, KS 66408		
Location:	Field #1	Twp.	Sec. SE 15 113 N.C.
Dates applied:	08/20 → 09/03/02		
Crop	Corn		
Gallons:	522,000 @ 7% solids = total dry ton 152.37		
Acres:	25	Dry ton per acre: 6.1	Lbs. per acre: 12,189.7
Nitrogen:	16.23 lbs/acre	2.66 available N per D.T. x 6.1 DT/acre	
Phosphorus:	58 lbs/acre	.475% x 12,189.7 lbs/acre	
Potassium:	20.1 lbs/acre	.165% x 12,189.7 lbs/acre	

	LBS/ACRE					EPA MAXIMUM LOAD RATE
Arsenic:	.101	8.25	mg/kg x .002 x	6.1	dt/acre	36 lbs/acre
Cadmium	.001	.0603	mg/kg x .002 x	6.1	dt/acre	34 lbs/acre
Chromium	.159	13.1	mg/kg x .002 x	6.1	dt/acre	2670 lbs/acre
Copper	.346	28.4	mg/kg x .002 x	6.1	dt/acre	1335 lbs/acre
Lead	.279	22.9	mg/kg x .002 x	6.1	dt/acre	267 lbs/acre
Nickel	.157	12.9	mg/kg x .002 x	6.1	dt/acre	373 lbs/acre
Mercury	ND	ND	mg/kg x .002 x	6.1	dt/acre	15 lbs/acre
Molybdenum	.021	1.69	mg/kg x .002 x	6.1	dt/acre	66 lbs/acre
Selenium	ND	ND	mg/kg x .002 x	6.1	dt/acre	89 lbs/acre
Zinc	.928	76.1	mg/kg x .002 x	6.1	dt/acre	2490 lbs/acre

Special comments about project or fields:

gal/acre:	20,880	CUMULATIVE	0
application method:	surface/incorp.	Arsenic	
ft. per applicator load	882	Cadmium	
		Chromium	
		Copper	
		Lead	
		Mercury	
		Molybdenum	
		Nickel	
		Selenium	
		Zinc	

REQUEST AND CONSENT FOR BIOSOLIDS

Generator:

Owner:

Eldon Kuster

Operator:

Emin Keser

Owner Address:

119 Spring
Bern KS 66408

Phone:

785-336-3901

Total Acres:

25

Legal Description:

~~SE 15 113 NE~~SE 15 113 NE

Crops:

Corn

1. We, as Owner and Operator, hereby agree to accept biosolids from, and grant permission to the above named generator, and their designated representatives, to utilize the property owned by me and described above for the agricultural application of wastewater treatment biosolids. I agree to allow agents of the generator, federal, state, and local regulatory staff access to my land for the purpose of inspecting the site, applying biosolids, and obtaining soil samples. I reserve the right to ask for proper identification.

Owner and Operator understand the biosolids shall be applied in accordance with requirements of the Kansas Department of Health and Environment and the United States Environmental Protection Agency. Owner and Operator also understand that certain site management criteria must also be met for proper utilization of biosolids.

Owner and Operator agree to be responsible for adhering to the following conditions:

- a. Animals shall not be allowed to graze on the land for 30 days after the application of biosolids.
- b. Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 18 months after the application of biosolids.
- c. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after the application of biosolids when the biosolids remain on

the land surface 4 months prior to incorporation into the soil, or 38 months when the biosolids remain on the land surface 4 months prior to incorporation.

d. Feed crops and fiber crops shall not be harvested for 30 days after application of biosolids.

e. Public access to land with a low potential for public exposure shall be restricted for 30 days. Public access to land with a high potential for public exposure shall be restricted for 1 year.

f. Turf shall not be harvested for one year after application of biosolids when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority.

g. Surface applied cake biosolids shall be incorporated within six hours, where applicable.

