

Central Davis Sewer District 2014 Year-End



Biosolids Annual Report

UT-0020974

January, 2015

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General Information - 2014

1. Permit Information
2. Report Narrative
3. Certification Statement
4. EPA Report Form

PERMIT: UT-0020974
Biosolids Annual Report
2014

Facility Owner: Central Davis Sewer District

Owner Status: Political Subdivision of the State of Utah

Contact Person: Leland Myers

Telephone Number: (801) 451-2190

Mailing Address: 2200 South Sunset Drive
Kaysville, Utah 84037

Treatment Plant Address: Same

Land Application Site: Latitude - 40 degrees 59 minutes 55 seconds
Longitude - 111 degrees 56 minutes 49 secs.

The Northwest quarter corner of Section 15 of
Township 3 North, Range 1 West of the Salt
Lake Base and Meridian.

Land Application Site: The land application site used by the District
surrounds the wastewater treatment plant and is owned by the District.

Indian Land Status: All sites associated with the general and disposal
of biosolids are not located on Indian Lands.

Permits: UPDES Permit No: UT-0020974

Central Davis Sewer District Annual Biosolids Report 2014

Central Davis Sewer District is providing the included information in fulfillment of the annual report requirement contained in permit UT-0020974. The report is divided according to the EPA requirements found in 40 CFR Part 503.

Chemical Pollutant Analysis

During 2014, Central Davis Sewer District tracked the chemical quality of biosolids produced by its wastewater treatment plant according to the method of treatment. Since each treatment method is tracked separately, the results are reported individually below.

Anaerobic Digested Biosolids

Metals analysis stipulated in 40 CFR Part 503 was performed quarterly by Central Davis Sewer District on anaerobic digested biosolids. Quarterly results, lab reports and quality control charts have been calculated and are included in a separate section. The summaries of the results are presented below:

(All values presented are in mg/KG on a dry weight basis)

<u>Metal</u>	<u>Annual Average</u>	<u>Limit</u>
Aluminum	4,570	None
Arsenic	15	41
Cadmium	1	39
Chromium	13	None
Copper	1,004	1,500
Lead	12	300
Mercury	1	17
Molybdenum	10	75
Nickel	11	420
Phosphorous	16,025	None
Selenium	8	100
Silver	6	None
Zinc	575	2,800

As can be seen, all results are within the acceptance limits.

Compost Biosolids

Compost is sampled when the pile is ready for distribution and marketing. In 2014, six samples were taken and analyzed. The yearly average is shown below. A summary report, lab reports and quality charts are included in a separate section.

(All values presented are in mg/KG on a dry weight basis)

Metal	Averages	Limit
Aluminum	1,445	None
Arsenic	6	41
Cadmium	1	39
Chromium	5	None
Copper	269	1,500
Lead	6	300
Mercury	1	17
Molybdenum	4	75
Nickel	5	420
Phosphorus	7,622	None
Selenium	2	100
Silver	1	None
Zinc	177	2,800

As can be seen, all results are within the acceptance limits.

Biosolids Pathogen Reduction

During 2014, Central Davis Sewer District met the permit and regulatory requirement for pathogen reduction in three separate ways. The two methods are discussed below. Since one method produces Class B pathogen reduction, a discussion of the site restrictions is presented at the end of this section.

Anaerobic Digestion

Anaerobic digestion stipulates both time and temperature requirements be met while the biosolids are in the digester. The permit requires that the temperature remain above 35° C for at least 15 days. During 2014, the digester monthly average temperatures remained above 35° C for the entire year. A history of the digester temperatures is given in this report. Calculation sheets determining the

duration biosolids remained in the digester are also included. The shortest duration for biosolids remaining in the primary digesters was 17.3 days during the period one digester was out of service for cleaning. The shortest duration in both Primary and Secondary digesters was 35.4 days. The average duration in the primary digesters excluding the period when one was out of service was 29.3 days. From the last of October through the first part of December, 2014 one primary digester was taken out of service for cleaning. If the temperature log does not show a temperature, it means that the digester was out of service for cleaning.

Composting Class A - Windrow

Windrow composting requirements stipulate that Class A compost produced under the windrow method remain above 55° C. for 15 days or longer. During the 15-day period, the compost piles must be turned a minimum of five times. At the end of the compost period, the compost must have less than either 1000 MPN/gram fecal coliforms or 3 MPN/4 grams for Salmonella. For composting, the District takes two weeks building a pile. At the end of the two-week period the pile is usually large enough to maintain temperature and moisture. A one-week rest period usually follows before active composting begins. This one-week rest period minimizes odor release. Each pile is then monitored for 15 days or longer and daily temperatures and turning dates recorded. Copies of the composting log sheets are included. During 2014, all the piles except one complied with the regulatory requirements. The one pile that did not meet the temperature requirement was dried and used for top cover on the remaining piles.

Composting Class A – Aerated Static Pile (ASP)

ASP composting requirements stipulate that Class A compost produced under the windrow method remain above 55° C. for 3 days or longer. At the end of the compost period, the compost must have less than either 1000 MPN/gram fecal coliforms or 3 MPN/4 grams for Salmonella. For composting, the District takes two weeks building a pile. At the end of the two-week period the pile is usually

large enough to maintain temperature and moisture. After one week, active composting begins and temperatures are recorded. All piles are capped to maintain temperatures and to reduce odors. Each pile is then monitored for 15 days or longer and daily temperatures are recorded. Copies of the composting log sheets are included. During 2014, all ASP compost complied with the regulatory requirements.

Composting Class B

No Class B compost was produced in 2014.

Site Restrictions

The land on which biosolids are applied is owned by the District and is used to produce feed crops and turf grass. Harvesting of all feed crops occurs at least 30 days after the application of the last load of biosolids. Turf grass is not harvested until at least one year after application. This land is farmed and separated from the public and is considered to have a low potential for public contact. The entire site is fenced with security fencing and warning signs are posted to inform the public that the area is a designated biosolids application site. The District has few problems with unauthorized entry to the site.

Vector Attraction Reduction Requirement

Central Davis Sewer District evaluates VAR methods separately for the two biosolids production streams which operate at the plant. These two production streams are Trickling Filter - Anaerobic Digested Biosolids and Oxidation Ditch - Composted Biosolids.

Trickling Filter - Anaerobic Biosolids

The District meets the VAR requirements for biosolids produced through anaerobic digestion by complying with the 38% or greater volatile solids reduction. All quarters exceeded the 38% requirement and the annual average volatile solids reduction was 61%.

Oxidation Ditch - Compost

The composting process VAR requirements are met by the biosolids being in an aerobic process for at least 14 days and during that time the compost maintains a temperature above 40°C with the average temperature being above 45°C. This requirement was met for all piles and documentation of the temperatures can be found on the log sheets included in the pathogen reduction section. Final curing for the compost lasts anywhere from 45 days to 120 days depending on moisture reduction and when screening takes place.

Biosolids Production Rates

Central Davis Sewer District produced composted and anaerobic digested biosolids. The District maintained separate records for production of each type. The 2014 quantities are presented separately below.

Anaerobic Digested Biosolids Production

During 2014 the District tracked the number of loads of anaerobic biosolids applied to agricultural land. A total of 892 loads were applied at an average of about 7.7% solids. This represents 380 English tons or 346 metric tons of dry biosolids.

Oxidation Ditch Biosolids Production

In 2014, the District also tracked the number of loads of aerobic biosolids incorporated into compost. 2,123 truckloads were hauled to the composting area at an average of 13.5% solids. This represents 573 English tons or 521 Metric tons of dry biosolids, sent to composting.

Final Compost Production

2,389 metric tons of 2013 - 2014 compost was sold in 2014. A total of 3,819 metric tons of compost were produced in 2014. Of this, about 2,772 metric tons of

2014 compost remains to be screened and or marketed.

Total Biosolids Production

Biosolids or biosolids derived material production for all of 2014 were 4,165 Metric tons.

Application Zones

Records for land application to fields or zones are included in this report. Only the zones reported on, received land application of biosolids.

Certification Statement 2014

Central Davis Sewer District

Permit #: UT -0020974

Certification Statement for Pathogens, VAR, Management Practices, Site Restrictions and Chemical Pollutant Limits

I certify under the penalty of law, that the heavy metal requirements, the pathogen requirements and the vector attraction reduction requirements found in Part III.B, the site restrictions in Part III.C and the management practices in III.D have been met during 2014. This determination has been made under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate information used to determine that the pathogen reduction 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 fine and/or imprisonment.



Leland Myers, P.E.

District Manager



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION I - BIOSOLIDS REPORT

By Authority of 40 CFR Part 503, this form is to be used by generators and distributors to report biosolids applied to the land (beneficially used) which are subject to 40 CFR Part 503.

REPORTS ARE DUE February 19, 2015

Please note: All Treatment Works Treating Domestic Sewage (TWTDS) are required to complete and return this form.
** If you hauled liquid biosolids to another facility, list the amount hauled and the haulers name.

REQUIRED INFORMATION - TO BE COMPLETED BY GENERATOR OR DISTRIBUTOR. (Please type or print.)
FACILITY NAME: Central Davis Sewer District
NPDES and/or State Permit Number: UT-0020974
FACILITY ADDRESS: 2200 South Sunset Drive, Kaysville, Utah 84037
TELEPHONE NO.: 801-451-2190
CITY: Kaysville, STATE: Ut, ZIP: 84037, CONTACT PERSON: Leland Myers
DURING FISCAL YEAR 2011 (1/1/2014 - 12/31/2014), THE GENERATOR/DISTRIBUTOR NAMED ABOVE LAND APPLIED
4,165 DRY METRIC TONS OF BIOSOLIDS TO LANDS WITHIN THE STATE
4,165 TOTAL DRY METRIC TONS OF BIOSOLIDS GENERATED
0 TOTAL DRY METRIC TONS LANDFILLED
0 TOTAL DRY METRIC TONS INCINERATED
0 TOTAL DRY METRIC TONS TRANSPORTED OUT OF STATE
0 TOTAL GALLONS TRANSPORTED TO ANOTHER WASTEWATER TREATMENT FACILITY
N/A RECEIVING FACILITY NAME
N/A HAULERS NAME

To convert the English system (short tons) to metric tons, use the following equation: DRY METRIC TONS = DRY SHORT TONS x .907

I certify that the information as provided on this form is true.
Signature of Authorized Representative: [Signature]
Date: 1/5/2015

Empty table structure for additional information.

IF YOU HAVE ANY QUESTIONS ABOUT COMPLETING THIS FORM, PLEASE CONTACT THE BIOSOLIDS STAFF PERSON



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION II – GENERAL FACILITY INFORMATION

these forms may be used by generators and distributors to report biosolids applied to the land which are subject to 503.

1. Annual Reporting Year January 1, 2014 to December 31, 2014		2. Biosolids Permit Number UT-0020974	
3. Generator Name Central Davis Sewer District		4. Facility Name (if Different)	
5. Latitude (nearest 15 seconds) 40°59'55"	Longitude 111°56'49"	6. Plant Type Trickling Filter/Oxidation Ditch	
7. Permit Issued (Date) 3/1/2010		8. Permit Expires (Date) 2/28/2015	
9. Current Actual Flow Rate (MGD) 5.9 MGD		10. Industrial Pretreatment? (check one) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
11. Facility sends biosolids out of state? (Y/N) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
12. Facility Physical Address			
Street: 2200 South Sunset Drive		City: Kaysville	
County: Davis	Zip Code: 84037	Phone (include area code): 801-451-2190	
13. Facility Mailing Address (if different)			
Street: Same		City:	
County:	Zip Code:	Phone (include area code):	
14. Name of Responsible Official Leland Myers		15. Title of Responsible Official District Manager	
16. Facility Contact Person Information			
Name of Contact: Leland Myers		Title: District Manager	
E-Mail Address: lmyers@cdsewer.org		Phone: 801-451-2190	Fax: 801-451-6836
17. Contract Applier(s)/Hauler(s) Information			
Name of Contractor: None			
Phone		Contact	
Name of Contractor			
Phone		Contact	

****Please place all attachments at the end of the report packet as appendices not after each section**



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION III – FINAL USE/DISPOSAL PRACTICES (reporting year 2014)
 Permit Number (UT-0020974)

1. Land Application (total)	<u>4,165</u> dmt		
Bulk Biosolids:	<u>346</u> dmt	Derived Materials:	<u>3,819</u> dmt
Agricultural Land	<u>346</u> dmt	Agricultural Land	_____ dmt
Forest	_____ dmt	Forest	_____ dmt
Public Contact Site	_____ dmt	Public Contact Site	_____ dmt
Reclamation Site	_____ dmt	Reclamation Site	_____ dmt
Sold or Given Away	_____ dmt	Sold or Given Away	<u>3,819</u> dmt
Lawn or Garden	_____ dmt	Lawn or Garden	_____ dmt
2. Surface Disposal (Total)	<u>0</u> dmt	3. Landfill (Total)	<u>0</u> dmt
With Liner and LCS	_____ dmt	Landfill Disposal	_____ dmt
Without Liner and LCS	_____ dmt	Landfill Cover	_____ dmt
4. Incineration	<u>0</u> dmt	Landfill Name	N/A
5. Transported to Another Facility	<u>0</u> dmt	6. Received From Another Facility	<u>0</u> dmt
Name	N/A	Name	N/A
Address		Address	
NPDES		NPDES	
Phone		Phone	
7. Other	<u>0</u> dmt	8. Stored	<u>2,772</u> dmt
9. Certifications: (*Please Attach All Required Certification Statements)			
Pathogen Certification (select one)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NOT APPLICABLE
Vector/Attraction Certification? (select one)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NOT APPLICABLE
Management Practice Certification? (select one)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NOT APPLICABLE
CPLR Certification? (select one)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NOT APPLICABLE
- CPLR Site Restrictions Certification? (select one)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NOT APPLICABLE

**dmt = Dry Metric Tons

**CPLR: Cumulative Pollutant Loading Rate – when pollutants exceed Table 3 concentrations (mg/kg)

If you have any questions about the preparation of this form, contact EPA biosolids program staff person.



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION IV – LAND APPLICATION SITE INFORMATION (reporting year 2014)
 Permit Number (UT-0020974)

SITE 1 – INFORMATION		
Site Name Central Davis Sewer District Farm	Site Number 1	Indian Country <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Owner Central Davis Sewer District		
Operator Central Davis Sewer District		
Applier Central Davis Sewer District		
Latitude Same As Treatment Plant	Longitude	Reached 90% CPLR App. Rate? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Township 3 North	Range 1 West	Section 15 Salt Lake Base and Meridian
Acres Approximately 200	Acres Used Approximately 200	Crop Hay, Oats & Turf
Application Rate (tons/acre) Varies from 10 to 30 Tons per Acre	Notification (select one) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Cumulative Load Required (select one) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
SITE ____ - INFORMATION		
Site Name N/A	Site Number	Indian Country <input type="checkbox"/> YES <input type="checkbox"/> NO
Owner		
Operator		
Applier		
Latitude	Longitude	Reached 90% CPLR App. Rate? <input type="checkbox"/> YES <input type="checkbox"/> NO
Township	Range	Section
Acres	Acres Used	Crop
Application Rate (tons/acre)	Notification (select one) <input type="checkbox"/> YES <input type="checkbox"/> NO	Cumulative Load Required (select one) <input type="checkbox"/> YES <input type="checkbox"/> NO
SITE ____ – INFORMATION		
Site Name N/A	Site Number	Indian Country <input type="checkbox"/> YES <input type="checkbox"/> NO
Owner		
Operator		
Applier		
Latitude	Longitude	Reached 90% CPLR App. Rate? <input type="checkbox"/> YES <input type="checkbox"/> NO
Township	Range	Section
Acres	Acres Used	Crop
Application Rate (tons/acre)	Notification (select one) <input type="checkbox"/> YES <input type="checkbox"/> NO	Cumulative Load Required (select one) <input type="checkbox"/> YES <input type="checkbox"/> NO

****Attach additional copies of this sheet as necessary, or you may attach your contractor's Land Application Reports.**

If you have any questions about the preparation of this form, contact EPA biosolids program staff person.



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

BIOSOLIDS TREATMENT PROVIDED

THICKENING:

- 1. Gravity
- 2. DAF
- 3. Centrifuge
- 4. Belt Press

STABILIZATION:

- 5. Aerobic Dig.
- 6. Anaerobic Dig.
- 7. Heat Treat.
- 8. Wet Oxidation
- 9. Chemical (Lime) Stab.
- 10. Composting
- 11. Biosolids Lagoons
- 12. _____

CONDITIONING:

- 13. Chemical Cond.
- 14. _____

DEWATERING:

- 15. Vacuum Filter
- 16. Pressure Filter
- 17. Belt Filter
- 18. Drying Bed
- 19. Drying Lagoon
- 20. Heat Drying
- 21. Centrifuge
- 22. _____

OTHER:

- 23. Wastewater Lagoon
- 24. Mixing of Biosolids
- 25. Oxidation Ditch
- 26. Incineration
- 27. Septage
- 28. _____



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION V – MONITORING DATA SUMMARY (reporting year 2014)
 Permit Number (UT-0020974)

Parameter	Minimum Monthly Concentration	Average Monthly Concentration	Maximum Monthly Concentration	Units	# of Analyses	Average Method Detection Limit	Test Method	Sample Type
Inorganics								
Total Solids				%				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Arsenic				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Cadmium			See	mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Copper			Included	mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Lead			Report	mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Mercury				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Molybdenum				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Nickel				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Selenium				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Zinc				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Nutrients								
Total Kjeldahl Nitrogen				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Ammonium Nitrogen				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Phosphorus				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite
Total Potassium				mg/kg				<input type="checkbox"/> Grab <input type="checkbox"/> Composite

****Include copies of the actual analytical laboratory data sheets as an attachment at the end of the packet. Include any additional monitoring results not listed above.** All sampling shall be representative of the biosolids applied to land during the reporting period and in accordance with 40 CFR Part and 503 Frequency of Monitoring – Land Application. All analysis should be provided on a dry weight basis.

If you have any questions about the preparation of this form, contact EPA biosolids program staff person.



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION VI – PATHOGEN AND VECTOR ATTRACTION REDUCTION (reporting year 2014)
Permit Number (UT-0020974)

**1. Pathogen Reduction
Class A**

- Class A – Alternative 1 (+ elevated temp for specified time)
- Class A – Alternative 2 (+ pH adjust for specified time/temp)
- Class A – Alternative 3 (+ virus and helminth criteria)
- Class A – Alternative 4 (+ other virus and helminth criteria)
- Class A – Alternative 5 (indicate which PFRP)
 - (a) composting
 - (b) heat drying
 - (c) heat treatment
 - (d) thermophillic aerobic digestion
 - (e) beta ray irradiation
 - (f) gamma ray irradiation
 - (g) pasteurization
- Class A – Alternative 6 (attach PFRP equivalent documentation)

**2. Pathogen Reduction
Class B**

- Class B – Alternative 1 (geometric mean of 7 samples)
- Class B – Alternative 2 (indicate which PSRP)
 - (a) aerobic digestion
 - (b) air drying
 - (c) anaerobic digestion
 - (d) composting
 - (e) lime stabilization (pH at 25' C or equivalent)
- Class B – Alternative 3 (attach PSRP equivalent documentation)

**3. Vector Attraction Reduction
Method Used:**

- Option 1 (minimum 38 percent reduction in volatile solids)
- Option 2 (Anaerobic process, with bench-scale demonstration)
- Option 3 (Aerobic Process, with bench scale demonstration)
- Option 4 (Specific Oxygen Uptake Rate (SOUR), aerobically digested)
- Option 5 (Aerobic Process plus raised temperature)
- Option 6 (Raise pH to 12 and retain at 11.5)
- Option 7 (75% solids with no unstabilized solids)
- Option 8 (90% solids with unstabilized solids)
- Option 9 (Injection below land surface with significant soil coverage)
- Option 10 (Covering active sewage sludge unit daily)

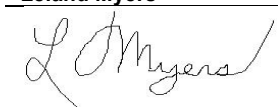
****Attach all Pathogen Reduction and Vector Attraction Reduction documentation to demonstrate compliance at the end of the packet**

If you have any questions regarding the preparation of this form, contact the EPA biosolids program staff person.