2. We understand this transaction is not contemplated by the parties to be a sale of goods, and the Generator, or their land application contractor, is willing to provide the service of land applying biosolids, which has been approved by the appropriate regulatory agencies for land application, without charge.
3. We understand that successful crop production depends on many variables, such as weather, soil conditions and specific farming practices. While the Generator, or their land application representative, has experience with land application of biosolids, the responsibility for properly accommodating agricultural practices to biosolids utilization are solely ours.
4. We certify to the best of our knowledge that this property has not received, and is not receiving applications of any other municipal or industrial waste, or septage.
5. We understand the Generator does not guarantee specific quantities or delivery dates of biosolids, or crop yields. If any signatories below wish to cancel this agreement, they will do so by giving the other signatories thirty (30) days written notice.
6. We understand the Generator does not make any express or implied warranty of the biosolids for land application, other than applicable Federal, State, and Local laws for preparation of biosolids for land application required at the time of application.

Lab Project Number: 6061857

Client Project ID: BERN

Solid results are reported on a dry weight basis

Lab Sample No: 605362326

Project Sample Number: 6061857-001

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FIELD 1 0-6

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
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Metals

Metals-Standard ICP, Soil

Prep/Method: EPA 3050 / EPA 6010

Potassium

2230

mg/kg

118.

09/03/02

SEL

7440-09-7

Date Digested

08/29/02

Wet Chemistry

Total Percent Solids

Method: EPA 160.4

Percent Solids

82.7

%

0.0100

08/22/02

SM

Total Kjeldahl Nitrogen, Soil

Method: EPA 351.3 Modified

Nitrogen, Kjeldahl, Total

1810

mg/kg

210.

08/26/02

SM

Phosphorus, Total, Soil

Method: EPA 365.4

Phosphorus

163.

mg/kg

30.3

09/11/02

KMW

7723-14-0

pH, Soil by EPA 9045

Method: EPA 9045

pH

4.70

08/27/02

KMW

Organics Prep

Percent Moisture

Method:

Percent Moisture

17.4

%

08/27/02

MAM

Date: 09/13/02

Page: 1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362342

Project Sample Number: 6061857-002

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FIELD 1 6-12

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
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Metals

Metals-Standard ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Potassium	2340	mg/kg	120.	09/04/02	SEL	7440-09-7		
Date Digested				08/29/02				

Wet Chemistry

Total Kjeldahl Nitrogen, Soil	Method: EPA 351.3 Modified							
Nitrogen, Kjeldahl, Total	1800	mg/kg	219.	08/26/02	SM			
Phosphorus, Total, Soil	Method: EPA 365.4							
Phosphorus	164.	mg/kg	30.7	09/11/02	KMW	7723-14-0		
pH, Soil by EPA 9045	Method: EPA 9045							
pH	4.65			08/27/02	KMW			

Organics Prep

Percent Moisture	Method:							
Percent Moisture	18.6	%		08/27/02	MAM			

Date: 09/13/02

Page: 2

REPORT OF LABORATORY ANALYSIS

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NUTRI-JECT SYSTEMS, INC.

Po Box 398
Hudson, Iowa 50643

FIELD REPORTS

City:	Bern, KS - lagoon cell 1 & 2		
Farmer:	Morris Leuthold - RR 1, Bern, KS 66408 - field 2		
Location:	E 1/2 SW 1/4	Twp.	Range: 13
Dates applied:	08/27 → 09/04/02		
Crop	Corn		
Gallons:	1,008,000 @ 7% solids = total dry ton 294.23		
Acres:	50	Dry ton per acre: 5.88	Lbs. per acre: 11,769.4
Nitrogen:	15.64 lbs/acre	2.66 available N per D.T. x 5.88 DT/acre	
Phosphorus:	55.9 lbs/acre	.4750% x 11,769.4 lbs/acre	
Potassium:	19.42 lbs/acre	.165% x 11,769.4 lbs/acre	

	LBS/ACRE					EPA MAXIMUM LOAD RATE
Arsenic:	.097	8.25	mg/kg x .002 x	5.88	dt/acre	36 lbs/acre
Cadmium	.0007	.0603	mg/kg x .002 x	5.88	dt/acre	34 lbs/acre
Chromium	.154	13.1	mg/kg x .002 x	5.88	dt/acre	2670 lbs/acre
Copper	.334	28.4	mg/kg x .002 x	5.88	dt/acre	1335 lbs/acre
Lead	.269	22.9	mg/kg x .002 x	5.88	dt/acre	267 lbs/acre
Nickel	.152	12.9	mg/kg x .002 x	5.88	dt/acre	373 lbs/acre
Mercury	ND	ND	mg/kg x .002 x	5.88	dt/acre	15 lbs/acre
Molybdenum	.019	1.69	mg/kg x .002 x	5.88	dt/acre	66 lbs/acre
Selenium	ND	ND	mg/kg x .002 x	5.88	dt/acre	89 lbs/acre
Zinc	.895	76.1	mg/kg x .002 x	5.88	dt/acre	2490 lbs/acre