USA EPA Region 8
BIOSOLIDS ANNUAL REPORT

SECTION VII – SIGNATURE PAGE

Facility Name Central Davis Sewer District	Biosolids Permit Number UT-0020974
<p>CERTIFICATION</p> <p><i>"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system of those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."</i></p>	
Name and Official Title	Leland Myers
Signature	
Telephone Number	801-451-2190
Date Signed	1/5/2015
Name and Official Title	_____
Signature	_____
Date Signed	_____
<p>Upon request you may be required to submit additional information necessary to access biosolids use or disposal practices at your facility or to identify appropriate permitting requirements.</p>	

PLEASE RETURN COMPLETED FORMS TO:

Bob Brobst
Attn: Water Program
Regional Biosolids Program, P-W-P
USEPA Region VIII,
1595 Wynkoop St.
Denver, Colorado 80202-1199

Anaerobic Biosolids Chemical Quality

1. 2014 Testing Summary
2. Testing Laboratory Reports
3. Historic Testing Summary
4. Quality Control Charts

CDSD Anaerobic Biosolids Chemical Quality - 2014

<u>Date</u>	<u>Type</u>	<u>Aluminum</u> <u>ppm</u>	<u>Arsenic</u> <u>ppm</u>	<u>Cadmium</u> <u>ppm</u>	<u>Chromium</u> <u>ppm</u>	<u>Copper</u> <u>ppm</u>	<u>Lead</u> <u>ppm</u>	<u>Mercury</u> <u>ppm</u>	<u>Molyb</u> <u>ppm</u>	<u>Nickel</u> <u>ppm</u>	<u>Phosphorus</u> <u>ppm</u>	<u>Selenium</u> <u>ppm</u>	<u>Silver</u> <u>ppm</u>	<u>Zinc</u> <u>ppm</u>
1/6/14	AN	4,200	14.7	0.816	10.5	828	10.4	0.79	10.1	9.31	12,000	7.1	4.8	541
4/4/14	AN	4,910	13.2	1.12	14	1110	13.4	1.81	13.2	13.3	19,200	8.87	7.14	105
7/7/14	AN	5,100	16.7	0.788	14.3	1170	15.4	1.99	12.8	12.7	19,600	10.7	6.14	939
10/8/14	AN	4,070	15.1	0.585	11.6	908	9.21	0.9	3.11	9.48	13,300	3.54	4.67	716
Total Year Values														
Minimum		4,070	13	1	11	828	9	1	3	9	12,000	4	5	105
Average		4,570	15	1	13	1,004	12	1	10	11	16,025	8	6	575
Maximum		5,100	17	1	14	1,170	15	2	13	13	19,600	11	7	939

<u>Date</u>	<u>TKN</u> <u>ppm</u>	<u>Ammonia</u> <u>as N</u> <u>ppm</u>	<u>Nitrate+Ni</u> <u>trite-Total</u> <u>ppm</u>	<u>Total Solids</u> <u>ppm</u>
1/6/14	3,848	391	4.4	7.4
4/4/14	4,580	502	0.0	5.8
7/7/14	6,240	480	0	8.1
10/8/14	4,770	433	0	8.9
Minimum	3,848	391	0	6
Average	4,860	452	1	8
Maximum	6,240	502	4	9

**Central Davis Sewer District
Anaerobic Biosolids - Historic Table**

Date	Type	Aluminum ppm	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Lead ppm	Mercury ppm	Molyb ppm	Nickel ppm	Phosphorus ppm	Selenium ppm	Silver ppm	Zinc ppm ppm
4/4/08	AN	13,500	15.7	1	17	940	75	2.3	12	13	24,800	6.6	16	800
7/8/08	AN	12,700	15	1.2	16.8	978	25	2.5	11.7	13.2	23,200	0.25	14.7	543
10/21/08	AN	12,000	18	1.1	15.6	1200	27	0.18	13	12.5	24,000	2.5	15.5	880
1/5/09	AN	11,400	25	1.2	29	1280	20	1.6	13	11.2	23,500	2.5	16.4	826
4/6/09	AN	11,500	16	1.1	18.6	1150	18.3	1.7	11.4	15.5	25,900	8.2	14.6	859
7/6/09	AN	12,100	18	1.1	18.3	1260	21.4	2	11.6	14.3	23,500	9.4	14.4	901
10/12/09	AN	11,100	20	1.2	16	1400	16.7	2	13	12.6	24,000	5.6	12.4	987
1/12/10	AN	10,300	18.6	1.03	13.5	1200	13.7	1.75	12.3	10.9	24,000	6.21	13.3	884
4/8/10	AN	11,200	15.9	1.07	19.1	998	15.7	3.03	12.3	12.9	11,200	12.2	12.2	913
7/16/10	AN	11,700	35.5	2.29	22.1	1120	34.8	0.45	15.7	15.6	25,600	21.5	21.5	983
10/4/10	AN	10,200	20.1	1.06	14.3	1240	15.5	1.5	12.8	11.6	20,800	8.02	12	922
1/14/11	AN	10,700	19.5	1.02	14.7	1270	13.2	1.31	13.2	10.4	22,100	5.16	11.7	852
4/4/11	AN	9,560	17.4	0.86	15.2	850	16.2	2.2	10.7	12	19,800	6.89	9.63	733
7/14/11	AN	3,410	13.6	0.49	6.78	425	10.6	3.1	5.0	5.6	8,460	11.8	4.51	345
10/6/11	AN	7,430	21.7	1.05	14.3	1250	16.7	2.04	10.9	12.6	17,900	8.45	8.69	812
1/9/12	AN	4,210	14.6	0.674	6.75	771	9.4	1.15	8.47	9.24	15,100	8.17	5.61	570
4/9/12	AN	4,710	14.7	0.811	10.6	807	11	1.77	9.03	9.36	16,400	8.35	6.55	632
7/6/12	AN	5,000	16.7	0.88	13.3	948	13.3	1.64	10.2	9.83	17,100	6.59	7.46	744
10/1/12	AN	4,870	21.7	0.501	11.7	1210	16.6	2.16	12.5	10	18,800	8.76	4.08	794
1/7/13	AN	9,320	20.3	0.857	10.3	1050	12.1	1.72	11.8	9.06	21,000	8.58	5.95	691
4/8/13	AN	7,460	23.6	0.884	15.6	1090	13.4	0.77	13.2	12.8	24,500	10.8	6.76	827
7/8/13	AN	3,790	14.6	0.632	10.7	721	11.9	1.98	8.39	8.12	12,800	7.28	5.03	560
10/4/13	AN	5,030	21	1.14	15.7	1340	16.8	1.91	14.6	13.7	18,500	9.99	7.35	995
1/6/14	AN	4,200	14.7	0.816	10.5	828	10.4	0.79	10.1	9.31	12,000	7.1	4.8	541
4/4/14	AN	4,910	13.2	1.12	14	1110	13.4	1.81	13.2	13.3	19,200	8.87	7.14	105
7/7/14	AN	5,100	16.7	0.788	14.3	1170	15.4	1.99	12.8	12.7	19,600	10.7	6.14	939
10/8/14	AN	4,070	15.1	0.585	11.6	908	9.21	0.9	3.11	9.48	13,300	3.54	4.67	716
average		15,393.6	8.3	1.8	16.8	541.9	25.4	2.7	8.1	13.4	20,243.2	6.6	13.5	509.4
Std. Dev.		7,324.8	6.0	1.5	5.6	289.3	16.7	1.9	3.3	3.3	5,267.9	4.3	7.7	210.4
Avg-2StDv		744.0	0.0	0.0	5.6	0.0	0.0	0.0	1.5	6.8	9,707.4	0.0	0.0	88.7
Avg+2StDv		30,043.2	20.3	4.7	28.0	1,120.5	58.8	6.5	14.6	20.1	30,779.0	15.2	28.9	930.2
Note: 1. When a value was found to be below the detection limit, the whole number of the detection limit was used in the analysis.														
2. An ** indicates that the value has not been used because of suspect integrity														



1/22/2014

Work Order: 1400123

Central Davis Sewer District

Attn: Leland Myers

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: Linda Daniels 801.262.7299

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Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1400123-03

Name: Central Davis Sewer District	Sample Date: 1/6/2014 10:20 AM
Sample Site: Anaerobic Sludge	Receipt Date: 1/7/2014 10:00 AM
Comments: Composite	Sampler: Jace Woodrow
Sample Matrix: Sludge	Project: WW

Parameter	Sample Result	Minimum Reporting Limit	Units	Analysis Date/Time	Analyst Initials	Analytical Method	CAS No.	Flag
Inorganic								
Ammonia (Soluble) as N	5380	54.1	mg/kg dry	1/17/2014 7:00	TSM	SM 4500G Mod	7664-41-7	
Nitrate + Nitrite, Soluble	59.5	13.5	mg/kg dry	1/21/2014 14:18	KSL	SM 4500 NO3- F	CTF10164	
Total Kjeldahl Nitrogen	52000	13.5	mg/kg dry	1/10/2014 14:40	KRW	SM 4500 NH3-D	CTF10234	
Total Solids	7.4	0.1	%	1/7/2014 15:00	LHD	SM 2540G	CTF10242	
Total Volatile Solids	63.1	0.1	%	1/7/2014 15:00	LHD	SM 2540 E	CTF10270	
Metals								
Aluminum, Total	4200	10.0	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7429-90-5	
Arsenic, Total	14.7	9.97	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-38-2	
Cadmium, Total	0.816	0.498	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-43-9	
Chromium, Total	10.5	0.498	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-47-3	
Copper, Total	828	0.498	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-50-8	
Lead, Total	10.4	4.98	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7439-92-1	
Mercury, Total	0.79	0.03	mg/kg dry	1/17/2014 9:00	AKL	EPA 7471A	7439-97-6	
Molybdenum, Total	10.1	1.00	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7439-98-7	
Nickel, Total	9.31	0.498	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-02-0	
Phosphorus, Total as P	12000	49.8	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7723-14-0	
Selenium, Total	7.10	4.98	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7782-49-2	
Silver, Total	4.80	0.498	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-22-4	
Zinc, Total	541	1.00	mg/kg dry	1/20/2014 11:51	TJS	EPA 6010B	7440-66-6	



Certificate of Analysis

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit.

1 mg/L = one milligram per liter or 1 mg/Kg = one milligram per kilogram = 1 part per million.

1 ug/L = one microgram per liter or 1 ug/Kg = one microgram per kilogram = 1 part per billion.

1 ng/L = one nanogram per liter or 1 ng/Kg = one nanogram per kilogram = 1 part per trillion.

Flag Descriptions



4/28/2014

Work Order: 1403163

Central Davis Sewer District

Attn: Debbie DeJong

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: Linda Daniels 801.262.7299

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Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1403163-01

Name: Central Davis Sewer District	Sample Date: 4/4/2014 9:00 AM
Sample Site: DRAFT: Anaerobic Sludge	Receipt Date: 4/8/2014 10:00 AM
Comments: Composite	Sampler: Lloyd Hess
Sample Matrix: Solid	Project: Sludge

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
DRAFT: Inorganic							
Ammonia (Soluble) as N	8660	69.0	mg/kg dry	SM 4500G Mod	04/17/2014 08:30	04/17/2014 08:30	
Nitrate + Nitrite, Soluble	ND	50.0	mg/kg	SM 4500 NO3- F	04/15/2014 10:09	04/15/2014 10:09	
Total Kjeldahl Nitrogen	4580	1.0	mg/kg	SM 4500 NH3-D	04/08/2014 22:06	04/08/2014 22:06	
Total Solids	5.8	0.1	%	SM 2540G	04/14/2014 14:50	04/16/2014 15:00	
Total Volatile Solids	69.0	0.1	%	SM 2540 E	04/16/2014 15:00	04/16/2014 15:00	
DRAFT: Metals							
Aluminum, Total	4910	11.3	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Arsenic, Total	13.2	11.3	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Cadmium, Total	1.12	0.563	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Chromium, Total	14.0	0.563	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Copper, Total	1110	0.563	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Lead, Total	13.4	5.63	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Mercury, Total	1.81	0.03	mg/kg dry	EPA 7471A	04/16/2014 09:57	04/16/2014 12:00	
Molybdenum, Total	13.2	1.13	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Nickel, Total	13.3	0.563	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Phosphorus, Total as P	19200	56.3	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Selenium, Total	8.87	5.63	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Silver, Total	7.14	0.563	mg/kg dry	EPA 6010B	04/16/2014 09:53	04/18/2014 10:51	
Zinc, Total	105	17.2	mg/kg dry	EPA 6010B	04/23/2014 15:44	04/24/2014 10:36	



CHEMTECH-FORD
LABORATORIES

Certificate of Analysis

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit.

1 mg/L = one milligram per liter or 1 mg/Kg = one milligram per kilogram = 1 part per million.

1 ug/L = one microgram per liter or 1 ug/Kg = one microgram per kilogram = 1 part per billion.

1 ng/L = one nanogram per liter or 1 ng/Kg = one nanogram per kilogram = 1 part per trillion.

Flag Descriptions



7/18/2014

Work Order: 1406424

Central Davis Sewer District

Attn: Debbie DeJong

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: Linda Daniels 801.262.7299

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Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1406424-01

<p>Name: Central Davis Sewer District</p> <p>Sample Site: Anaerobic Sludge</p> <p>Comments: Composite</p> <p>Sample Matrix: Solid</p>	<p>Sample Date: 7/7/2014 9:42 AM</p> <p>Receipt Date: 7/8/2014 10:00 AM</p> <p>Sampler: Jace Woodrow</p> <p>Project: Sludge</p>
---	---

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	480	0.2	mg/kg	SM 4500G Mod	07/14/2014 11:00	07/14/2014 11:00	
Nitrate + Nitrite, Soluble	ND	1.0	mg/kg	SM 4500 NO3- F	07/15/2014 15:46	07/15/2014 15:46	
Total Kjeldahl Nitrogen	6240	1.0	mg/kg	SM 4500 NH3-D	07/09/2014 15:58	07/10/2014 16:01	
Total Solids	8.1	0.1	%	SM 2540G	07/08/2014 14:00	07/09/2014 10:00	
Total Volatile Solids	70.1	0.1	%	SM 2540 E	07/08/2014 14:00	07/09/2014 10:00	
Metals							
Aluminum, Total	5100	8.9	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Arsenic, Total	16.7	8.92	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Cadmium, Total	0.788	0.446	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Chromium, Total	14.3	0.446	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Copper, Total	1170	0.446	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Lead, Total	15.4	4.46	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Mercury, Total	1.99	0.05	mg/kg dry	EPA 7471A	07/09/2014 08:37	07/09/2014 13:50	
Molybdenum, Total	12.8	0.89	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Nickel, Total	12.7	0.446	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Phosphorus, Total as P	19600	44.6	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Selenium, Total	10.7	4.46	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Silver, Total	6.14	0.446	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	
Zinc, Total	939	0.89	mg/kg dry	EPA 6010B	07/09/2014 08:28	07/09/2014 15:45	



CHEMTECH-FORD
LABORATORIES

Certificate of Analysis

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit.

1 mg/L = one milligram per liter or 1 mg/Kg = one milligram per kilogram = 1 part per million.

1 ug/L = one microgram per liter or 1 ug/Kg = one microgram per kilogram = 1 part per billion.

1 ng/L = one nanogram per liter or 1 ng/Kg = one nanogram per kilogram = 1 part per trillion.

Flag Descriptions



10/31/2014

Work Order: 1411462

Central Davis Sewer District

Attn: Debbie DeJong

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: 801.262.7299

The analyses presented on this report were performed in accordance with the National Environmental Laboratory Accreditation Program (NELAP) unless noted in the comments, flags or case narrative. If the report is to be used for regulatory compliance, it should be presented in its entirety, and not be altered.



Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1411462-01

Name: Central Davis Sewer District

Sample Date: 10/8/2014 11:30 AM

Sample Site: Anaerobic Sludge

Receipt Date: 10/10/2014 2:15 PM

Comments: Composite

Sampler: Nate Cloward

Sample Matrix: Solid

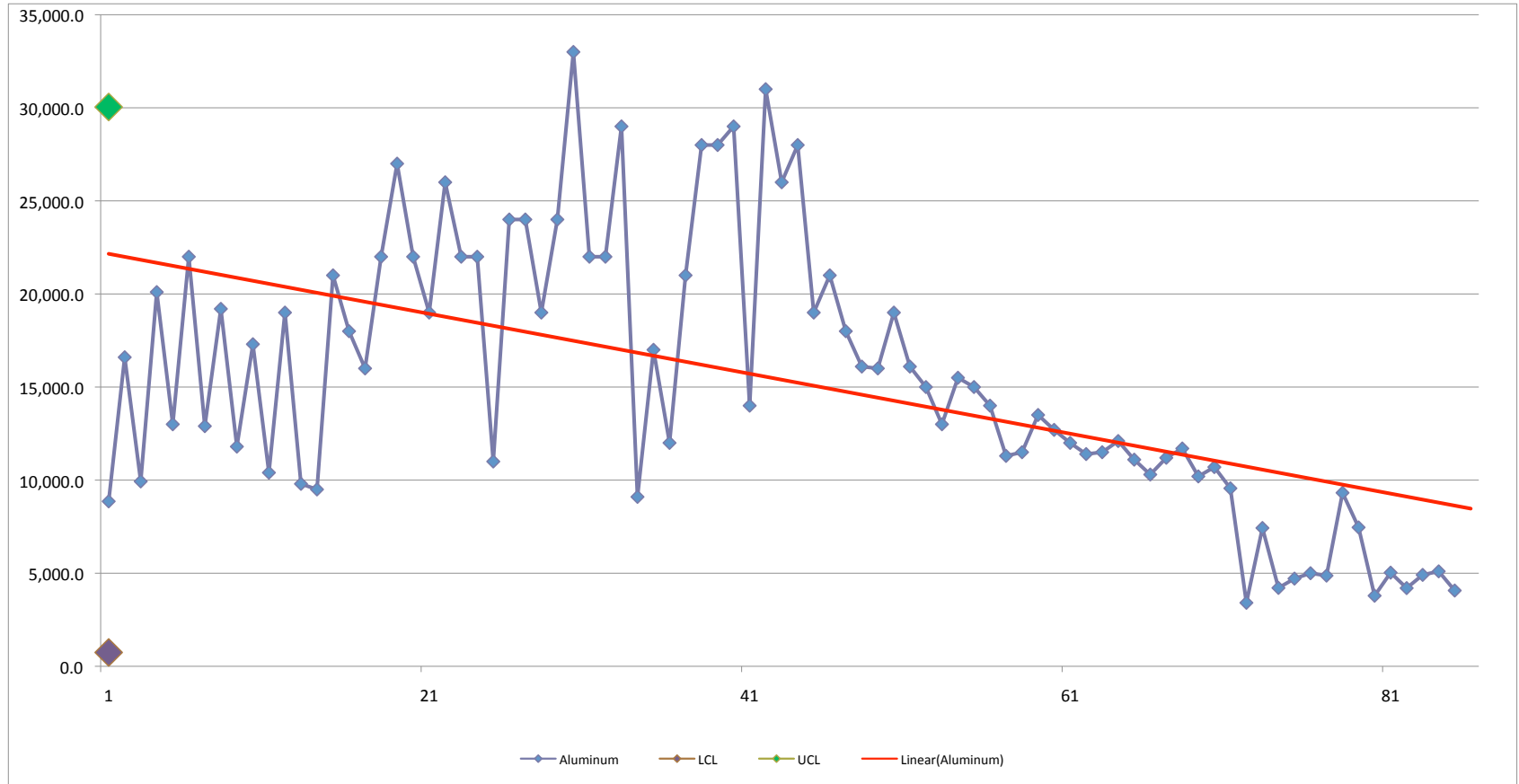
Project: Sludge

PO Number:

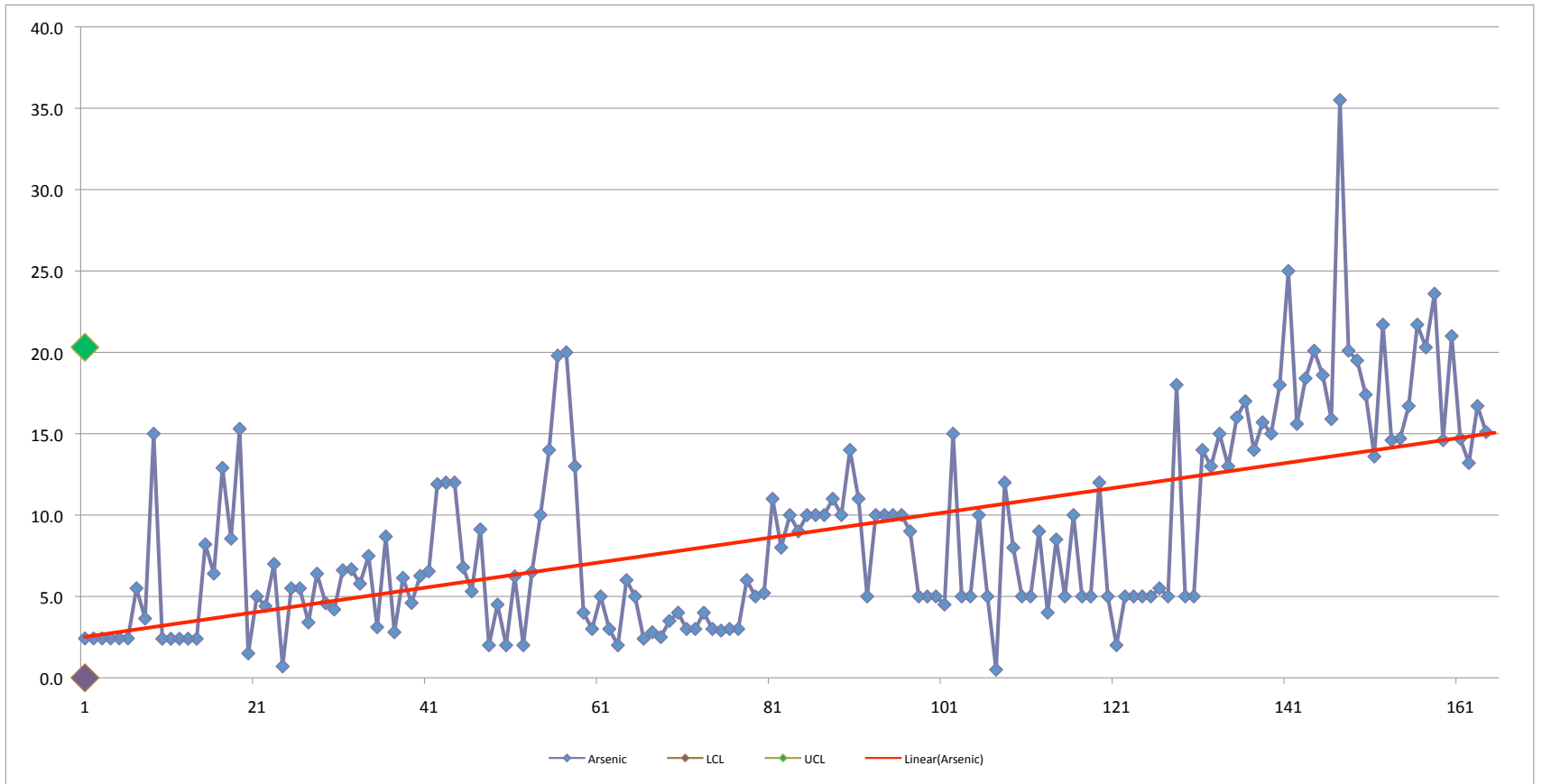
Project Number:

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	433	4.0	mg/kg	SM 4500G Mod	10/13/2014 10:00	10/13/2014 10:00	
Nitrate + Nitrite, Soluble	ND	0.1	mg/kg	SM 4500 NO3- F	10/23/2014 14:30	10/23/2014 14:30	
Total Kjeldahl Nitrogen	4770	1.0	mg/kg	SM 4500 NH3-D	10/17/2014 13:57	10/21/2014 23:23	
Total Solids	8.9	0.1	%	SM 2540G	10/10/2014 14:30	10/10/2014 14:30	
Total Volatile Solids	67.3	0.1	%	SM 2540 E	10/10/2014 14:30	10/10/2014 14:30	
Metals							
Aluminum, Total	4070	8.0	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Arsenic, Total	15.1	8.03	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Cadmium, Total	0.585	0.401	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Chromium, Total	11.6	0.401	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Copper, Total	908	0.401	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Lead, Total	9.21	4.01	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Mercury, Total	0.90	0.03	mg/kg dry	EPA 7471A	10/16/2014 08:00	10/16/2014 12:15	
Molybdenum, Total	3.11	0.80	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Nickel, Total	9.48	0.401	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Phosphorus, Total as P	13300	40.1	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Selenium, Total	3.54	4.01	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	J
Silver, Total	4.67	0.401	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	
Zinc, Total	716	0.80	mg/kg dry	EPA 6010B	10/14/2014 14:44	10/15/2014 9:10	

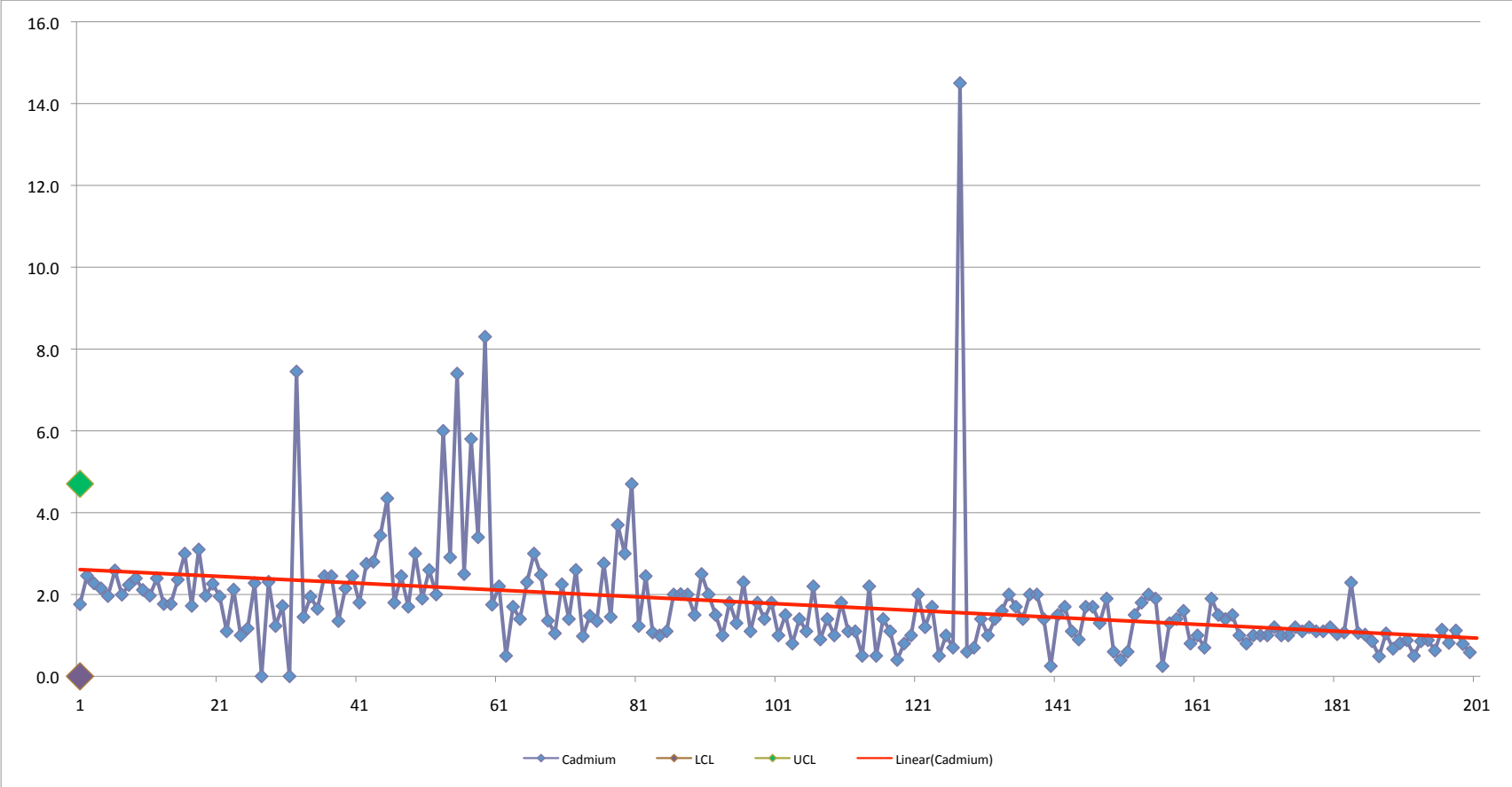
Central Davis Sewer District
Anaerobic Biosolids
Aluminum Quality Control Chart



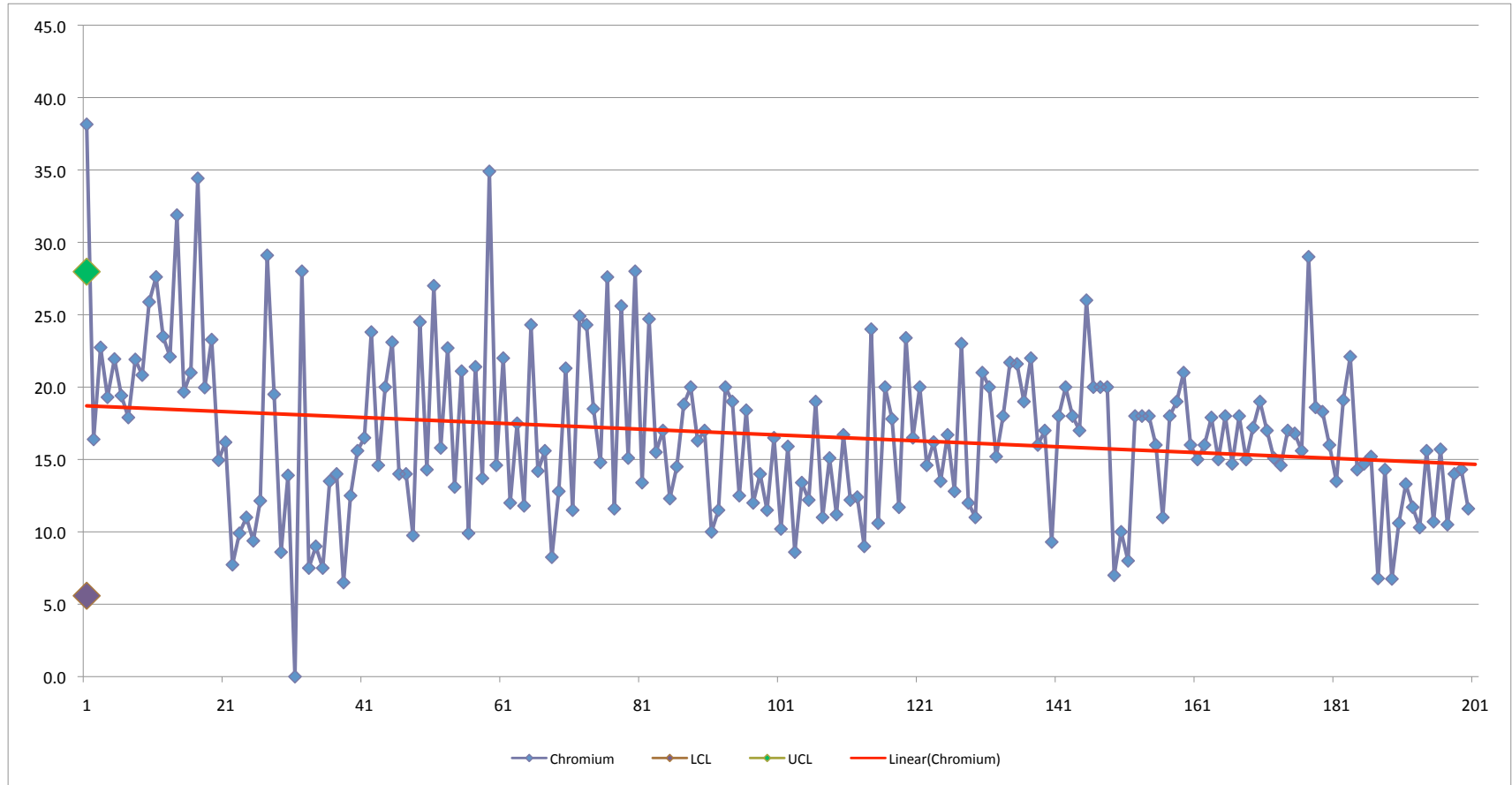
Central Davis Sewer District
Anaerobic Biosolids
Arsenic Quality Control Chart



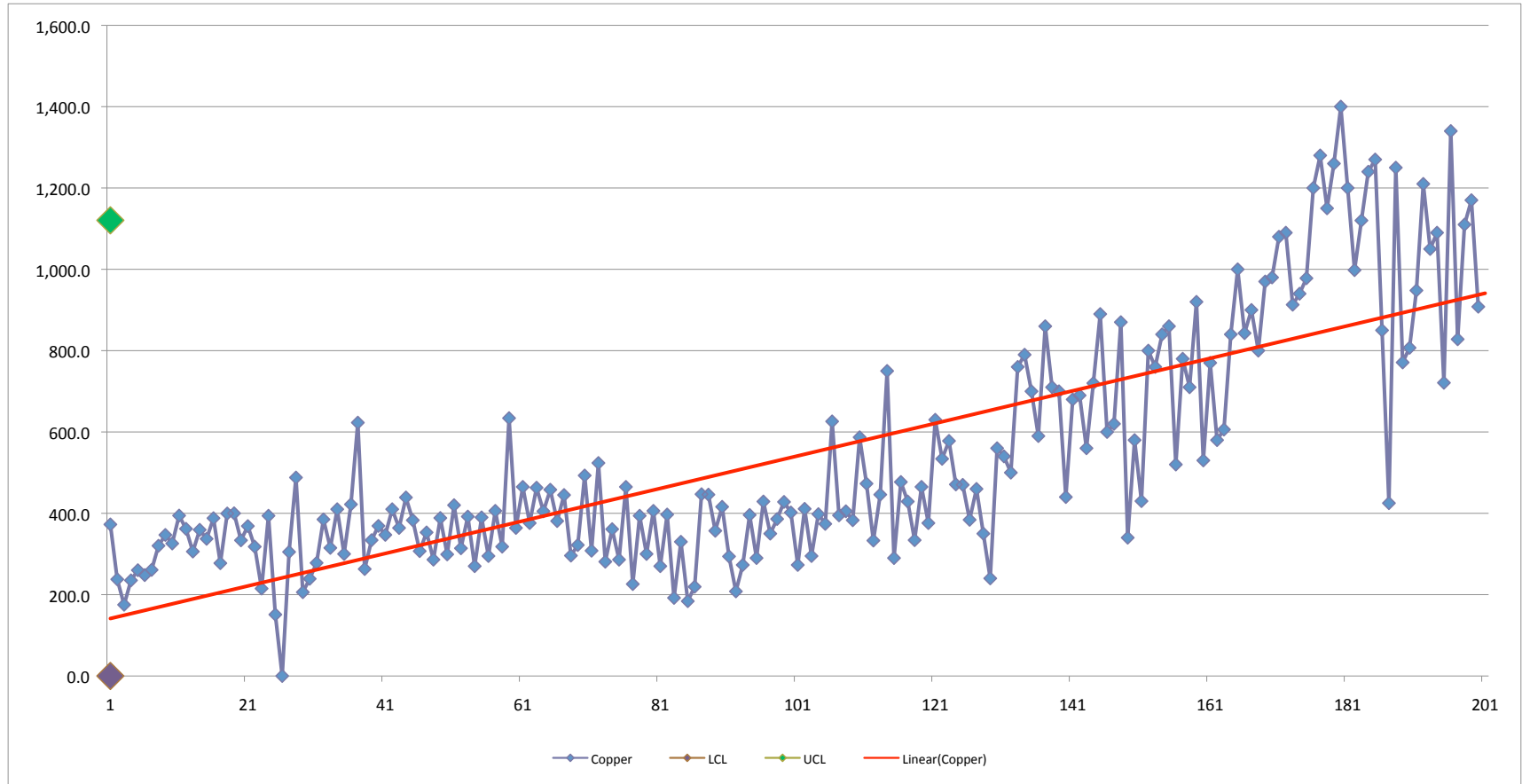
Central Davis Sewer District
Anaerobic Biosolids
Cadmium Quality Control Chart



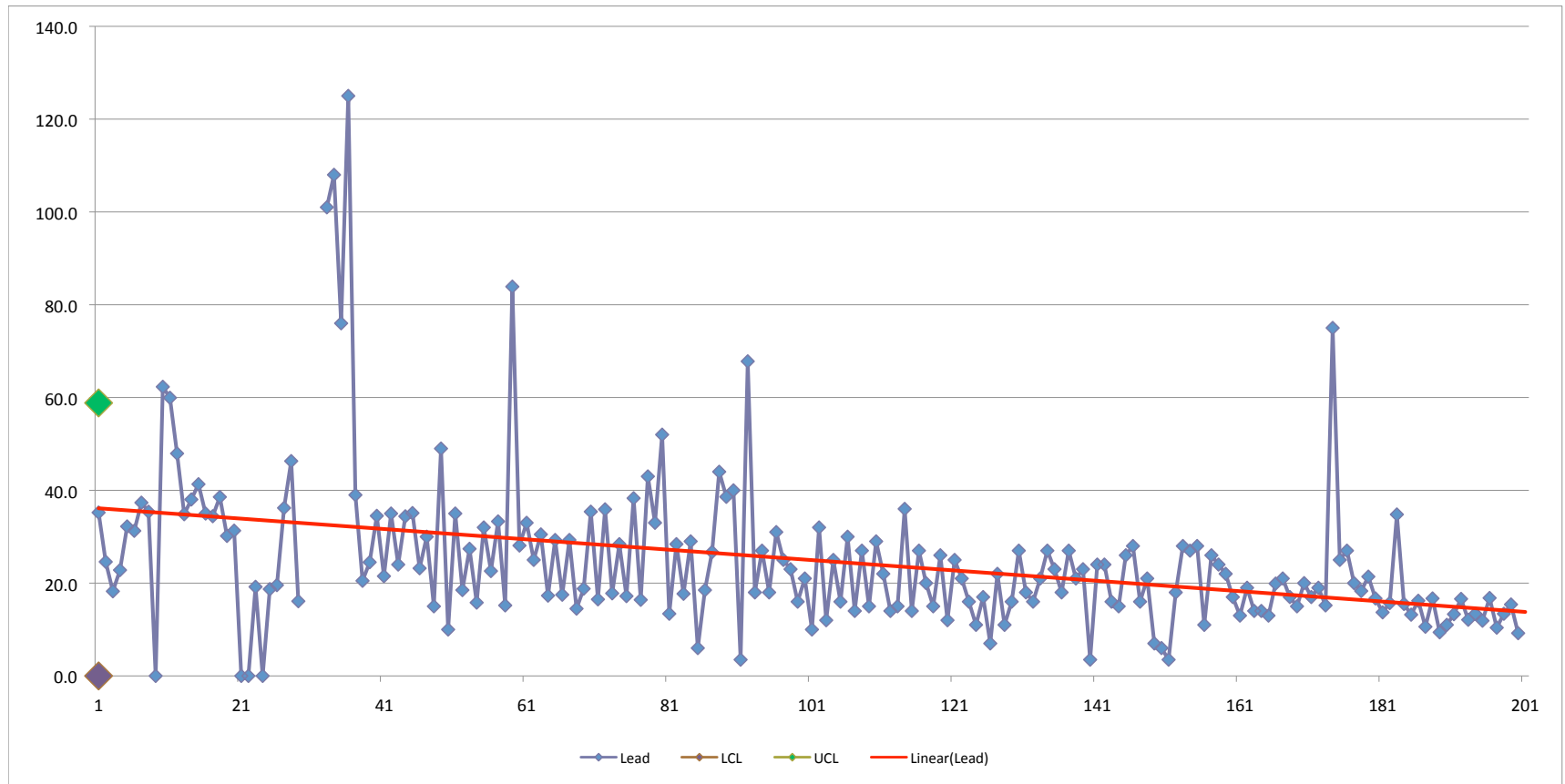
Central Davis Sewer District
Anaerobic Biosolids
Chromium Quality Control Chart



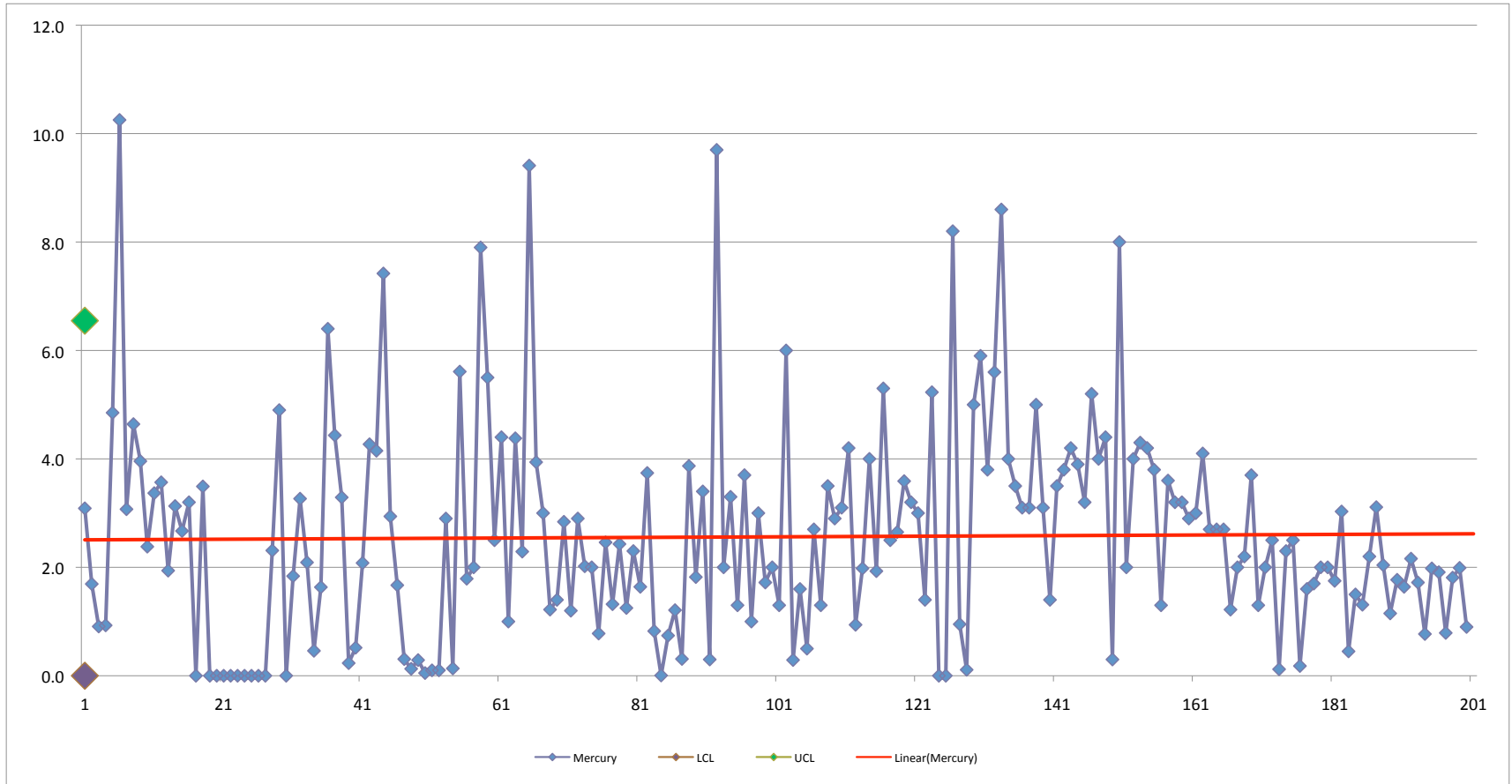
Central Davis Sewer District
Anaerobic Biosolids
Copper Quality Control Chart



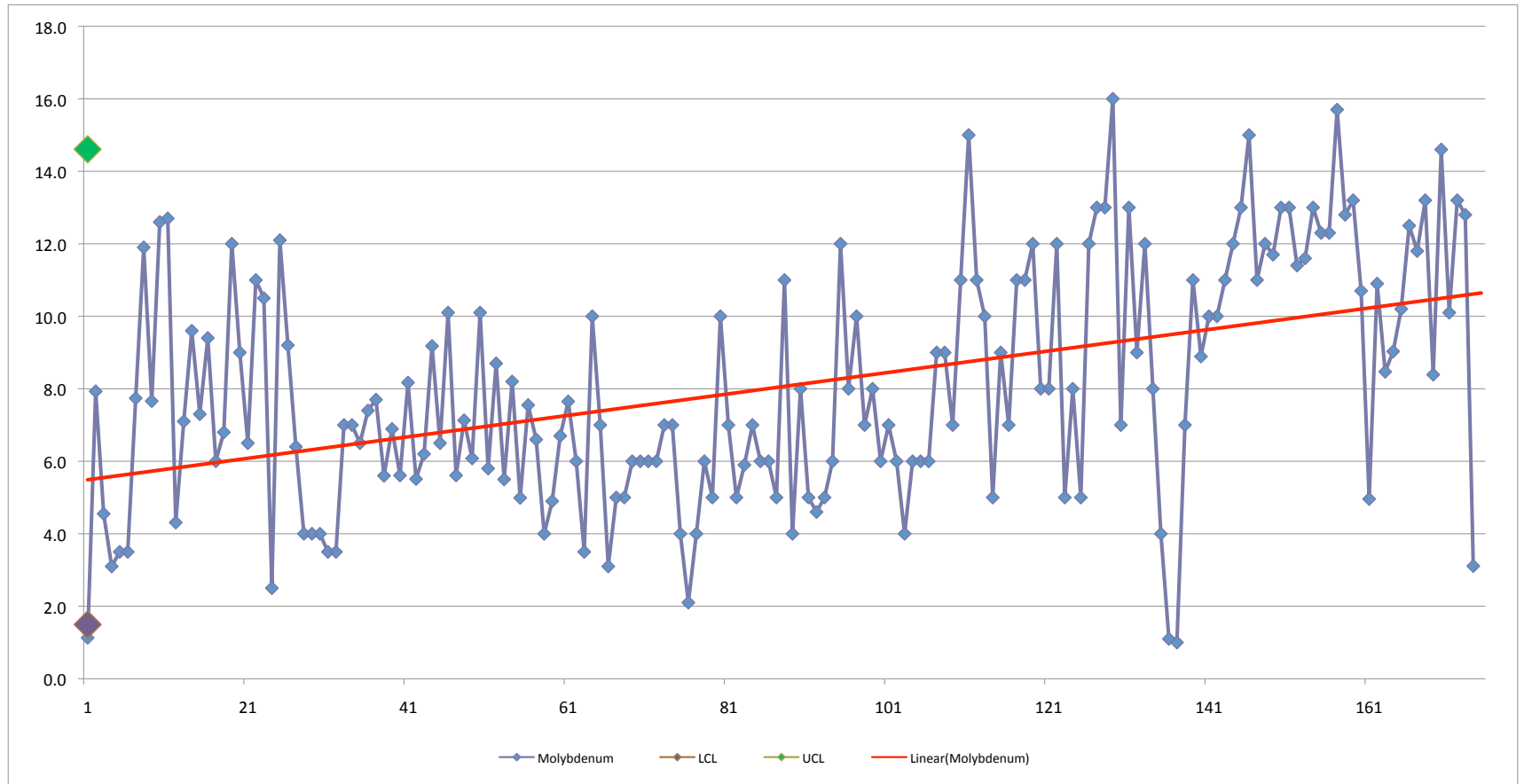
Central Davis Sewer District
Anaerobic Biosolids
Lead Quality Control Chart



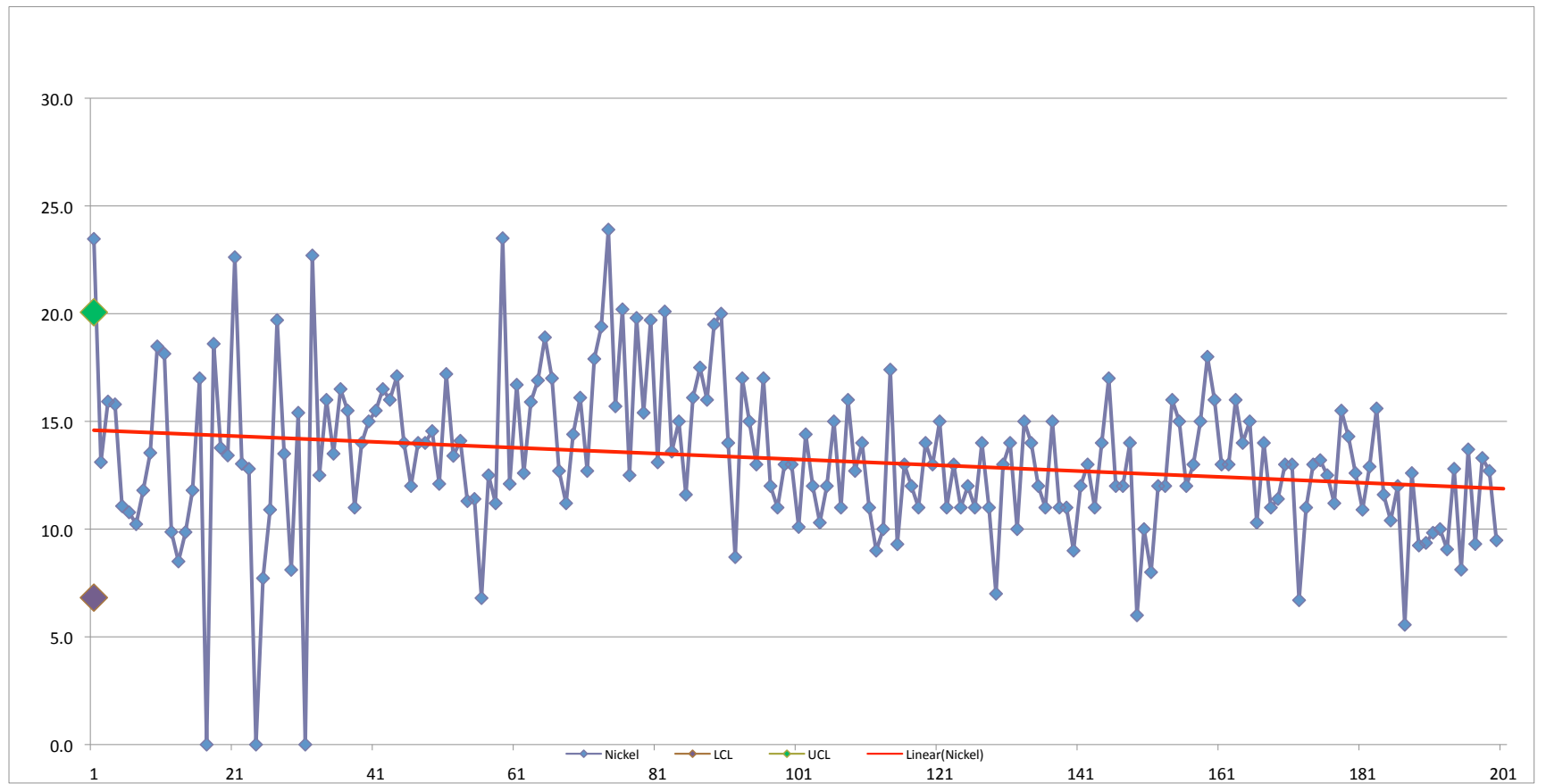
Central Davis Sewer District
Anaerobic Biosolids
Mercury Quality Control Chart



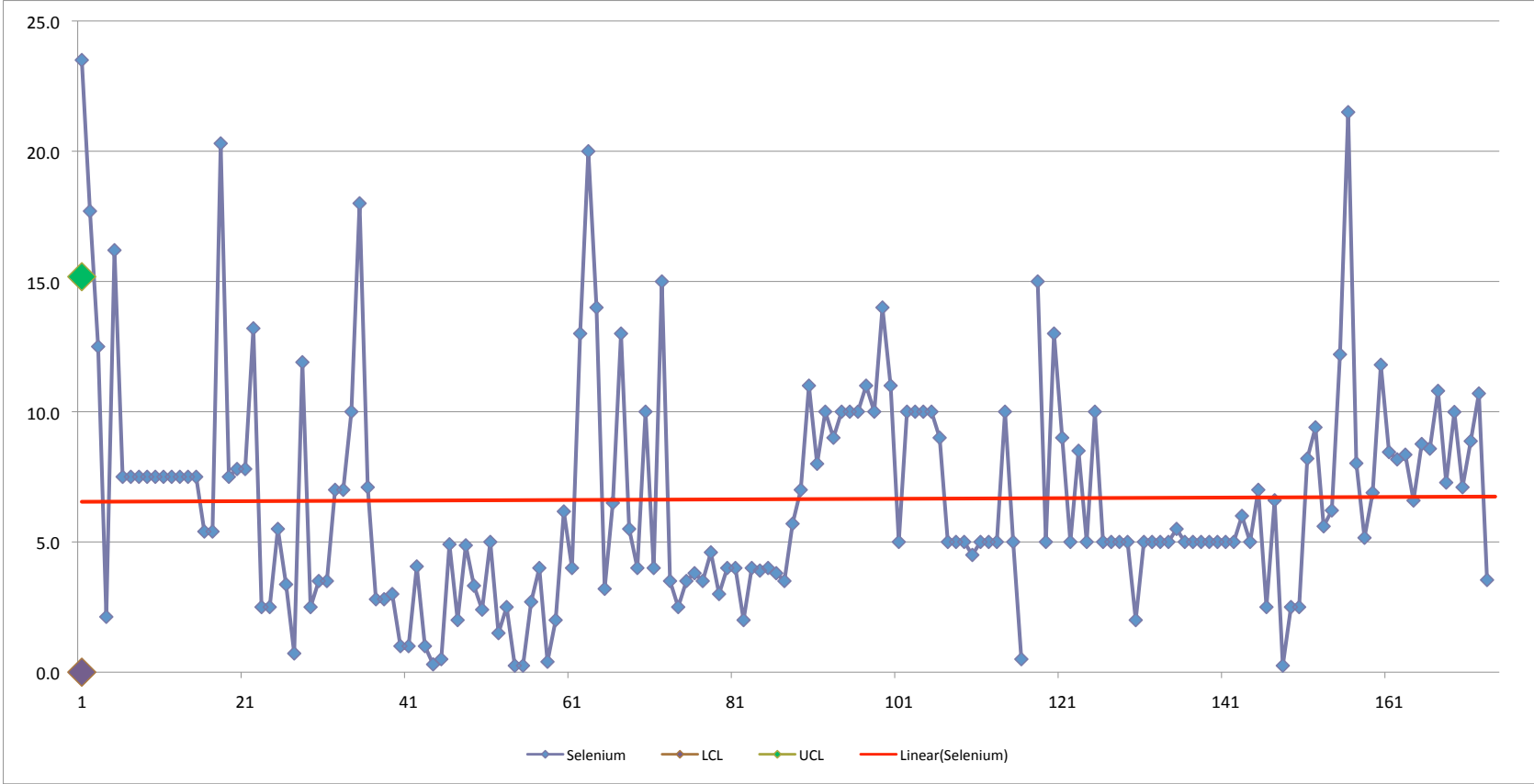
Central Davis Sewer District
Anaerobic Biosolids
Molybdenum Quality Control Chart



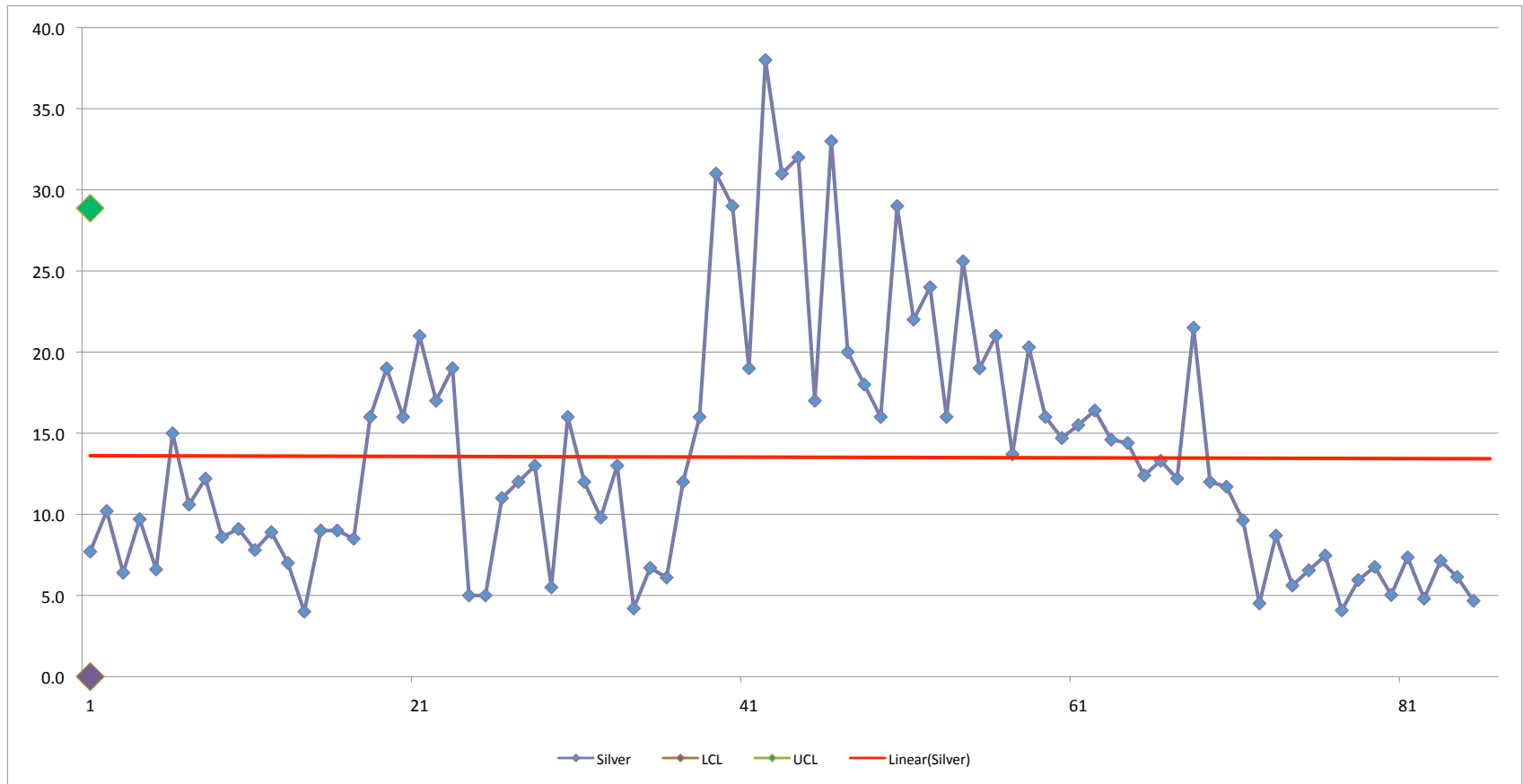
Central Davis Sewer District
Anaerobic Biosolids
Nickel Quality Control Chart



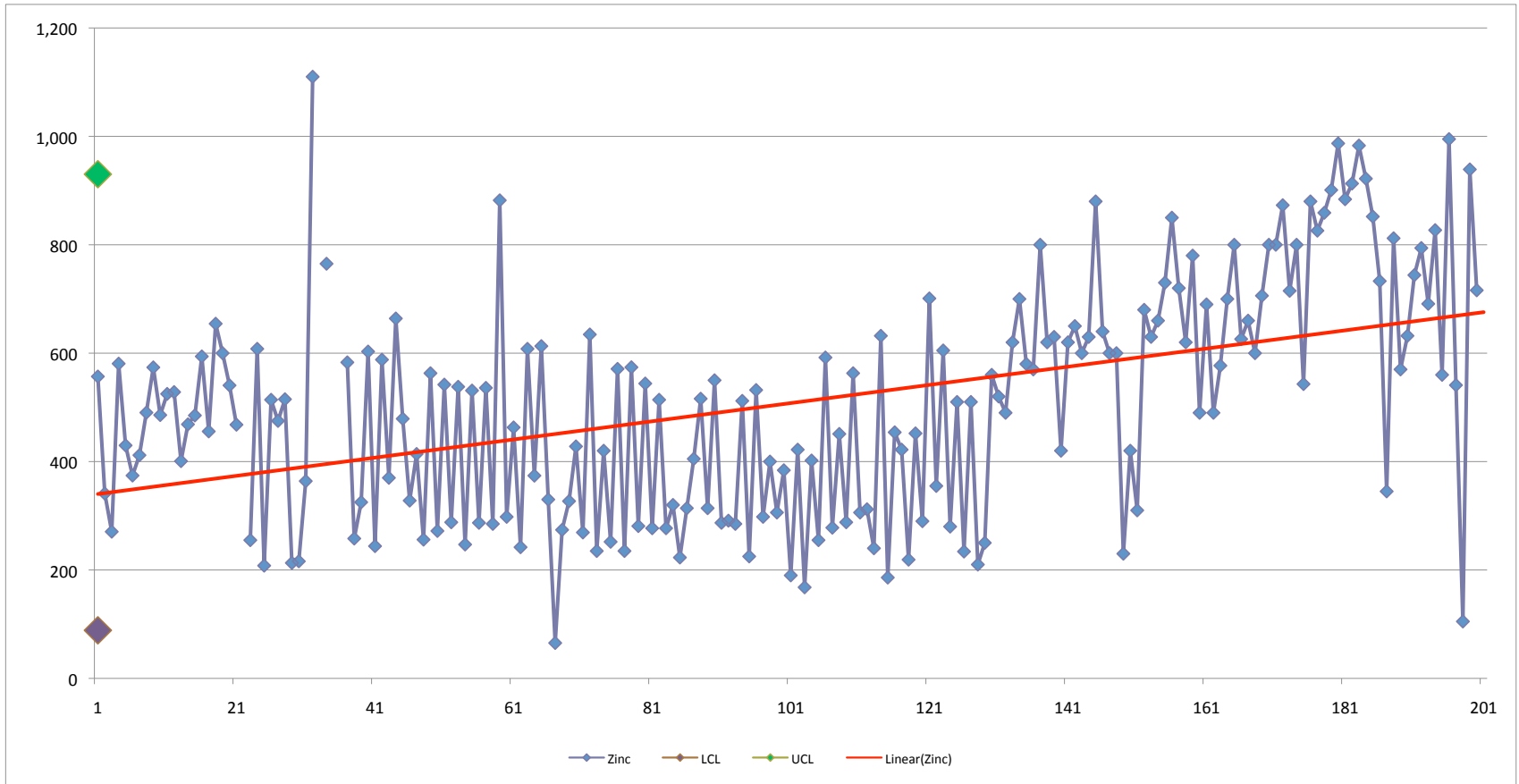
Central Davis Sewer District
Anaerobic Biosolids
Selenium Quality Control Chart



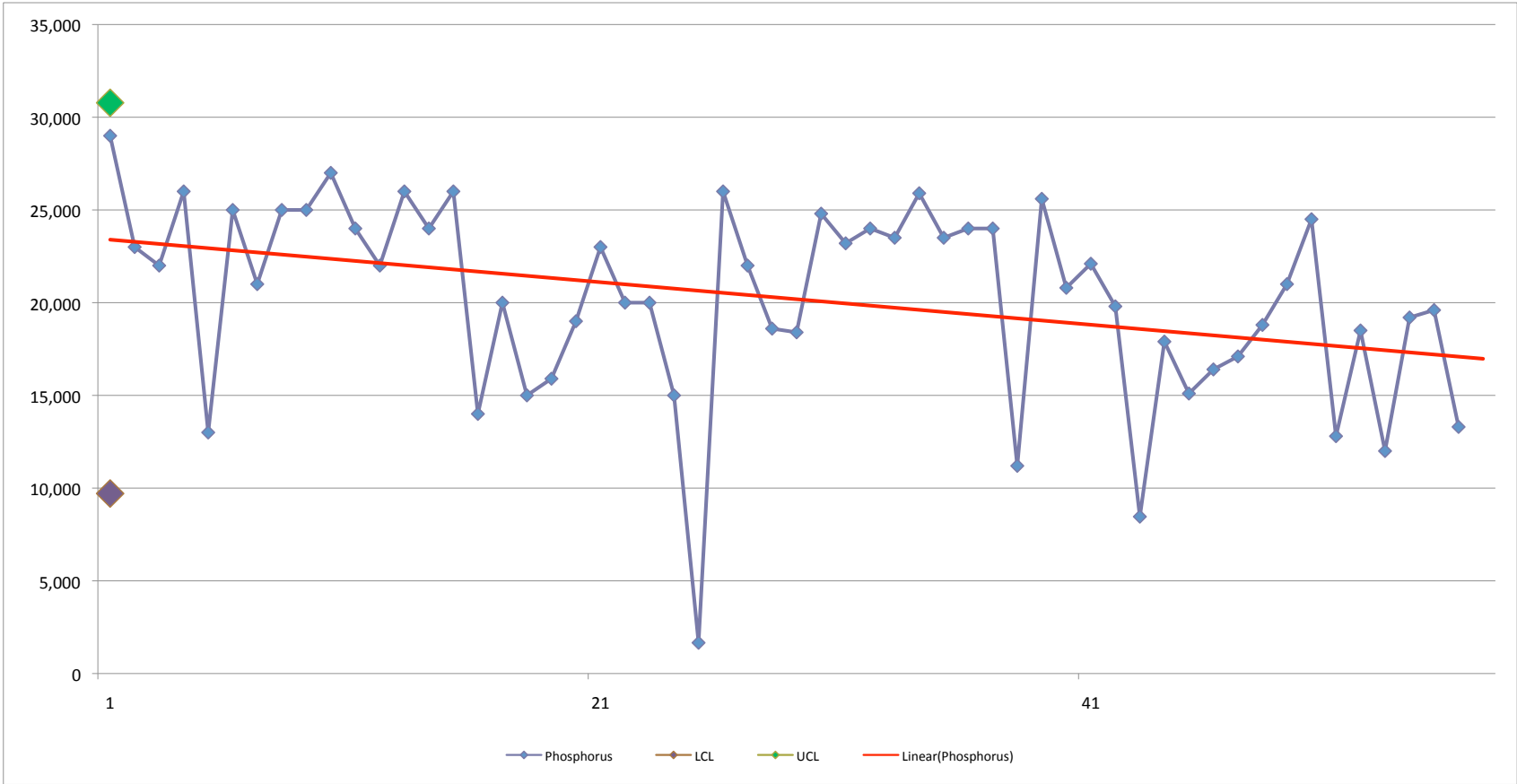
Central Davis Sewer District
Anaerobic Biosolids
Silver Quality Control Chart