Special comments about project or fields:

gal/acre:	20,160	CUMULATIVE	0
application method:	surface / incorp.	Arsenic	
ft. per applicator load	882	Cadmium	
		Chromium	
		Copper	
		Lead	
		Mercury	
		Molybdenum	
		Nickel	
		Selenium	
		Zinc	

REQUEST AND CONSENT FOR BIOSOLIDS

Generator:

Owner:

Morris Leuthold

Operator:

Mike Lockhart

Owner Address:

RA 1

Bern KS 66408

Phone:

785-336-3046

Total Acres:

50

Legal Description:

E 1/2 of SW Quarter Township 1 Range 13

Crops:

Corn

1. We, as Owner and Operator, hereby agree to accept biosolids from, and grant permission to the above named generator, and their designated representatives, to utilize the property owned by me and described above for the agricultural application of wastewater treatment biosolids. I agree to allow agents of the generator, federal, state, and local regulatory staff access to my land for the purpose of inspecting the site, applying biosolids, and obtaining soil samples. I reserve the right to ask for proper identification.

Owner and Operator understand the biosolids shall be applied in accordance with requirements of the Kansas Department of Health and Environment and the United States Environmental Protection Agency. Owner and Operator also understand that certain site management criteria must also be met for proper utilization of biosolids.

Owner and Operator agree to be responsible for adhering to the following conditions:

- a. Animals shall not be allowed to graze on the land for 30 days after the application of biosolids.
- b. Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 18 months after the application of biosolids.
- c. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after the application of biosolids when the biosolids remain on

the land surface 4 months prior to incorporation into the soil, or 38 months when the biosolids remain on the land surface 4 months prior to incorporation.

d. Feed crops and fiber crops shall not be harvested for 30 days after application of biosolids.

e. Public access to land with a low potential for public exposure shall be restricted for 30 days. Public access to land with a high potential for public exposure shall be restricted for 1 year.

f. Turf shall not be harvested for one year after application of biosolids when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority.

g. Surface applied cake biosolids shall be incorporated within six hours, where applicable.

2. We understand this transaction is not contemplated by the parties to be a sale of goods, and the Generator, or their land application contractor, is willing to provide the service of land applying biosolids, which has been approved by the appropriate regulatory agencies for land application, without charge.
3. We understand that successful crop production depends on many variables, such as weather, soil conditions and specific farming practices. While the Generator, or their land application representative, has experience with land application of biosolids, the responsibility for properly accommodating agricultural practices to biosolids utilization are solely ours.
4. We certify to the best of our knowledge that this property has not received, and is not receiving applications of any other municipal or industrial waste, or septage.
5. We understand the Generator does not guarantee specific quantities or delivery dates of biosolids, or crop yields. If any signatories below wish to cancel this agreement, they will do so by giving the other signatories thirty (30) days written notice.
6. We understand the Generator does not make any express or implied warranty of the biosolids for land application, other than applicable Federal, State, and Local laws for preparation of biosolids for land application required at the time of application.

Marin Lauthold
Owner Signature (Additional owners sign and date
below, if applicable)

8-26-02
Date

Mike Lockhart
Operator Signature (if different from Owner)

8-26-02
Date

Generator Signature

Date

Additional Owner's Signatures:

Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362359

Project Sample Number: 6061857-003

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FIELD 2 0-6

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
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Metals

Metals-Standard ICP, Soil

Prep/Method: EPA 3050 / EPA 6010

Potassium

2300

mg/kg

115.

09/04/02

SEL

7440-09-7

Date Digested

08/29/02

Wet Chemistry

Total Kjeldahl Nitrogen, Soil

Method: EPA 351.3 Modified

Nitrogen, Kjeldahl, Total

1560

mg/kg

219.