Central Davis Sewer District
Anaerobic Biosolids
Zinc Quality Control Chart



Central Davis Sewer District
Anaerobic Biosolids
Phosphorus Quality Control Chart



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Compost Biosolids Chemical Quality

1. 2014 Testing Summary
2. Testing Laboratory Reports
3. Historic Testing Summary
4. Quality Control Charts

CDSD Compost Metals Quality - 2014 Year End

<u>Date</u>	<u>Type</u>	<u>Aluminum</u> <u>ppm</u>	<u>Arsenic</u> <u>ppm</u>	<u>Cadmium</u> <u>ppm</u>	<u>Chromium</u> <u>ppm</u>	<u>Copper</u> <u>ppm</u>	<u>Lead</u> <u>ppm</u>	<u>Mercury</u> <u>ppm</u>	<u>Molyb</u> <u>ppm</u>	<u>Nickel</u> <u>ppm</u>	<u>Phosphorus</u> <u>ppm</u>	<u>Selenium</u> <u>ppm</u>	<u>Silver</u> <u>ppm</u>	<u>Zinc</u> <u>ppm</u>
5/22/14	CPT	1,510	5.8	0.3	5.1	303	5.5	0.5	3.2	2.2	7,160	3.1	1.9	220
5/22/14	CPT	1,300	4.9	0.3	4.7	273	4.8	0.5	3.3	4.4	6,330	2.8	1.5	179
5/22/14	CPT	1,720	4.4	0.4	5.5	300	6.0	0.5	4.5	5.2	7,460	3.0	1.6	202
6/9/14	CPT	2,970	7.2	0.5	10.0	397	12.7	0.6	4.2	8.0	11,500	1.8	1.9	261
10/20/14	CPT	494	6.3	0.2	2.6	174	3.8	0.8	2.9	4.1	7,920	1.7	0.6	102
10/20/14	CPT	677	4.3	0.1	2.8	167	3.6	1.1	2.8	3.3	5,360	1.1	0.8	100

Total Year Values

Minimum	494	4.3	0.1	2.6	167	3.6	0.5	2.8	2.2	5,360	1.1	0.6	100
Average	1,445	5.5	0.3	5.1	269	6.1	0.7	3.5	4.5	7,622	2.2	1.4	177
Maximum	2,970	7.2	0.5	10.0	397	12.7	1.1	4.5	8.0	11,500	3.1	1.9	261

Nitrate+

<u>Date</u>	<u>TKN</u> <u>ppm</u>	<u>Ammonia</u> <u>as N</u> <u>ppm</u>	<u>Nitrite-</u> <u>Total</u> <u>ppm</u>	<u>Total</u> <u>Solids</u> <u>%</u>
5/22/14	12,800	1,140	-	71
5/22/14	6,840	810	-	59
5/22/14	13,900	840	-	55
6/9/14	15,100	860	-	67
10/20/14	17,900	890	-	89
10/20/14	13,700	540	-	83
Minimum	6,840	540	0	55
Average	13,373	847	0	71
Maximum	17,900	1,140	0	89

**Central Davis Sewer District
Composted Biosolids - Historic Table**

Date	#	Aluminum ppm	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Lead ppm	Mercury ppm	Molyb ppm	Nickel ppm	Phosphr ppm	Selenium ppm	Silver ppm	Zinc ppm
4/21/10	CPT	4640	9.3	0.7	10.0	533	9.9	0.8	4.9	8.1	12800	5.1	5.6	334
6/23/10	CPT	3,740	8.9	0.6	8.2	403	7.2	0.7	4.1	6.5	12,600	4.2	4.7	259
6/23/10	CPT	3,790	8.3	0.5	8.6	395	7.5	0.7	4.0	6.5	13,100	3.6	4.4	253
10/11/10	CPT	4,520	8.5	0.5	10.4	409	9.4	0.9	3.2	8.0	1,480	5.3	4.2	254
6/6/11	CPT	6,430	17.5	0.7	14.6	559	17.2	0.8	5.2	10.3	15,400	11.7	5.3	349
6/6/11	CPT	4,820	19.2	0.7	10.1	561	14.4	0.1	5.1	8.0	13,200	13.0	5.1	330
6/6/11	CPT	5,200	15.7	0.7	10.6	562	13.3	0.6	4.5	8.1	13,900	9.8	5.5	334
7/26/11	CPT	3,480	14.6	0.5	10.6	415	14.0	0.6	4.8	7.9	10,100	8.7	4.0	263
7/26/11	CPT	4,740	16.4	0.7	12.1	495	13.3	0.9	4.4	8.3	12,500	10.0	5.0	312
10/10/11	CPT	5,070	12.7	0.7	15.4	503	12.9	0.7	3.7	10.6	14,200	6.5	5.0	332
5/3/12	CPT	2,500	13.9	0.6	10.3	399	7.6	0.7	4.5	6.6	9,890	8.3	2.7	258
5/3/12	CPT	2,510	13.5	0.6	11.4	404	8.5	0.7	4.2	6.9	9,640	7.1	2.7	259
5/3/12	CPT	3,150	16.4	0.7	18.1	478	9.6	0.6	5.1	7.7	11,600	6.1	3.4	311
8/14/12	CPT	3,820	12.3	0.8	13.8	466	13.0	0.8	3.8	8.7	14,500	7.5	3.7	316
8/14/12	CPT	4,200	12.6	0.7	14.5	472	12.9	0.8	4.0	8.8	15,400	7.3	3.8	325
8/14/12	CPT	4,030	4.9	0.2	8.0	22.9	8.2	0.2	0.9	4.3	1,630	2.8	0.2	71.7
5/14/13	CPT	2,550	14.7	0.6	7.6	464	10.9	0.4	3.8	6.8	10,200	7.1	3.3	266
6/27/13	CPT	4,250	15.1	0.6	13.7	474	13.3	0.8	3.9	8.9	19,900	6.7	2.9	318
6/27/13	CPT	3,400	12.6	0.7	11.8	502	25.4	0.3	3.8	8.1	13,400	6.6	3.5	337
6/27/13	CPT	3,290	14.3	0.6	10.7	407	10.5	0.1	3.4	7.3	15,400	6.2	2.6	278
10/8/13	CPT	2,390	10.8	0.5	9.5	392	8.5	0.8	4.3	7.0	9,390	3.1	2.6	254
10/8/13	CPT	1,730	10.1	0.4	6.7	317	7.3	0.4	3.1	5.4	7,410	5.2	1.9	186
5/22/14	CPT	1,510	5.8	0.3	5.1	303	5.5	0.5	3.2	2.2	7,160	3.1	1.9	220
5/22/14	CPT	1,300	4.9	0.3	4.7	273	4.8	0.5	3.3	4.4	6,330	2.8	1.5	179
5/22/14	CPT	1,720	4.4	0.4	5.5	300	6.0	0.5	4.5	5.2	7,460	3.0	1.6	202
6/9/14	CPT	2,970	7.2	0.5	10.0	397	12.7	0.6	4.2	8.0	11,500	1.8	1.9	261
10/20/14	CPT	494	6.3	0.2	2.6	174	3.8	0.8	2.9	4.1	7,920	1.7	0.6	102
10/20/14	CPT	677	4.3	0.1	2.8	167	3.6	1.1	2.8	3.3	5,360	1.1	0.8	100
average		7,880	8.0	0.7	12.3	390	16.3	1.5	4.2	9.2	13,735	5.9	7.0	278
Std. Dev.		4,587	3.8	0.6	4.5	107	13.4	1.1	1.9	2.7	4,368	3.4	3.7	72
Avg-2Stdv		0	0.3	0.0	3.4	176	0.0	0.0	0.4	3.8	4,998	0.0	0.0	133
Avg+2Stdv		17,054	15.6	1.9	21.3	605	43.2	3.7	8.1	14.6	22,472	12.6	14.4	423
Note: 1. When a value was found to be below the detection limit, the whole number of the detection limit was used in the analysis.														
2. An ** indicates that the value has not been used because of suspect integrity														



6/9/2014

Work Order: 1404738

Central Davis Sewer District

Attn: Debbie DeJong

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: Linda Daniels 801.262.7299

The analyses presented on this report were performed in accordance with the National Environmental Laboratory Accreditation Program (NELAP) unless noted in the comments, flags or case narrative. If the report is to be used for regulatory compliance, it should be presented in its entirety, and not be altered.



Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1404738-01

Name: Central Davis Sewer District	Sample Date: 5/22/2014 9:40 AM
Sample Site: Compost #1	Receipt Date: 5/23/2014 1:30 PM
Comments: East	Sampler: Debbie DeJong
Sample Matrix: Solid	Project: Sludge

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	1140	20.0	mg/kg	SM 4500G Mod	06/02/2014 05:00	06/02/2014 05:00	
Nitrate + Nitrite, Soluble	ND	10.0	mg/kg	SM 4500 NO3- F	05/30/2014 17:51	05/30/2014 17:51	
Total Kjeldahl Nitrogen	12800	1.0	mg/kg	SM 4500 NH3-D	05/28/2014 10:11	06/02/2014 10:13	
Total Solids	70.6	0.1	%	SM 2540G	05/23/2014 14:30	05/23/2014 14:30	
Total Volatile Solids	84.7	0.1	%	SM 2540 E	05/23/2014 14:30	05/23/2014 14:30	
Metals							
Aluminum, Total	1510	10.0	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Arsenic, Total	5.79	9.97	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	J
Cadmium, Total	0.345	0.499	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	J
Chromium, Total	5.13	0.499	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Copper, Total	303	0.499	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Lead, Total	5.46	4.99	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Mercury, Total	0.52	0.03	mg/kg dry	EPA 7471A	05/28/2014 14:00	06/03/2014 13:29	
Molybdenum, Total	3.17	1.00	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Nickel, Total	5.15	0.499	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Phosphorus, Total as P	7160	49.9	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Selenium, Total	3.05	4.99	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	J
Silver, Total	1.85	0.499	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	
Zinc, Total	220	1.00	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:03	



Certificate of Analysis

Lab Sample No.: 1404738-02

Name: Central Davis Sewer District	Sample Date: 5/22/2014 9:40 AM
Sample Site: Compost #2	Receipt Date: 5/23/2014 1:30 PM
Comments: West	Sampler: Debbie DeJong
Sample Matrix: Solid	Project: Sludge

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	810	20.0	mg/kg	SM 4500G Mod	06/02/2014 05:00	06/02/2014 05:00	
Nitrate + Nitrite, Soluble	ND	100	mg/kg	SM 4500 NO3- F	05/30/2014 17:51	05/30/2014 17:51	
Total Kjeldahl Nitrogen	6840	1.0	mg/kg	SM 4500 NH3-D	05/28/2014 10:11	06/02/2014 10:13	
Total Solids	59.3	0.1	%	SM 2540G	05/23/2014 14:30	05/23/2014 14:30	
Total Volatile Solids	81.2	0.1	%	SM 2540 E	05/23/2014 14:30	05/23/2014 14:30	
Metals							
Aluminum, Total	1300	10.0	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Arsenic, Total	4.91	10.0	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	J
Cadmium, Total	0.313	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	J
Chromium, Total	4.73	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Copper, Total	273	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Lead, Total	4.81	5.02	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	J
Mercury, Total	0.50	0.03	mg/kg dry	EPA 7471A	05/28/2014 14:00	06/03/2014 13:29	
Molybdenum, Total	3.26	1.00	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Nickel, Total	4.44	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Phosphorus, Total as P	6330	50.2	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Selenium, Total	2.83	5.02	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	J
Silver, Total	1.54	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	
Zinc, Total	179	1.00	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:07	



Certificate of Analysis

Lab Sample No.: 1404738-03

Name: Central Davis Sewer District	Sample Date: 5/22/2014 9:40 AM
Sample Site: Compost #3	Receipt Date: 5/23/2014 1:30 PM
Comments: New Pile	Sampler: Debbie DeJong
Sample Matrix: Solid	Project: Sludge

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	840	20.0	mg/kg	SM 4500G Mod	06/02/2014 05:00	06/02/2014 05:00	
Nitrate + Nitrite, Soluble	ND	10.0	mg/kg	SM 4500 NO3- F	05/30/2014 17:51	05/30/2014 17:51	
Total Kjeldahl Nitrogen	13900	1.0	mg/kg	SM 4500 NH3-D	05/28/2014 10:11	06/02/2014 10:13	
Total Solids	54.7	0.1	%	SM 2540G	05/23/2014 14:30	05/23/2014 14:30	
Total Volatile Solids	83.0	0.1	%	SM 2540 E	05/23/2014 14:30	05/23/2014 14:30	
Metals							
Aluminum, Total	1720	10.0	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Arsenic, Total	4.39	10.0	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	J
Cadmium, Total	0.362	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	J
Chromium, Total	5.52	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Copper, Total	300	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Lead, Total	6.04	5.02	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Mercury, Total	0.54	0.03	mg/kg dry	EPA 7471A	05/28/2014 14:00	06/03/2014 13:29	
Molybdenum, Total	4.52	1.00	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Nickel, Total	5.20	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Phosphorus, Total as P	7460	50.2	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Selenium, Total	3.01	5.02	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	J
Silver, Total	1.55	0.502	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	
Zinc, Total	202	1.00	mg/kg dry	EPA 6010B	05/28/2014 11:00	06/03/2014 11:11	



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Certificate of Analysis

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit.

1 mg/L = one milligram per liter or 1 mg/Kg = one milligram per kilogram = 1 part per million.

1 ug/L = one microgram per liter or 1 ug/Kg = one microgram per kilogram = 1 part per billion.

1 ng/L = one nanogram per liter or 1 ng/Kg = one nanogram per kilogram = 1 part per trillion.

Flag Descriptions

J = Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).



6/25/2014

Work Order: 1405359

Central Davis Sewer District

Attn: Debbie DeJong

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: Linda Daniels 801.262.7299

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Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1405359-01

Name: Central Davis Sewer District	Sample Date: 6/9/2014 10:05 AM
Sample Site: Compost #1	Receipt Date: 6/10/2014 10:25 AM
Comments: East	Sampler: Debbie DeJong
Sample Matrix: Solid	Project: Sludge

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	860	40.0	mg/kg	SM 4500G Mod	06/19/2014 10:00	06/19/2014 10:00	
Nitrate + Nitrite, Total	ND	10.0	mg/kg	SM 4500 NO3-F	06/23/2014 16:31	06/23/2014 16:31	
Total Kjeldahl Nitrogen	15100	1.0	mg/kg	SM 4500 NH3-D	06/15/2014 15:58	06/15/2014 16:05	
Total Solids	67.3	0.1	%	SM 2540G	06/10/2014 14:00	06/10/2014 14:00	
Total Volatile Solids	77.7	0.1	%	SM 2540 E	06/10/2014 14:00	06/10/2014 14:00	
Metals							
Aluminum, Total	2970	10.0	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Arsenic, Total	7.20	10.0	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 15:41	J
Cadmium, Total	0.502	0.502	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Chromium, Total	10.0	0.502	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Copper, Total	397	0.502	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Lead, Total	12.7	5.02	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Mercury, Total	0.61	0.03	mg/kg dry	EPA 7471A	06/13/2014 13:24	06/16/2014 08:26	
Molybdenum, Total	4.15	1.00	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Nickel, Total	8.02	0.502	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Phosphorus, Total as P	11500	50.2	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Selenium, Total	1.78	5.02	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	J
Silver, Total	1.90	0.502	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	
Zinc, Total	261	1.00	mg/kg dry	EPA 6010B	06/13/2014 11:00	06/19/2014 13:06	



CHEMTECH-FORD
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Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit.

1 mg/L = one milligram per liter or 1 mg/Kg = one milligram per kilogram = 1 part per million.

1 ug/L = one microgram per liter or 1 ug/Kg = one microgram per kilogram = 1 part per billion.

1 ng/L = one nanogram per liter or 1 ng/Kg = one nanogram per kilogram = 1 part per trillion.

Flag Descriptions

J = Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).



11/3/2014

Work Order: 1411822

Central Davis Sewer District

Attn: Debbie DeJong

2200 South Sunset Drive

Kaysville, UT 84037

Client Service Contact: 801.262.7299

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Approved By:

Dave Gayer, Laboratory Director



Certificate of Analysis

Lab Sample No.: 1411822-01

Name: Central Davis Sewer District	Sample Date: 10/20/2014 11:00 AM
Sample Site: Compost - Location #1	Receipt Date: 10/21/2014 10:00 AM
Comments: Composite	Sampler: Debbie DeJong
Sample Matrix: Solid	Project: Sludge
PO Number:	Project Number:

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	890	20.0	mg/kg	SM 4500G Mod	10/26/2014 11:30	10/26/2014 11:30	
Nitrate + Nitrite, Soluble	ND	5.0	mg/kg	SM 4500 NO3- F	10/30/2014 11:53	10/30/2014 11:53	
Total Kjeldahl Nitrogen	17900	1.0	mg/kg	SM 4500 NH3-D	10/24/2014 12:36	10/29/2014 10:00	
Total Solids	88.6	0.1	%	SM 2540G	10/21/2014 14:30	10/21/2014 14:30	
Total Volatile Solids	85.8	0.1	%	SM 2540 E	10/21/2014 14:30	10/21/2014 14:30	
Metals							
Aluminum, Total	494	5.7	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Arsenic, Total	6.32	5.70	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Cadmium, Total	0.153	0.285	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	J
Chromium, Total	2.64	0.285	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Copper, Total	174	0.285	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Lead, Total	3.78	2.85	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Mercury, Total	0.76	0.03	mg/kg dry	EPA 7471A	10/28/2014 08:43	10/28/2014 11:45	
Molybdenum, Total	ND	5.70	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Nickel, Total	4.10	0.285	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Phosphorus, Total as P	7920	28.5	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Selenium, Total	1.68	2.85	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	J
Silver, Total	0.642	0.285	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	
Zinc, Total	102	0.57	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:18	



Certificate of Analysis

Lab Sample No.: 1411822-02

Name: Central Davis Sewer District	Sample Date: 10/20/2014 11:00 AM
Sample Site: Compost - Location #2	Receipt Date: 10/21/2014 10:00 AM
Comments: Composite	Sampler: Debbie DeJong
Sample Matrix: Solid	Project: Sludge
PO Number:	Project Number:

Parameter	Sample Result	Minimum Reporting Limit	Units	Analytical Method	Preparation Date/Time	Analysis Date/Time	Flag
Inorganic							
Ammonia (Soluble) as N	540	20.0	mg/kg	SM 4500G Mod	10/26/2014 11:30	10/26/2014 11:30	
Nitrate + Nitrite, Soluble	ND	5.0	mg/kg	SM 4500 NO3- F	10/30/2014 11:53	10/30/2014 11:53	
Total Kjeldahl Nitrogen	13700	1.0	mg/kg	SM 4500 NH3-D	10/24/2014 12:36	10/29/2014 10:00	
Total Solids	61.0	0.1	%	SM 2540G	10/21/2014 14:30	10/21/2014 14:30	
Total Volatile Solids	83.4	0.1	%	SM 2540 E	10/21/2014 14:30	10/21/2014 14:30	
Metals							
Aluminum, Total	677	5.6	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Arsenic, Total	4.30	5.61	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	J
Cadmium, Total	0.142	0.281	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	J
Chromium, Total	2.79	0.281	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Copper, Total	167	0.281	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Lead, Total	3.59	2.81	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Mercury, Total	1.05	0.03	mg/kg dry	EPA 7471A	10/28/2014 08:43	10/28/2014 11:45	
Molybdenum, Total	ND	5.61	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Nickel, Total	3.34	0.281	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Phosphorus, Total as P	5360	28.1	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Selenium, Total	1.12	2.81	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	J
Silver, Total	0.806	0.281	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	
Zinc, Total	100	0.56	mg/kg dry	EPA 6010B	10/22/2014 07:48	10/23/2014 13:21	



CHEMTECH-FORD
LABORATORIES

Certificate of Analysis

Report Footnotes

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit.

1 mg/L = one milligram per liter or 1 mg/Kg = one milligram per kilogram = 1 part per million.

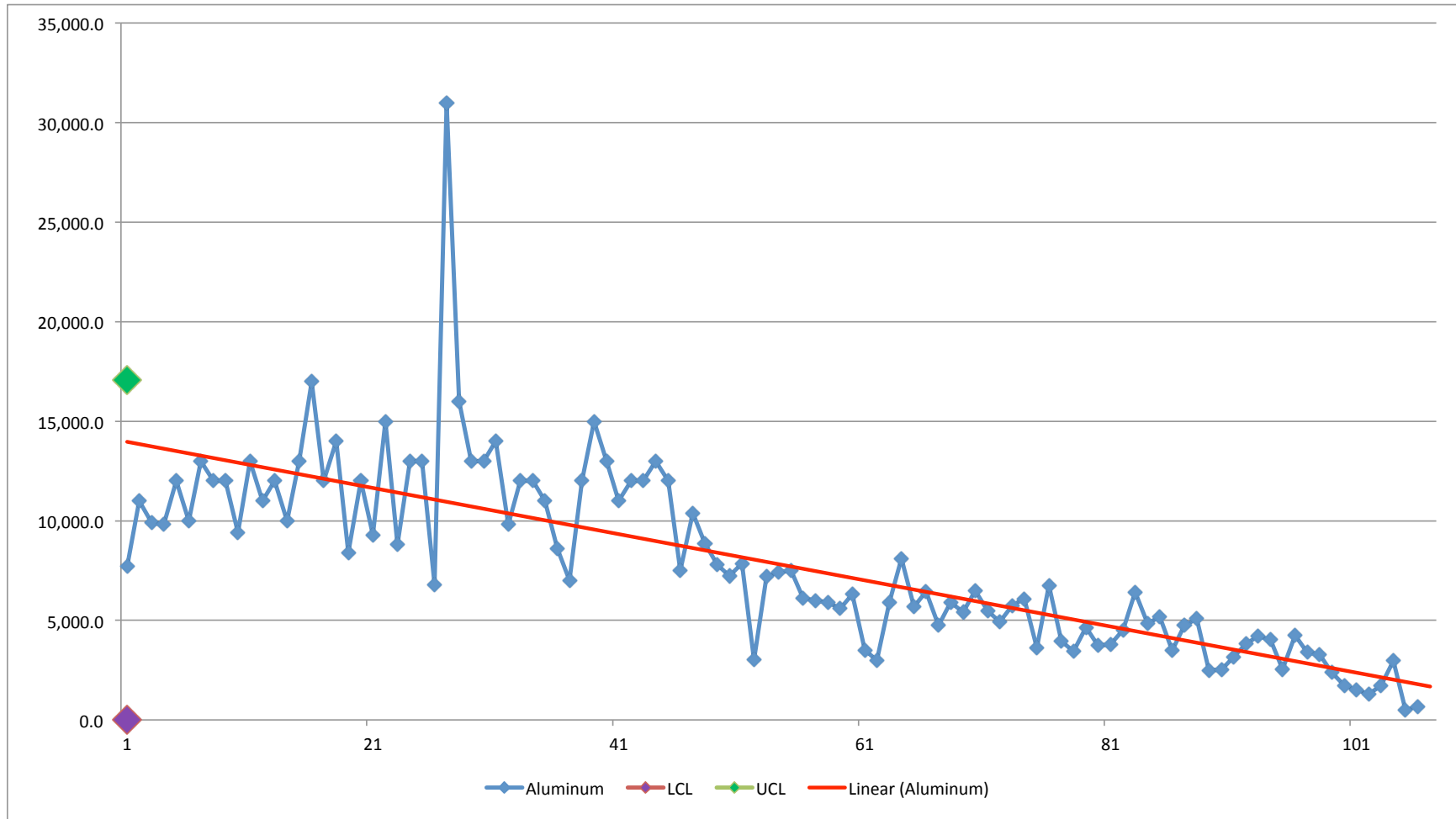
1 ug/L = one microgram per liter or 1 ug/Kg = one microgram per kilogram = 1 part per billion.

1 ng/L = one nanogram per liter or 1 ng/Kg = one nanogram per kilogram = 1 part per trillion.

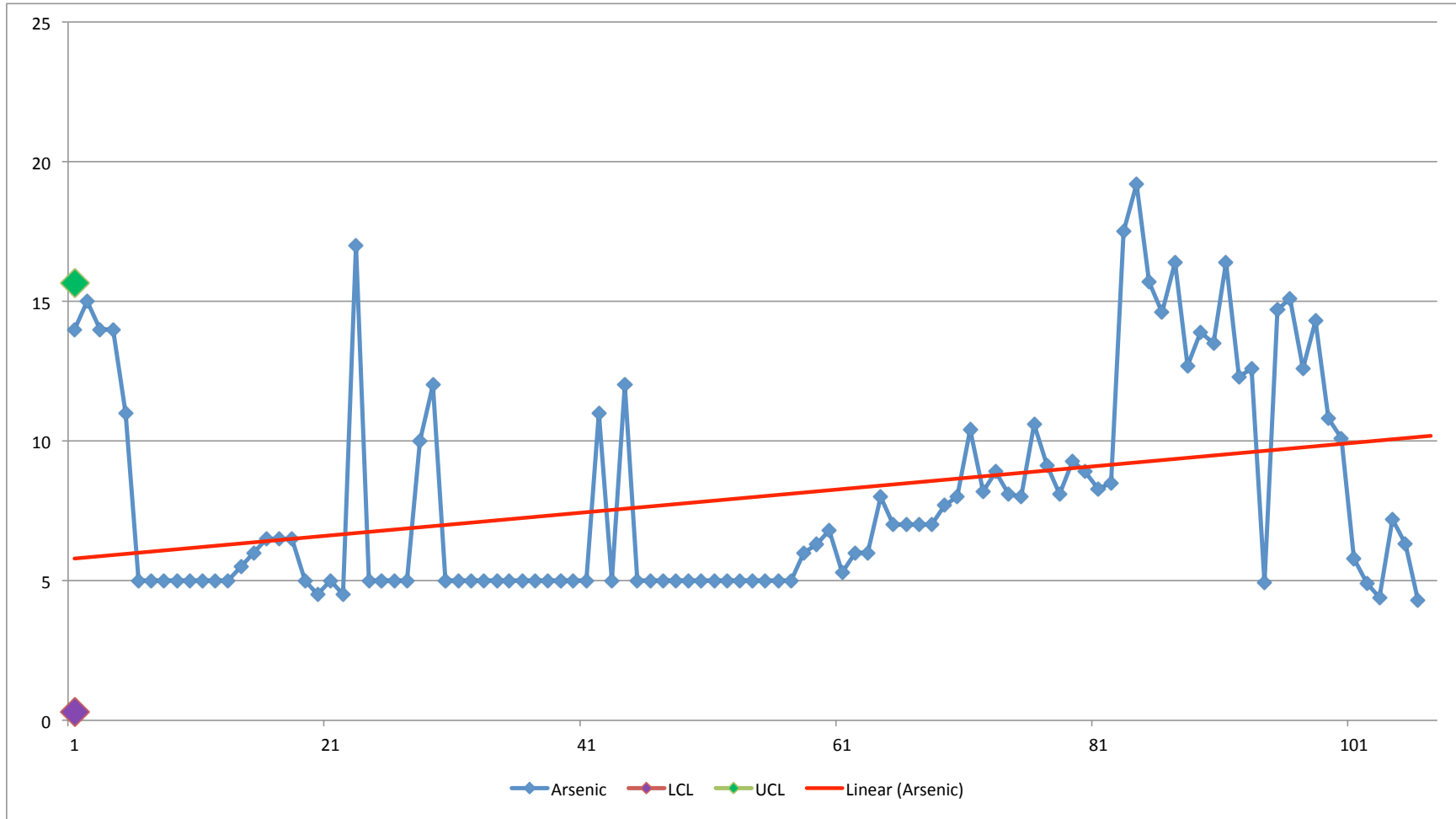
Flag Descriptions

J = Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

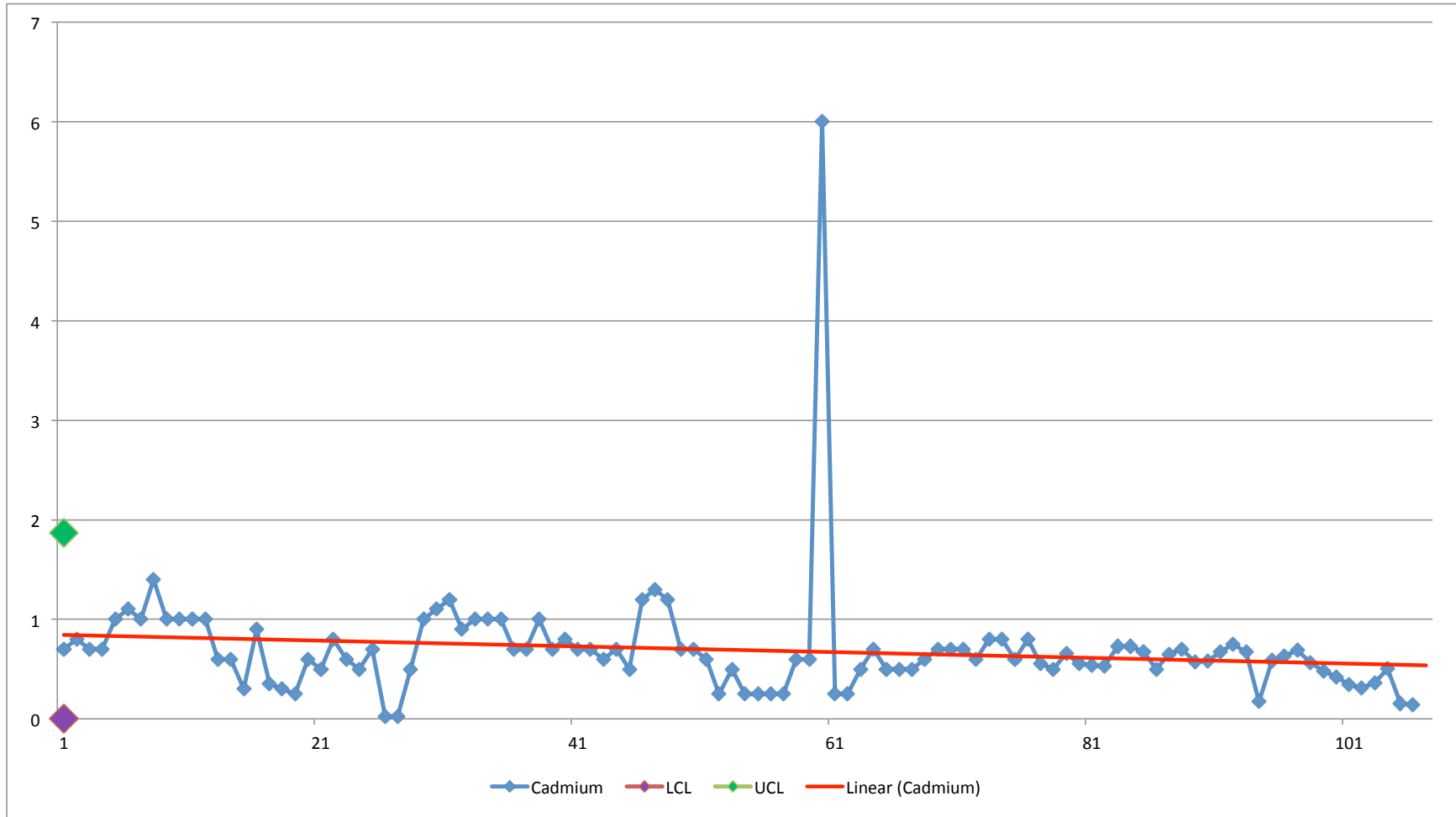
Central Davis Sewer District
Composted Biosolids
Aluminum Quality Control Chart



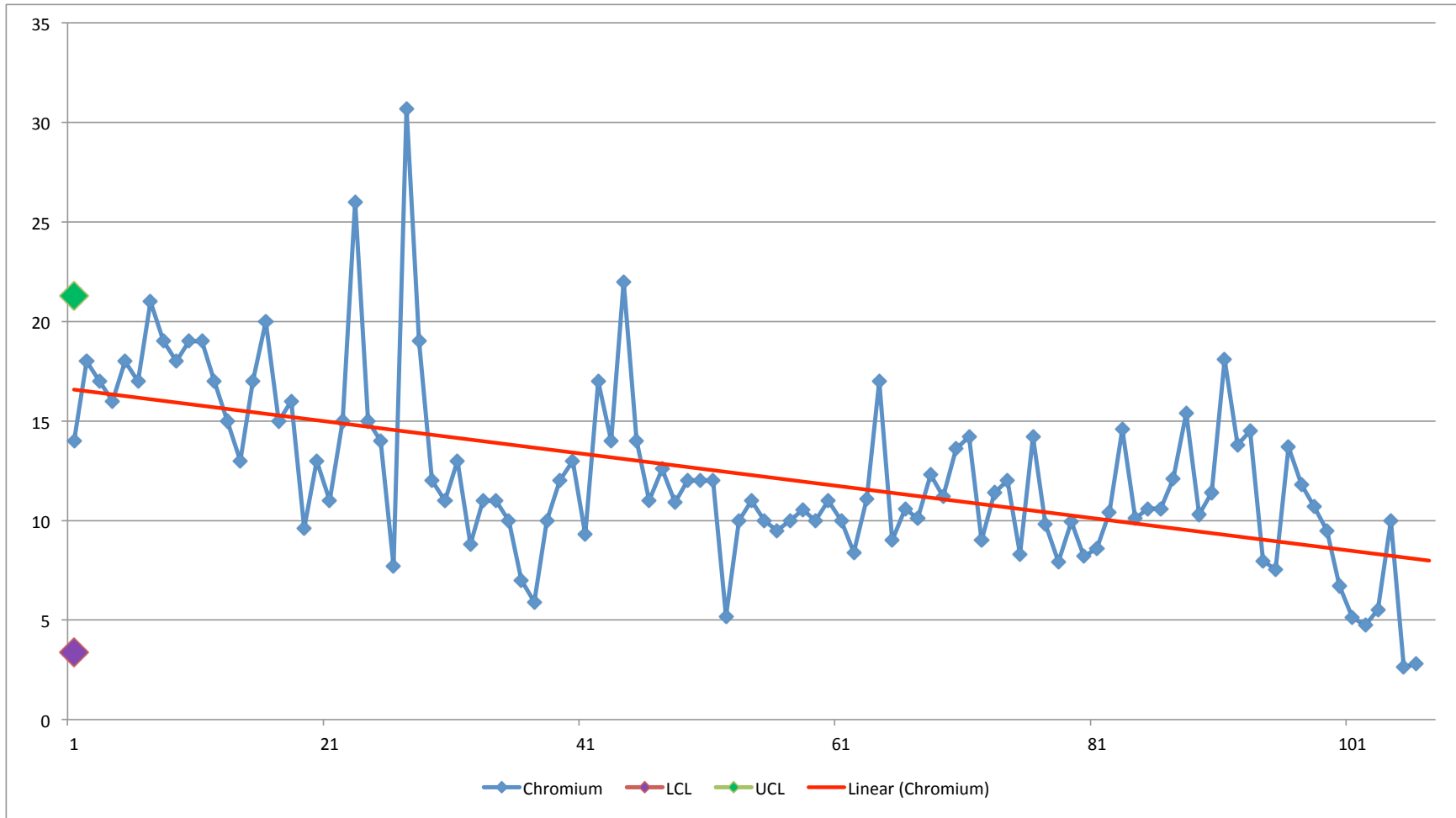
Central Davis Sewer District
Composted Biosolids
Arsenic Quality Control Chart



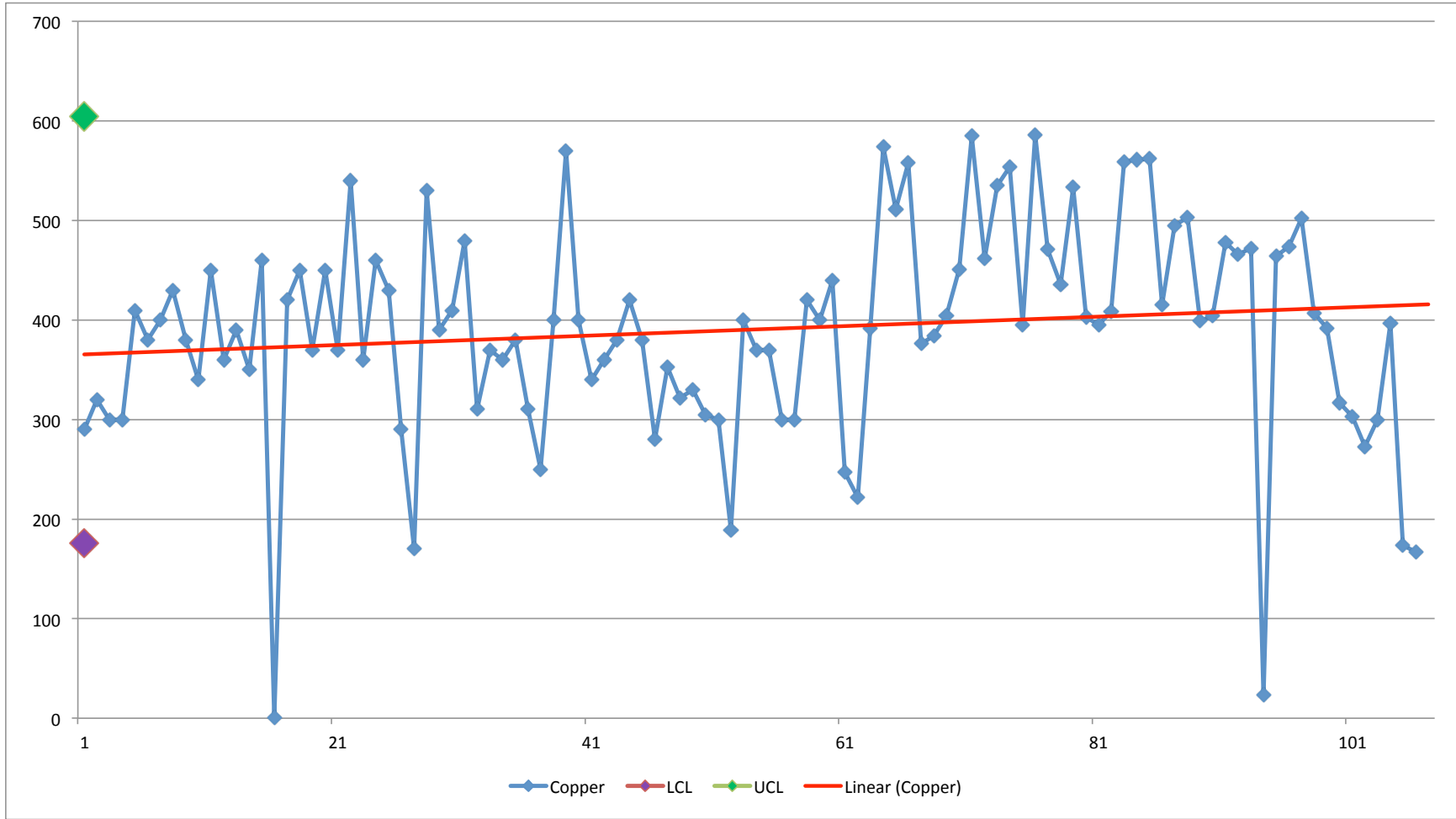
Central Davis Sewer District
Composted Biosolids
Cadmium Quality Control Chart



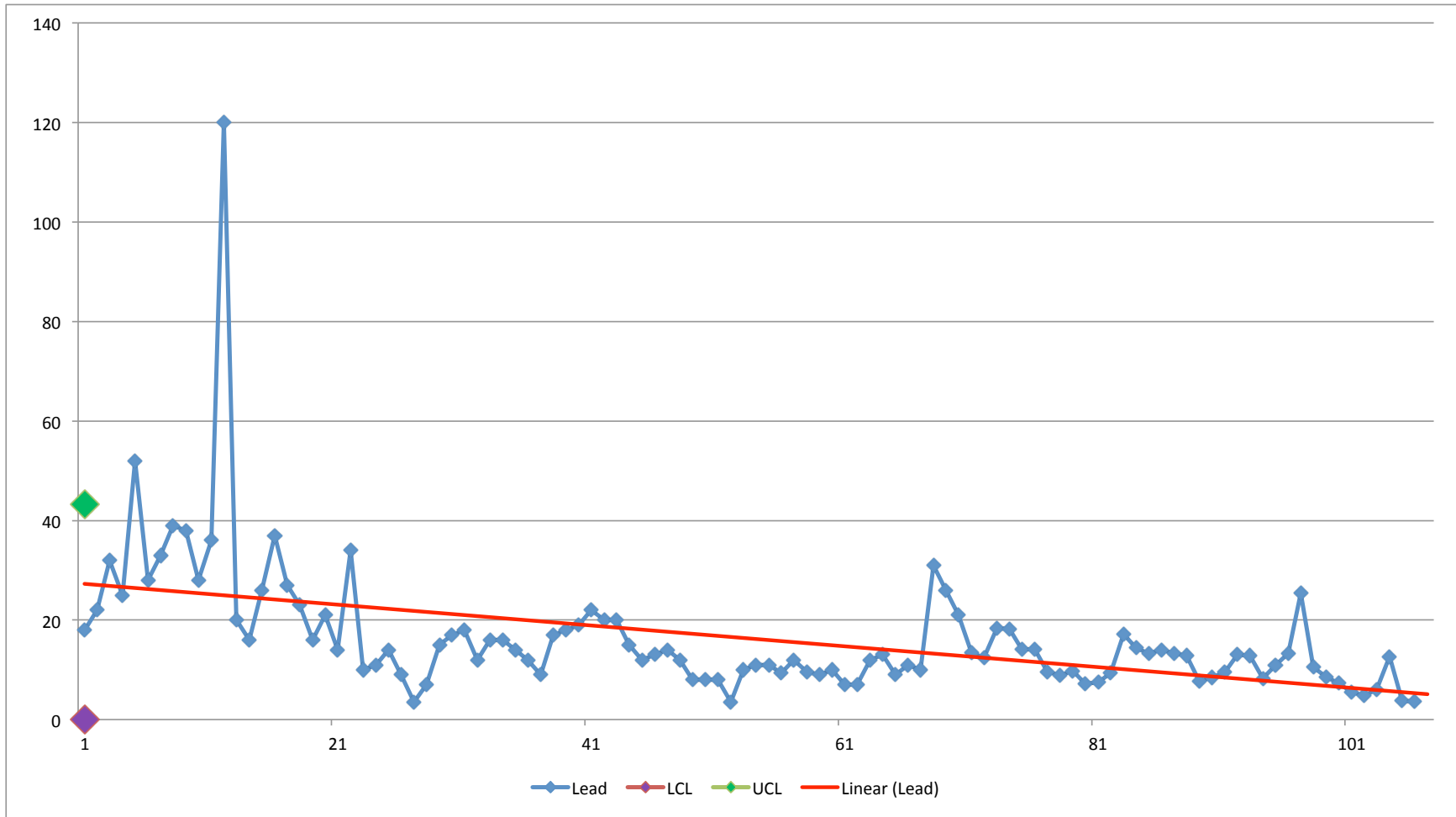
Central Davis Sewer District
Composted Biosolids
Chromium Quality Control Chart