08/26/02

SM

Phosphorus, Total, Soil

Method: EPA 365.4

Phosphorus

308.

mg/kg

30.7

09/11/02

KMW

7723-14-0

pH, Soil by EPA 9045

Method: EPA 9045

pH

4.65

08/27/02

KMW

Organics Prep

Percent Moisture

Method:

Percent Moisture

18.5

%

08/27/02

MAM

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362375

Project Sample Number: 6061857-004

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FIELD 2 6-12

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Metals

Metals-Standard ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Potassium	2350	mg/kg	119.	09/04/02	SEL	7440-09-7		
Date Digested				08/29/02				

Wet Chemistry

Total Kjeldahl Nitrogen, Soil	Method: EPA 351.3 Modified							
Nitrogen, Kjeldahl, Total	1940	mg/kg	195.	08/26/02	SM			
Phosphorus, Total, Soil	Method: EPA 365.4							
Phosphorus	259.	mg/kg	30.8	09/11/02	KMW	7723-14-0		
pH, Soil by EPA 9045	Method: EPA 9045							
pH	4.60			08/27/02	KMW			

Organics Prep

Percent Moisture	Method:							
Percent Moisture	18.9	%		08/27/02	MAM			

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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NUTRI-JECT SYSTEMS, INC.

Po Box 398
Hudson, Iowa 50643

FIELD REPORTS

City:	Bern, KS		
Farmer:	Gary Lortscher - 310 Railroad St., Bern, KS 66408-0124 - field 3		
Location:	Cty.	Twp. 1	Sec. 4 & 5 Range 13
Dates applied:	09/04 → 09/06/02		
Crop	Wheat		
Gallons:	594,000 @ 7% solids = total dry ton 173.38		
Acres:	30	Dry ton per acre: 5.77	Lbs. per acre: 11,559
Nitrogen:	15.348 lbs/acre	2.66 available N per D.T. x 5.77 DT/acre	
Phosphorus:	54.91 lbs/acre	.4750% x 11,559 lbs/acre	
Potassium:	19.07 lbs/acre	.165% x 11,559 lbs/acre	

	LBS/ACRE					EPA MAXIMUM LOAD RATE
Arsenic:	.095	8.25	mg/kg x .002 x	5.77	dt/acre	36 lbs/acre
Cadmium	.001	.0603	mg/kg x .002 x	5.77	dt/acre	34 lbs/acre
Chromium	.1512	13.1	mg/kg x .002 x	5.77	dt/acre	2670 lbs/acre
Copper	.328	28.4	mg/kg x .002 x	5.77	dt/acre	1335 lbs/acre
Lead	.264	22.9	mg/kg x .002 x	5.77	dt/acre	267 lbs/acre
Nickel	.149	12.9	mg/kg x .002 x	5.77	dt/acre	373 lbs/acre
Mercury	ND	ND	mg/kg x .002 x	5.77	dt/acre	15 lbs/acre
Molybdenum	.0195	1.69	mg/kg x .002 x	5.77	dt/acre	66 lbs/acre
Selenium	ND	ND	mg/kg x .002 x	5.77	dt/acre	89 lbs/acre
Zinc	.878	76.1	mg/kg x .002 x	5.77	dt/acre	2490 lbs/acre

Special comments about project or fields:

gal/acre:	19,800	CUMULATIVE	0
application method:	surface / incorp.	Arsenic	
ft. per applicator load	882	Cadmium	
		Chromium	
		Copper	
		Lead	
		Mercury	
		Molybdenum	
		Nickel	
		Selenium	
		Zinc	

REQUEST AND CONSENT FOR BIOSOLIDS

Generator: _____

Owner: _____

LORTSCHER/CHAUZA

Operator: _____

LORTSCHER, R. Gary

Owner Address: _____

310 RAILROAD ST

BERN KS 66408-0124

Phone: _____

785-336-6171

Total Acres: _____

30

Legal Description: _____

Sec 4, Twp 1, Range 13

+ Sec 5, Twp 1, Range 13

Crops: _____

WHEAT/MAIZE

1. We, as Owner and Operator, hereby agree to accept biosolids from, and grant permission to the above named generator, and their designated representatives, to utilize the property owned by me and described above for the agricultural application of wastewater treatment biosolids. I agree to allow agents of the generator, federal, state, and local regulatory staff access to my land for the purpose of inspecting the site, applying biosolids, and obtaining soil samples. I reserve the right to ask for proper identification.