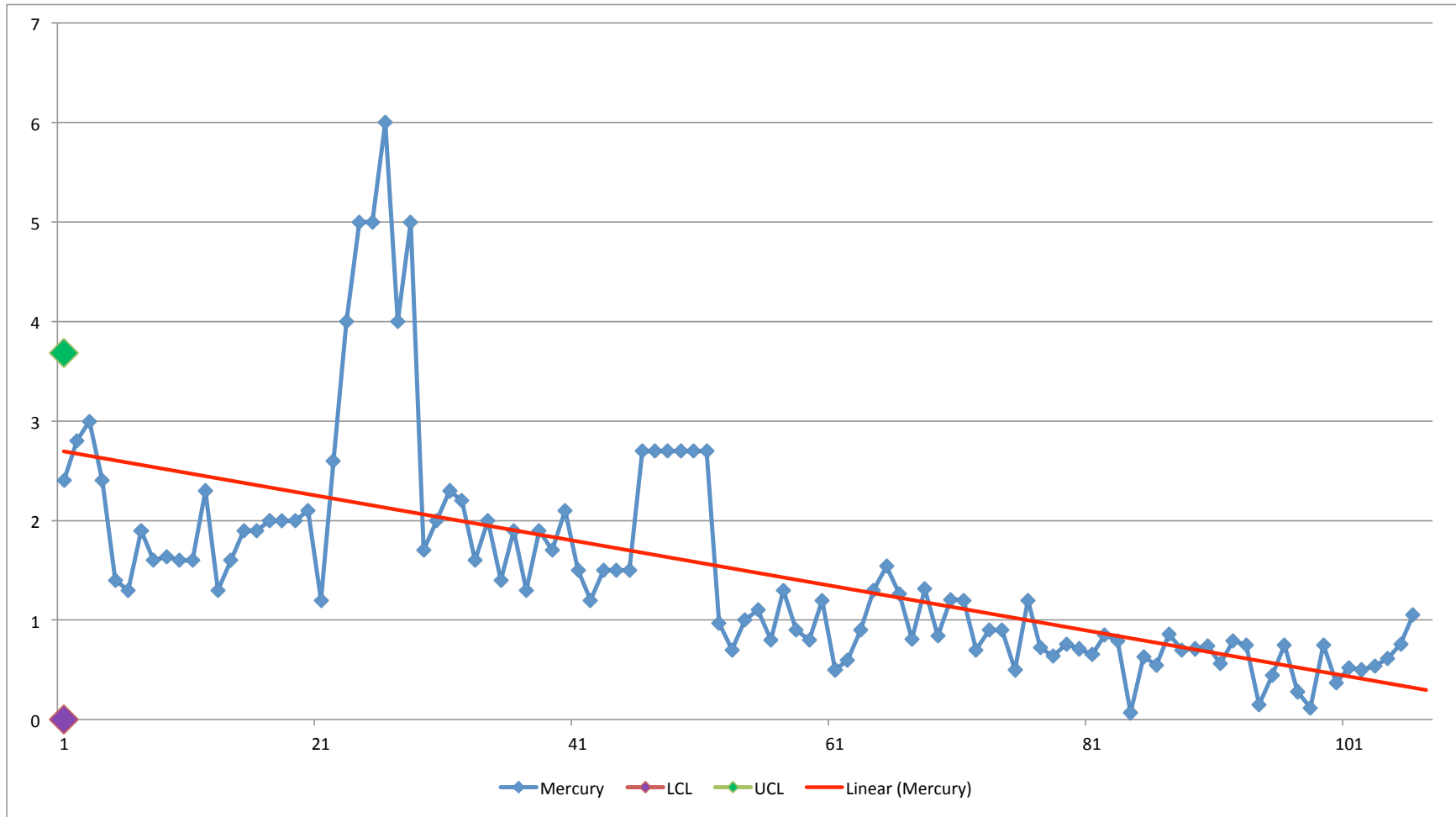
Central Davis Sewer District Composted Biosolids Copper Quality Control Chart



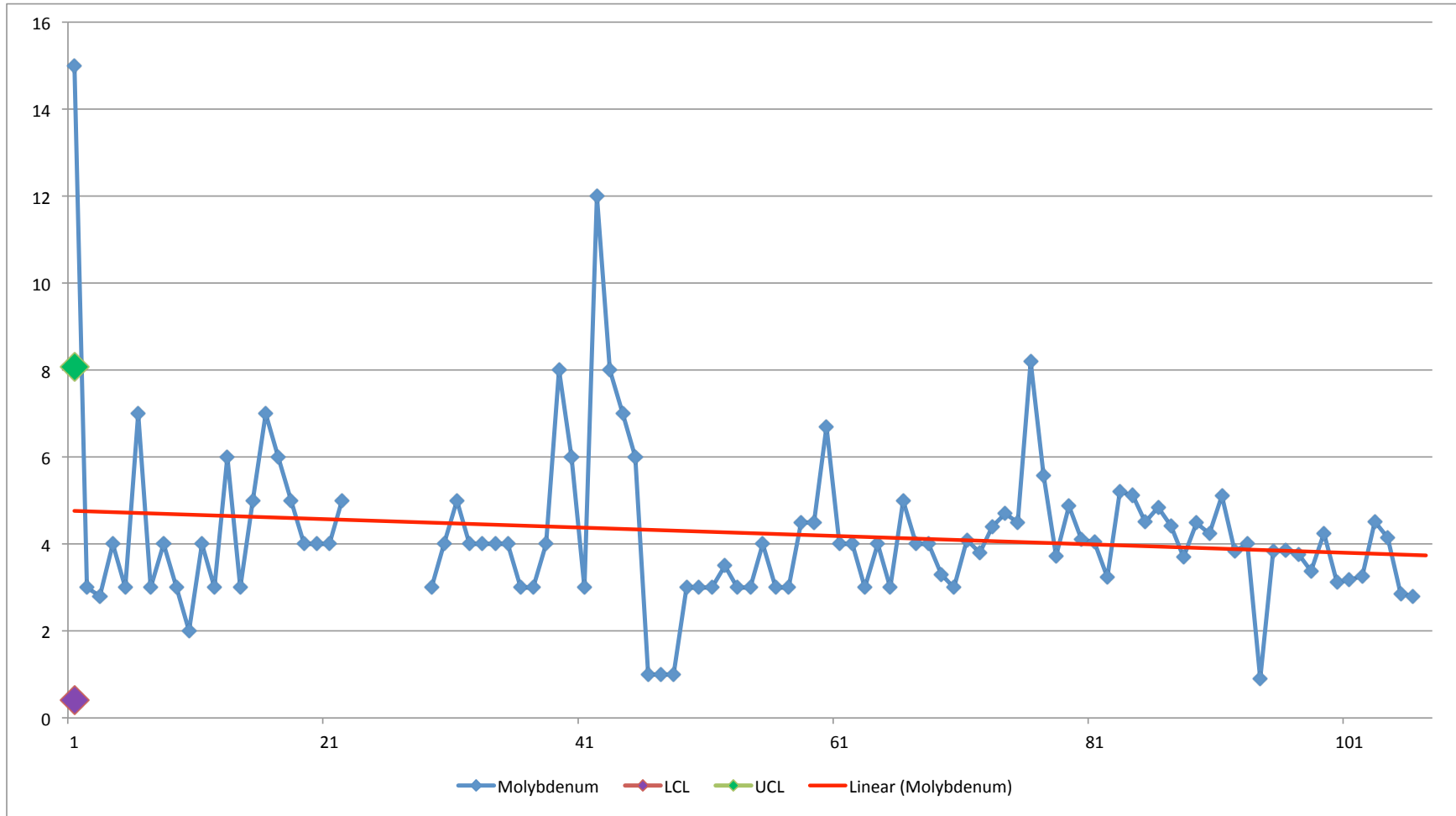
Central Davis Sewer District
Composted Biosolids
Lead Quality Control Chart



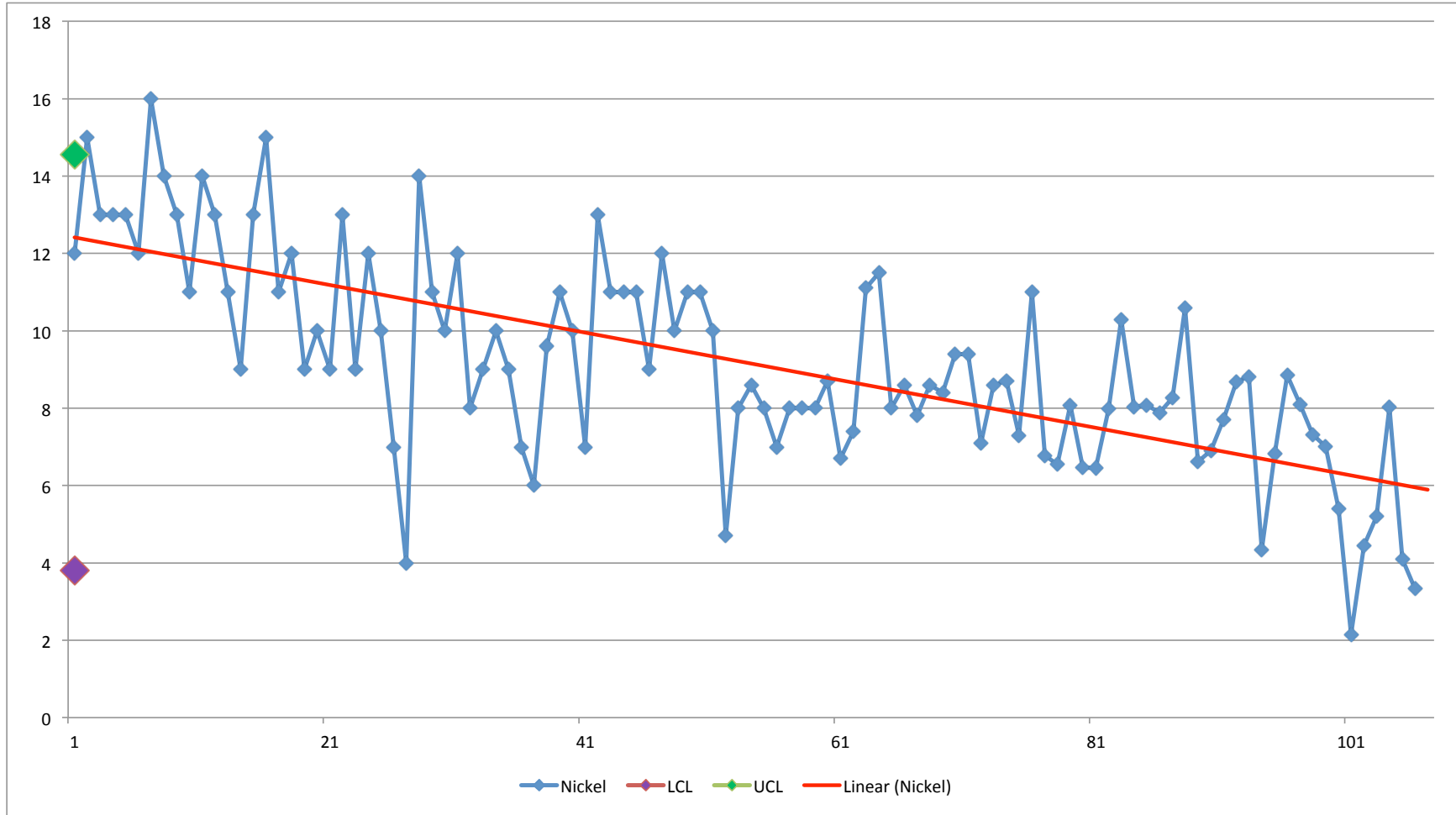
Central Davis Sewer District
Composted Biosolids
Mercury Quality Control Chart



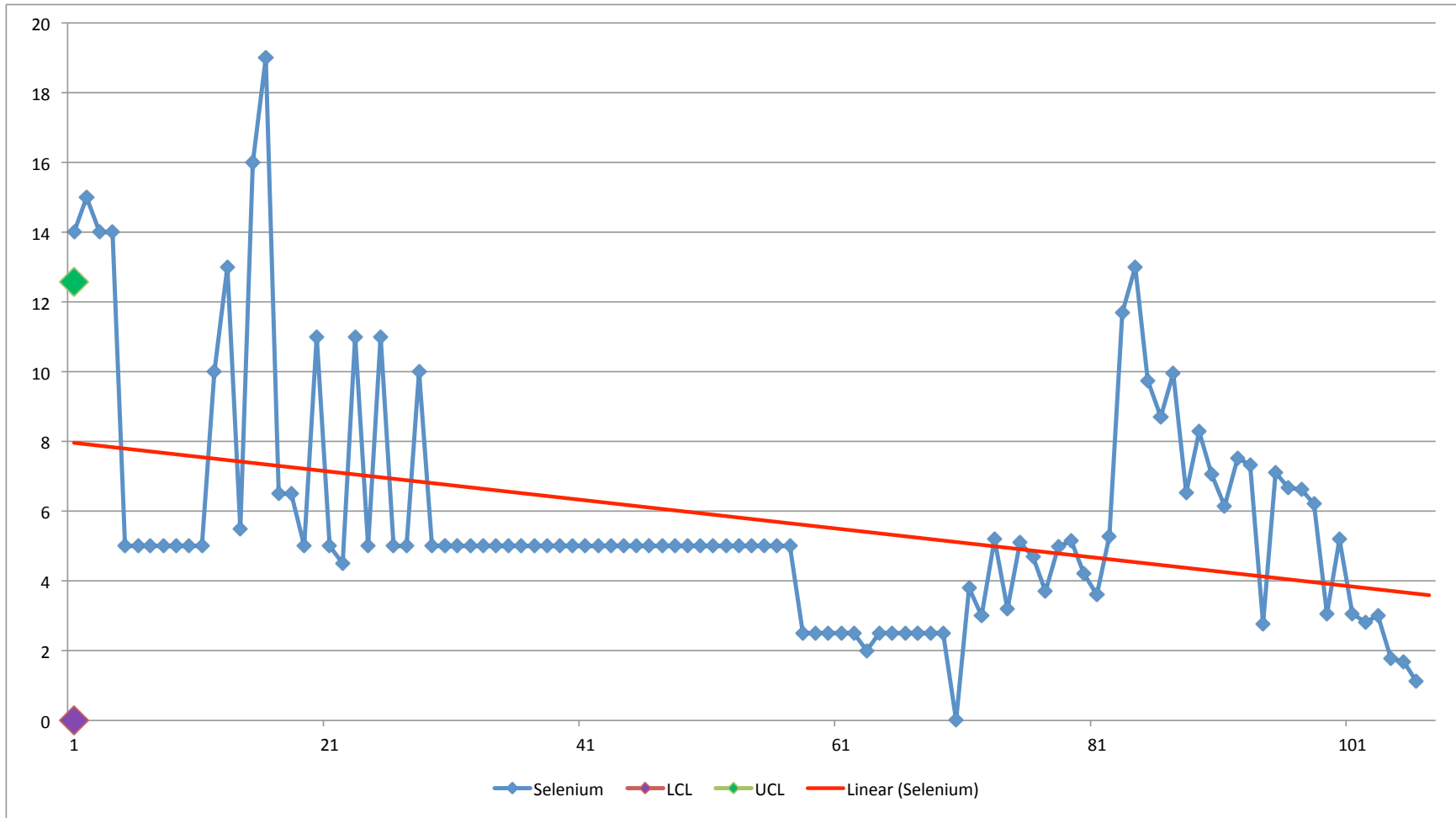
Central Davis Sewer District Composted Biosolids Molybdenum Quality Control Chart



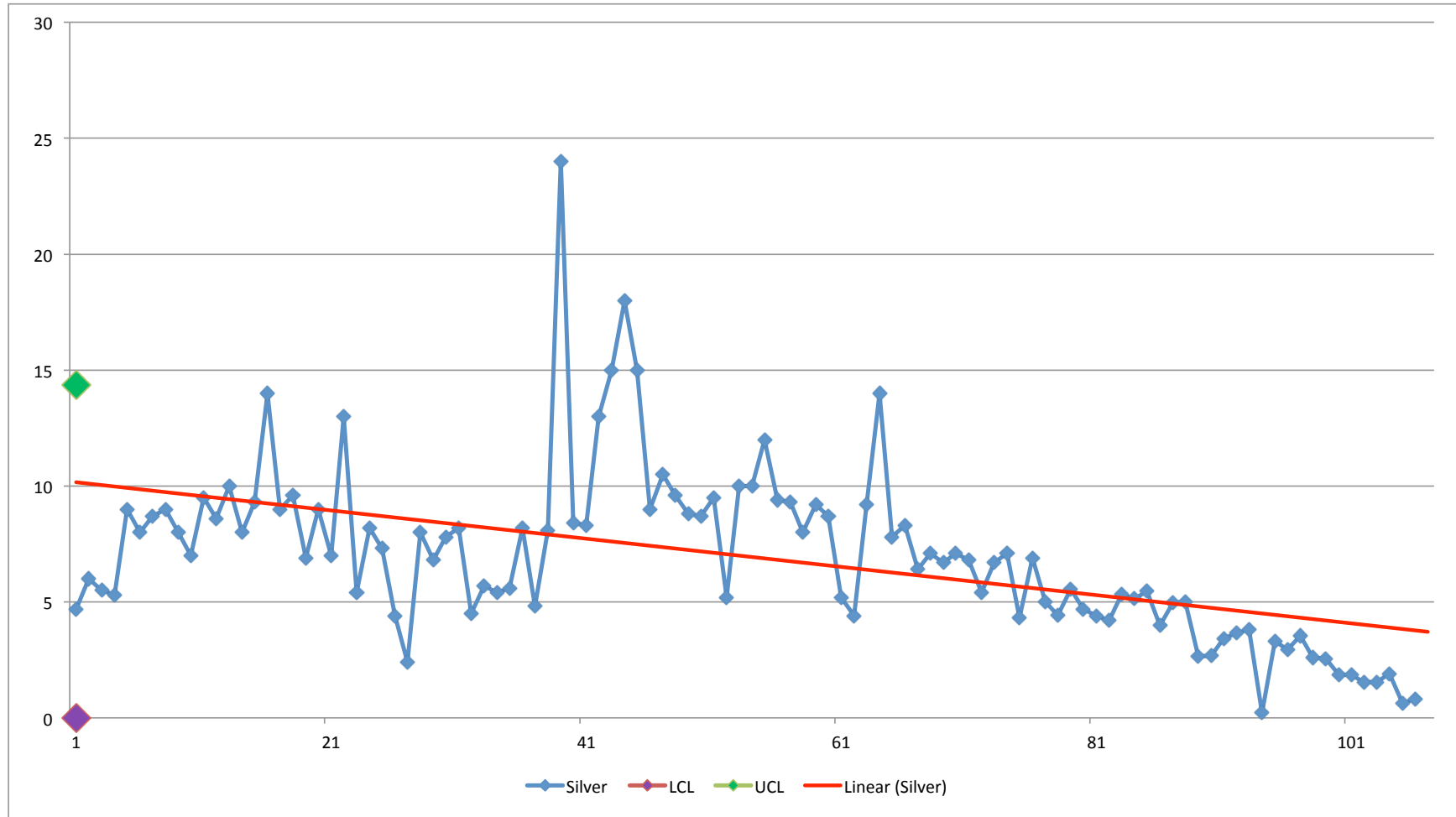
Central Davis Sewer District
Composted Biosolids
Nickel Quality Control Chart



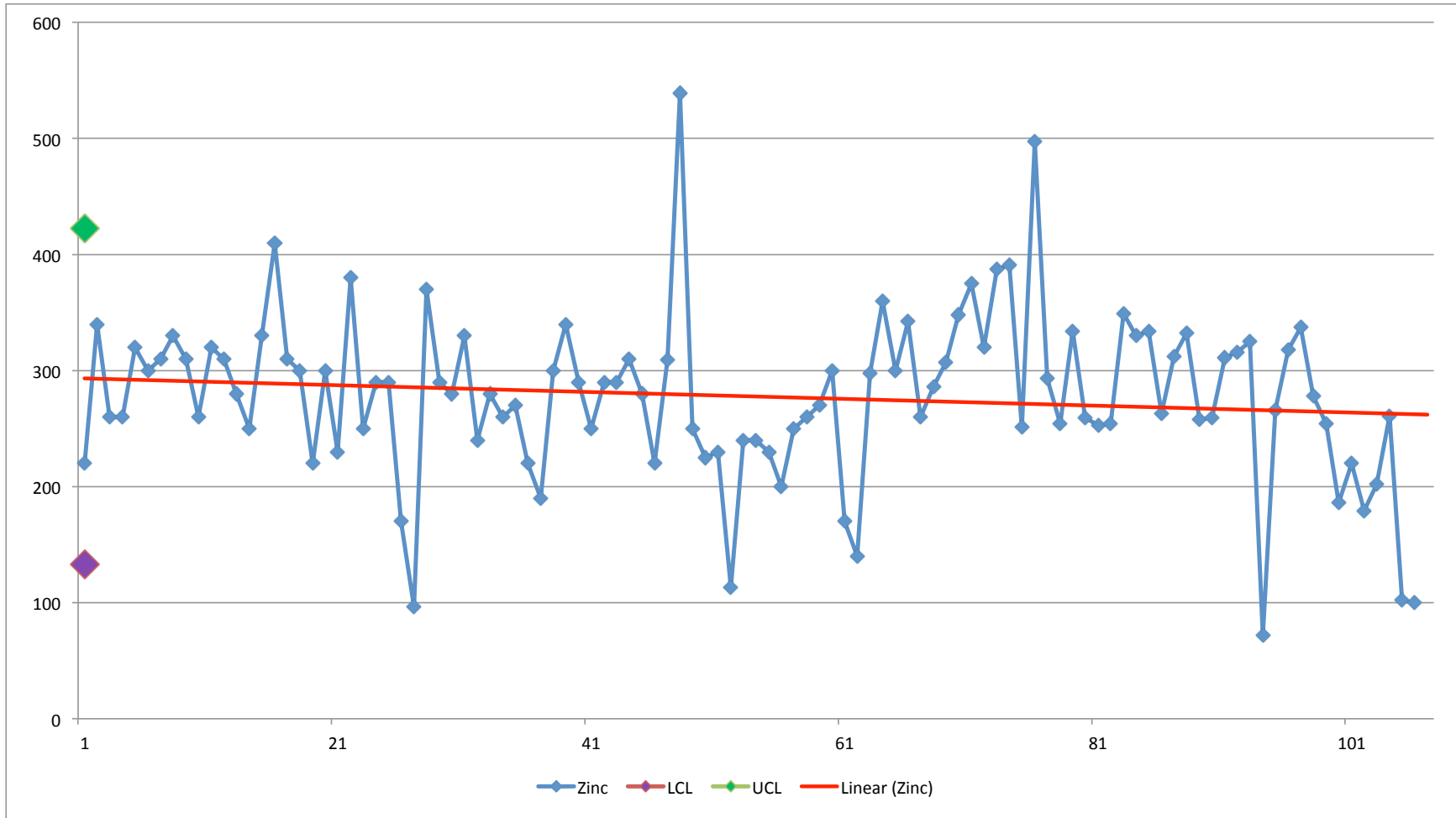
Central Davis Sewer District
Composted Biosolids
Selenium Quality Control Chart