Owner and Operator understand the biosolids shall be applied in accordance with requirements of the Kansas Department of Health and Environment and the United States Environmental Protection Agency. Owner and Operator also understand that certain site management criteria must also be met for proper utilization of biosolids.

Owner and Operator agree to be responsible for adhering to the following conditions:

- a. Animals shall not be allowed to graze on the land for 30 days after the application of biosolids.
- b. Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 18 months after the application of biosolids
- c. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after the application of biosolids when the biosolids remain on

the land surface 4 months prior to incorporation into the soil, or 38 months when the biosolids remain on the land surface 4 months prior to incorporation

d. Feed crops and fiber crops shall not be harvested for 30 days after application of biosolids.

e. Public access to land with a low potential for public exposure shall be restricted for 30 days. Public access to land with a high potential for public exposure shall be restricted for 1 year.

f. Turf shall not be harvested for one year after application of biosolids when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority.

g. Surface applied cake biosolids shall be incorporated within six hours, where applicable.

2. We understand this transaction is not contemplated by the parties to be a sale of goods, and the Generator, or their land application contractor, is willing to provide the service of land applying biosolids, which has been approved by the appropriate regulatory agencies for land application, without charge.
3. We understand that successful crop production depends on many variables, such as weather, soil conditions and specific farming practices. While the Generator, or their land application representative, has experience with land application of biosolids, the responsibility for properly accommodating agricultural practices to biosolids utilization are solely ours.
4. We certify to the best of our knowledge that this property has not received, and is not receiving applications of any other municipal or industrial waste, or septage.
5. We understand the Generator does not guarantee specific quantities or delivery dates of biosolids, or crop yields. If any signatories below wish to cancel this agreement, they will do so by giving the other signatories thirty (30) days written notice.
6. We understand the Generator does not make any express or implied warranty of the biosolids for land application, other than applicable Federal, State, and Local laws for preparation of biosolids for land application required at the time of application.

Lortscher/Chauza By Mayhostel

Owner Signature (Additional owners sign and date below, if applicable)

5 SEP '02

Date _____

Operator Signature (if different from Owner)

Date _____

Generator Signature

Date _____

Additional Owner's Signatures:

Solid results are reported on a dry weight basis

Lab Sample No: 605408970	Project Sample Number: 6062415-001	Date Collected: 09/02/02 11:30
Client Sample ID: BERN KS 0-6	Matrix: Soil	Date Received: 09/06/02 12:40

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Metals

Metals-Standard ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Potassium	1800	mg/kg	112.	09/11/02 22:17	JAH	7440-09-7		
Date Digested				09/10/02				

Wet Chemistry

Nitrogen, Nitrate plus Nitrite	Method: EPA 353.2							
Nitrogen, NO2 plus NO3	24.0	mg/kg	5.97	09/10/02	AEP			
Phosphorus, Total, Soil	Method: EPA 365.4							
Phosphorus	103.	mg/kg	29.9	09/20/02	KMW	7723-14-0		
pH, Soil by EPA 9045	Method: EPA 9045							
pH	4.40			09/10/02	KMW			

Organics Prep

Percent Moisture	Method:							
Percent Moisture	16.3	%		09/13/02	MAM			

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6062415

Client Project ID: NO LOCATION

Lab Sample No: 605408988

Project Sample Number: 6062415-002

Date Collected: 09/02/02 11:30

Client Sample ID: BERN KS 6-12

Matrix: Soil

Date Received: 09/06/02 12:40

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Metals

Metals-Standard ICP, Soil

Prep/Method: EPA 3050 / EPA 6010

Potassium

1780

mg/kg

119.

09/11/02 22:22 JAH

7440-09-7

Date Digested

09/10/02

Wet Chemistry

Nitrogen, Nitrate plus Nitrite Method: EPA 353.2

Nitrogen, NO2 plus NO3

24.6

mg/kg

6.03

09/10/02

AEP

Phosphorus, Total, Soil

Method: EPA 365.4

Phosphorus

60.4

mg/kg

30.2

09/20/02

KMW 7723-14-C

pH, Soil by EPA 9045

Method: EPA 9045

pH

4.80

09/10/02

KMW

Organics Prep

Percent Moisture

Method:

Percent Moisture

17.1

%

09/13/02

MAM

Date: 09/20/02

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REPORT OF LABORATORY ANALYSIS

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Determination of Liquid Sludge Application Rate

Step 1 -- Determine carryover nitrogen from last year's sludge application

$$\% \text{ Organic N} = \boxed{} - \boxed{} = \boxed{} \text{ (1)}$$

% Kjeldahl N* % Ammonia N* % Organic N
(*use last years analysis)

$$\text{Carryover N} = \boxed{} \times \boxed{} = \boxed{} \text{ (2)}$$

(lbs. N / acre) % Organic N (1) Dry tons / Acre** Carryover N
(**last years application rate)

Step 2 -- Determine available nitrogen in this year's sludge *Bern KS*

$$\% \text{ Organic N} = \boxed{.623} - \boxed{.029} = \boxed{.594} \text{ (3)}$$

% Kjeldahl N* % Ammonia N* % Organic N
(*use recent analysis)

$$\boxed{.594} \times \boxed{4} = \boxed{2.376} \text{ (4)}$$

% Organic N (3) Factor I

$$\boxed{.029} \times \boxed{10} = \boxed{.29} \text{ (5)}$$

% Ammonia N Factor II

$$\boxed{0} \times \boxed{20} = \boxed{0} \text{ (6)}$$

% Nitrate N

$$\text{Available N in sludge} = \boxed{2.376} + \boxed{.290} + \boxed{0} = \boxed{2.666} \text{ (7)}$$

(lbs. N / dry ton) (4) (5) (6) Available N

Factor I = 4 for digested sludges
6 for chemically or physically stabilized or unstabilized sludges

Factor II = 10 for surface applied sludges
15 for injected or immediately incorporated sludges

Step 3 -- Determine crop nitrogen credits

$$\text{Fertilizer N in lbs. / acre} = \boxed{} \text{ (8)}$$

$$\text{Manure N applied in lbs. / acre} = \boxed{} \text{ (9)}$$

$$\text{Nitrogen Credits} = \boxed{} + \boxed{} + \boxed{} = \boxed{} \text{ (10)}$$

(lbs. N / acre) Carryover N (2) Fertilizer N (8) Manure N (9) N Credits

Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362490

Client Sample ID: BERN 8

Project Sample Number: 6061857-012

Matrix: Soil

Date Collected: 08/19/02 00:00

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Metals

Metals-Standard ICP, Soil

Prep/Method: EPA 3050 / EPA 6010

Arsenic	8.25	mg/kg	5.76	09/04/02	SEL	7440-38-2		
Cadmium	0.0603	J mg/kg	0.339	09/04/02	SEL	7440-43-9	2	
Chromium	13.1	mg/kg	0.474	09/04/02	SEL	7440-47-3		
Copper	28.4	mg/kg	0.678	09/04/02	SEL	7440-50-8		
Lead	22.9	mg/kg	3.39	09/04/02	SEL	7439-92-1		
Molybdenum	1.69	mg/kg	1.36	09/04/02	SEL	7439-98-7		
Nickel	12.9	mg/kg	2.03	09/04/02	SEL	7440-02-0		
Potassium	1650	mg/kg	67.8	09/04/02	SEL	7440-09-7		
Selenium	ND	mg/kg	6.78	09/04/02	SEL	7782-49-2		
Zinc	76.1	mg/kg	6.78	09/04/02	SEL	7440-66-6		
Date Digested				08/29/02				

Mercury, Soil CVAAS

Mercury

Method: EPA 7471

ND mg/kg 0.912 08/22/02 11:06 SYW 7439-97-6

Organics Prep

Percent Moisture

Method:

Percent Moisture

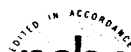
85.3 % 08/27/02 MAM

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605373745

Project Sample Number: 6061857-013

Date Collected: 08/20/02 00:00

Client Sample ID: BERN

Matrix: Soil

Date Received: 08/23/02 12:30

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
Wet Chemistry								
Total Percent Solids	Method: EPA 160.4							
Percent Solids	10.4	%	0.0100	08/27/02	SM			
Ammonia in Soil								
Method: EPA 350.2 Modified								
Nitrogen, Ammonia	ND	mg/kg	302.	08/25/02	SM	7727-37-9		
Total Kjeldahl Nitrogen, Soil								
Method: EPA 351.3 Modified								
Nitrogen, Kjeldahl, Total	6230	mg/kg	980.	08/26/02	SM			
Nitrogen, Nitrate plus Nitrite								
Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/kg	23.5	09/03/02	KMW			
Phosphorus, Total, Soil								
Method: EPA 365.4								
Phosphorus	4750	mg/kg	1180	09/11/02	KMW	7723-14-0		
Organic Nitrogen Calc. Soil								
Method:								
Total Organic Nitrogen	5940	mg/kg	2.00	08/29/02	KMW			
Organics Prep								
Method:								
Percent Moisture	78.7	%		08/29/02	MAM			

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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PARAMETER FOOTNOTES

- ND Not detected at or above adjusted reporting limit
NC Not Calculable
J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL Adjusted Method Detection Limit
[1] GEOMEAN = 5455
[2] Detected but below the PRL; therefore, result is an estimated concentration (CLP J-Flag).

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362409

Project Sample Number: 6061857-005

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FC1

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Wet Chemistry

Total Percent Solids

Method: EPA 160.4

Percent Solids

15.1

%

0.0100

08/22/02

SM

Fecal Coliform Solid

Method: 40CFR PART 503

Coliform, Fecal

0

col/g

662.

08/21/02 13:40 TDH

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362417

Project Sample Number: 6061857-006

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FC2

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Wet Chemistry

Total Percent Solids

Method: EPA 160.4

Percent Solids

13.8

%

0.0100

08/22/02

SM

Fecal Coliform Solid

Method: 40CFR PART 503

Coliform, Fecal

0

col/g

725.

08/21/02 13:40 TDH

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362425

Project Sample Number: 6061857-007

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FC3

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Wet Chemistry								
Total Percent Solids	Method: EPA 160.4							
Percent Solids	15.1	%	0.0100	08/22/02	SM			
Fecal Coliform Solid	Method: 40CFR PART 503							
Coliform, Fecal	0	col/g	662.	08/21/02 13:40	TDH			

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362433

Project Sample Number: 6061857-008

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FC4

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
Wet Chemistry								
Total Percent Solids	Method: EPA 160.4							
Percent Solids	12.5	%	0.0100	08/22/02	SM			
Fecal Coliform Solid	Method: 40CFR PART 503							
Coliform, Fecal	0	col/g	800.	08/21/02 13:40	TDH			

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857
Client Project ID: BERN

Lab Sample No: 605362441
Client Sample ID: BERN FC5

Project Sample Number: 6061857-009
Matrix: Soil

Date Collected: 08/19/02 00:00
Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Wet Chemistry								
Total Percent Solids	Method: EPA 160.4							
Percent Solids	16.5	%	0.0100	08/22/02	SM			
Fecal Coliform Solid	Method: 40CFR PART 503							
Coliform, Fecal	5460	col/g	1.00	08/21/02 13:40	TDH			

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362466

Project Sample Number: 6061857-010

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FC6

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	ReqLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Wet Chemistry

Total Percent Solids

Method: EPA 160.4

Percent Solids

11.1

%

0.0100

08/22/02

SM

Fecal Coliform Solid

Method: 40CFR PART 503

Coliform, Fecal

0

col/g

901.

08/21/02 13:40 TDH

Date: 09/13/02

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REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6061857

Client Project ID: BERN

Lab Sample No: 605362474

Project Sample Number: 6061857-011

Date Collected: 08/19/02 00:00

Client Sample ID: BERN FC7

Matrix: Soil

Date Received: 08/19/02 15:35

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
------------	---------	-------	--------------	----------	----	---------	------	--------

Wet Chemistry

Total Percent Solids

Method: EPA 160.4

Percent Solids

8.19 %

0.0100 08/22/02

SM

Fecal Coliform Solid

Method: 40CFR PART 503

Coliform, Fecal

0 col/g

1220

08/21/02 13:40 TDH

1

Date: 09/13/02

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