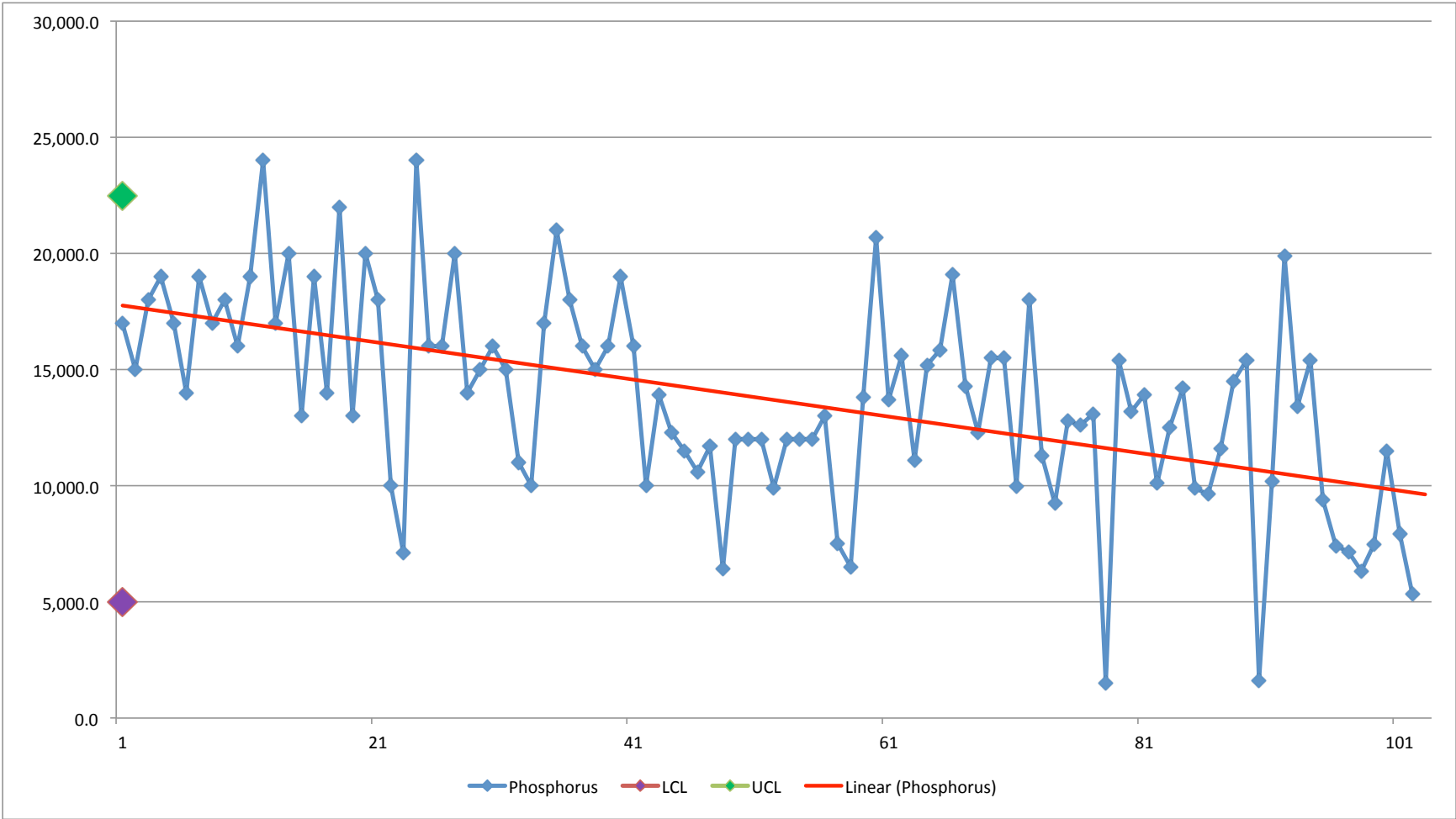
Central Davis Sewer District
Composted Biosolids
Silver Quality Control Chart



Central Davis Sewer District
Composted Biosolids
Zinc Quality Control Chart



Central Davis Sewer District Composted Biosolids Phosphorus Quality Control Chart



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Pathogen Reduction

Compliance Documentation

1. 2014 Digester Temperatures
2. 2014 Digester HRT Calculations
3. Class A Compost Testing -
Salmonella
4. Class A Time, Temperature and
Turning

Central Davis Sewer District Anaerobic Biosolids Digestion Temperatures - 2014

Day	JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP		OCT		NOV		DEC		
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	
1	100	100	100	100	100	100	99	99	100	100	101	100	101	100	102	100	100	100	102	102	101		102	F	
2	101	101	100	100	98	100	99	99	100	100	100	100	101	100	101	100	100	100	102	101	101		104	i	
3	101	100	100	100	99	100	98	99	100	100	100	101	101	100	100	100	104	99	103		100	D	102	i	
4	100	100	101	101	99	100	100	100	100	100	100	100	101	100	100	100	101	99	102		100	i	102	n	
5	95	100	101	100	100	100	99	100	99	100	101	100	101	100	100	100	100	100	102		100	g	104	g	
6	98	100	100	100	100	100	99	100	100	100	101	100	100	100	100	100	102	100	102		101	e	105	96	
7	100	100	98	100	100	100	100	100	100	100	102	100	100	101	100	100	102	100	102		101	s	104	97	
8	100	100	98	100	99	100	100	100	100	101	101	100	101	101	102	99	102	100	104		95	t	104	99	
9	100	100	100	100	100	99	100	100	100	100	100	100	101	100	103	100	103	100	101	D	97	e	103	99	
10	100	100	100	100	100	100	100	100	100	100	100	101	100	101	101	101	100	101	100	103	i	98	r	104	100
11	101	100	100	100	100	100	100	100	100	100	101	100	101	101	101	100	100	102	100	103	g	100		104	100
12	100	100	100	100	100	100	100	100	100	100	100	100	101	100	101	101	101	100	105	e	101	C	103	100	
13	101	101	100	100	100	100	100	100	98	100	101	100	101	101	101	99	101	100	104	s	100	l	102	98	
14	101	101	100	98	100	100	100	100	100	100	100	101	100	102	101	100	102	100	105	t	100	e	102	99	
15	100	100	100	100	100	100	100	100	100	100	100	102	100	101	101	99	100	102	101	105	e	103	a	101	99
16	101	101	100	100	100	100	100	100	100	100	100	101	100	101	101	100	104	102	101	104	r	101	n	103	100
17	100	100	100	100	100	100	100	100	100	100	100	101	101	100	101	101	100	100	104		103	i	103	100	
18	101	100	100	100	100	101	100	100	98	100	101	102	100	100	101	100	101	100	100	C	103	n	103	100	
19	102	101	98	100	100	100	100	100	100	100	101	101	100	100	101	100	100	100	100	l	104	g	102	101	
20	102	101	99	100	100	100	100	100	100	100	101	101	100	98	100	100	101	101	101	e	103		101	99	
21	102	101	99	100	100	100	100	100	100	100	101	101	100	100	100	100	100	100	103	a	104	&	104	99	
22	100	100	100	100	100	100	100	100	98	100	101	101	101	101	101	100	102	102	100	n	103		104	99	
23	101	101	100	100	100	100	100	100	97	99	101	101	102	100	102	100	102	104	98	i	103	F	103	99	
24	102	101	100	100	96	99	99	100	98	100	100	102	101	100	102	100	103	101	100	n	102	i	103	100	
25	100	100	100	100	96	99	100	100	99	100	101	100	101	100	101	98	100	101	100	g	102	l	104	99	
26	101	101	100	100	99	100	100	100	103	99	101	101	100	99	100	98	102	100	100		102	l	103	100	
27	100	100	100	100	99	100	99	100	100	99	101	101	100	100	100	100	102	100	101		102	i	102	100	
28	100	100	100	100	99	100	100	100	100	99	100	101	101	99	104	100	102	99	101		102	n	102	101	
29	100	100	100	100	98	100	100	100	101	100	101	100	101	99	101	100	101	100	100		103	g	101	100	
30	100	100	100	100	98	100	100	100	101	99	101	100	100	100	102	100	100	100	101		102		101	100	
31	101	99	100	100	99	99			101	100			100	100	102	100			99				102	99	
Average	100	100	100	100	99	100	100	100	100	100	101	101	101	100	101	100	101	100	102	102	101	-	103	99	
Deg C	38	38	38	38	37	38	38	38	38	38	38	38	38	38	38	38	39	38	39	39	38	-	39	37	

Central Davis Sewer District Digester HRT Calculations

DATES

12/31/2013 - 5/9/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1	27,800 ft cubed
Digester 2	<u>43,100 ft cubed</u>
 Total Volume	 70,900 ft cubed
 Gallons Conversion	 <u>7.48 gal/ft cubed</u>
 Storage Volume	 530,332 gallons
 Dead Storage - 1 foot	 <u>4%</u>
 Active Storage	 509,119 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate	80 gpm
 Pump 1 time	 12 min
Per	180 min
 Pump 2 time	 12 min
Per	180 min
 Total Pumping per day	 192.00 min/day
 Total Pump Volume	 15,360 gal/day

Primary Digester HRT

Hydraulic Residence 33.1 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 13.5 Days

Total Digester HRT 46.7 Days

Central Davis Sewer District Digester HRT Calculations

DATES

5/9/2014 - 5/19/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1		27,800 ft cubed
Digester 2		<u>43,100 ft cubed</u>
Total Volume		70,900 ft cubed
Gallons Conversion		<u>7.48 gal/ft cubed</u>
Storage Volume		530,332 gallons
Dead Storage - 1 foot		<u>4%</u>
Active Storage		509,119 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate		80 gpm
Pump 1 time		12 min
	Per	180 min
Pump 2 time		15 min
	Per	180 min
Total Pumping per day		216.00 min/day
Total Pump Volume		17,280 gal/day

Primary Digester HRT

Hydraulic Residence 29.5 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 12.0 Days

Total Digester HRT 41.5 Days

Central Davis Sewer District Digester HRT Calculations

DATES

5/19/2014 - 6/2/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1		27,800 ft cubed
Digester 2		<u>43,100 ft cubed</u>
 Total Volume		 70,900 ft cubed
 Gallons Conversion		 <u>7.48 gal/ft cubed</u>
 Storage Volume		 530,332 gallons
 Dead Storage - 1 foot		 <u>4%</u>
 Active Storage		 509,119 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate		80 gpm
 Pump 1 time		 14 min
	Per	180 min
 Pump 2 time		 20 min
	Per	180 min
 Total Pumping per day		 272.00 min/day
 Total Pump Volume		 21,760 gal/day

Primary Digester HRT

Hydraulic Residence 23.4 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 9.6 Days

Total Digester HRT 33.0 Days

Central Davis Sewer District Digester HRT Calculations

DATES
6/2/2014 - 9/5/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1		27,800 ft cubed
Digester 2		<u>43,100 ft cubed</u>
 Total Volume		 70,900 ft cubed
 Gallons Conversion		 <u>7.48 gal/ft cubed</u>
 Storage Volume		 530,332 gallons
 Dead Storage - 1 foot		 <u>4%</u>
 Active Storage		 509,119 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate		80 gpm
 Pump 1 time		 10 min
	Per	180 min
 Pump 2 time		 20 min
	Per	180 min
 Total Pumping per day		 240.00 min/day
 Total Pump Volume		 19,200 gal/day

Primary Digester HRT

Hydraulic Residence 26.5 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 10.8 Days

Total Digester HRT 37.3 Days

Central Davis Sewer District Digester HRT Calculations

DATES

9/5/2014 - 10/2/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1	27,800 ft cubed
Digester 2	<u>43,100 ft cubed</u>
 Total Volume	 70,900 ft cubed
 Gallons Conversion	 <u>7.48 gal/ft cubed</u>
 Storage Volume	 530,332 gallons
 Dead Storage - 1 foot	 <u>4%</u>
 Active Storage	 509,119 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate	80 gpm
 Pump 1 time	 10 min
Per	180 min
 Pump 2 time	 15 min
Per	180 min
 Total Pumping per day	 200.00 min/day
 Total Pump Volume	 16,000 gal/day

Primary Digester HRT

Hydraulic Residence 31.8 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 13.0 Days

Total Digester HRT 44.8 Days

Central Davis Sewer District Digester HRT Calculations

DATES

10/2/2014 - 12/6/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1		27,800 ft cubed
Digester 2		<u> -</u> ft cubed
 Total Volume		 27,800 ft cubed
 Gallons Conversion		 <u> 7.48</u> gal/ft cubed
 Storage Volume		 207,944 gallons
 Dead Storage - 1 foot		 <u> 4%</u>
 Active Storage		 199,626 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate		80 gpm
 Pump 1 time		 8 min
	Per	180 min
 Pump 2 time		 10 min
	Per	180 min
 Total Pumping per day		 144.00 min/day
 Total Pump Volume		 11,520 gal/day

Primary Digester HRT

Hydraulic Residence 17.3 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 18.1 Days

Total Digester HRT 35.4 Days

Central Davis Sewer District Digester HRT Calculations

DATES

12/6/2014 - 12/31/2014

Central Davis Sewer District Digesters HRT's are calculated as if there is no supernating. The District does supernate so actual HRT's are longer than calculated.

Primary Digesters - Heated and Mixed - Active Volume

Digester 1		27,800 ft cubed
Digester 2		<u>43,100 ft cubed</u>
 Total Volume		 70,900 ft cubed
 Gallons Conversion		 <u>7.48 gal/ft cubed</u>
 Storage Volume		 530,332 gallons
 Dead Storage - 1 foot		 <u>4%</u>
 Active Storage		 509,119 gallons

Daily Pumping Rate - Plunger Pumps

Pump Rate		80 gpm
 Pump 1 time		 10 min
	Per	180 min
 Pump 2 time		 15 min
	Per	180 min
 Total Pumping per day		 200.00 min/day
 Total Pump Volume		 16,000 gal/day

Primary Digester HRT

Hydraulic Residence 31.8 Days

Secondary Digester HRT - Unheated

Active Storage 207,944 gallons

Hydraulic Residence 13.0 Days

Total Digester HRT 44.8 Days

Central Davis Sewer District

Salmonella Testing Summary 2014

Date	Test #	Salmonella	Total Solids	Date	Test #	Salmonella	Total Solids	Date	Test #	Salmonella	Total Solids
4/8/14	Sample 1	2.6	46.8	5/14/14	Sample 1	1.80	67.4	6/2/14	Sample 1	1.60	76.5
	Sample 2	2	59.6		Sample 2	1.80	66.5		Sample 2	1.60	75.5
	Sample 3	2.1	58.3		Sample 3	1.70	69.6		Sample 3	1.50	80.4
	Sample 4	2.3	53.2		Sample 4	1.70	72.6		Sample 4	1.70	71.3
	Sample 5	1.9	64.7		Sample 5	1.70	71.5		Sample 5	1.50	79.1
	Sample 6	1.9	63.1		Sample 6	1.90	63.9		Sample 6	1.50	81.6
	Sample 7	2.4	50.1		Sample 7	1.90	62.3		Sample 7	1.40	84.5
	Minimum	1.90	46.8		Minimum	1.70	62.3		Minimum	1.40	71.3
	Average	2.17	56.5		Average	1.79	67.7		Average	1.54	78.4
	Maximum	2.60	64.7		Maximum	1.90	72.6		Maximum	1.70	84.5
Date	Test #	Salmonella	Total Solids	Date	Test #	Salmonella	Total Solids	Date	Test #	Salmonella	Total Solids
6/9/14	Sample 1	1.15	69.3	8/11/14	Sample 1	1.70	69.3	10/20/14	Sample 1	1.80	67.2
	Sample 2	1.19	67.4		Sample 2	1.80	67.4		Sample 2	1.80	67.3
	Sample 3	1.19	66.8		Sample 3	1.80	66.8		Sample 3	1.80	67.5
	Sample 4	1.07	74.6		Sample 4	1.60	74.6		Sample 4	1.90	63.2
	Sample 5	1.11	71.8		Sample 5	1.80	68.0		Sample 5	1.80	67.1
	Sample 6	1.2	66.8		Sample 6	1.70	71.8		Sample 6	1.80	65.5
	Sample 7	1.18	68.0		Sample 7	1.80	66.8		Sample 7	1.80	65.2
	Minimum	1.07	66.8		Minimum	1.60	66.8		Minimum	1.80	63.20
	Average	1.16	69.3		Average	1.74	69.3		Average	1.81	66.14
	Maximum	1.20	74.6		Maximum	1.80	74.6		Maximum	1.90	67.50

All Salmonella tests are less than the values shown above



**RICHARDS LABORATORIES
OF UTAH**

45 North 100 East Pleasant Grove UT 84062 (800) 453-1210 (801) 785-2500 SLC (801) 355-5579

All samples tested according to NELAP requirements

Date Report Printed *Wednesday, April 16, 2014*

RECEIVED

APR 30 2014

CENTRAL DAVIS SEWER DISTRICT

2200 SOUTH SUNSET DRIVE
KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

Central Davis Sewer

SAMPLE SITE:	Compost Piles	Sampler:	LM	Receive	4/8/2014	11:30
Sample ID	25911.114628 COMPOST				<i>Receiving Temp</i>	23.0 °C
	Date and Time Sample	4/8/2014	10:20			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<2.60	3 MPN/4 g dry	SM 9260	Preparation 08-Apr-14	12:30
					Analysis 12-Apr-14	13:30
					Completed 12-Apr-14	13:30
1/8/14						
Sample ID	25911.114629 COMPOST				<i>Receiving Temp</i>	23.0 °C
	Date and Time Sample	4/8/2014	10:20			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<2.00	3 MPN/4 g dry	SM 9260	Preparation 08-Apr-14	12:30
					Analysis 12-Apr-14	13:30
					Completed 12-Apr-14	13:30
1/16/14						
Sample ID	25911.114630 COMPOST				<i>Receiving Temp</i>	23.0 °C
	Date and Time Sample	4/8/2014	10:20			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<2.10	3 MPN/4 g dry	SM 9260	Preparation 08-Apr-14	12:30
					Analysis 12-Apr-14	13:30
					Completed 12-Apr-14	13:30
1/2/14						
Sample ID	25911.114631 COMPOST				<i>Receiving Temp</i>	23.0 °C
	Date and Time Sample	4/8/2014	10:20			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<2.30	3 MPN/4 g dry	SM 9260	Preparation 08-Apr-14	12:30
					Analysis 12-Apr-14	13:30
					Completed 12-Apr-14	13:30
2014-1-72						
Sample ID	25911.114632 COMPOST				<i>Receiving Temp</i>	23.0 °C
	Date and Time Sample	4/8/2014	10:20			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.90	3 MPN/4 g dry	SM 9260	Preparation 08-Apr-14	12:30
					Analysis 12-Apr-14	13:30
					Completed 12-Apr-14	13:30
1/29/14						
Sample ID	25911.114633 COMPOST				<i>Receiving Temp</i>	23.0 °C
	Date and Time Sample	4/8/2014	10:20			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.90	3 MPN/4 g dry	SM 9260	Preparation 08-Apr-14	12:30
					Analysis 12-Apr-14	13:30
					Completed 12-Apr-14	13:30
2014-1-67						

Dean F. Richards
 Dean F. Richards Director
 Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
OF UTAH**

45 North 100 East Pleasant Grove UT 84062 (800) 453-1210 (801) 785-2500 SLC (801) 355-5579

All samples tested according to NELAP requirements
Date Report Printed *Wednesday, April 16, 2014*

CENTRAL DAVIS SEWER DISTRICT

2200 SOUTH SUNSET DRIVE
KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE: Compost Piles

Sampler: LM

Receive

4/8/2014

11:30

Sample ID 25911.114634 COMPOST

Receiving Temp 23.0 °C

Date and Time Sample 4/8/2014 10:20

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<2.40	3 MPN/4 g dry	SM 9260	Preparation	08-Apr-14 12:30
					Analysis	12-Apr-14 13:30
					Completed	12-Apr-14 13:30

2014-1-63

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



RICHARDS LABORATORIES OF UTAH

45 North 100 East Pleasant Grove UT 84062 (800) 453-1210 (801) 785-2500 SLC (801) 355-5579

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Phone: 801 451-2190
Fax: (801) 451-6836

KAYSVILLE, UT 84037

SAMPLE SITE: Compost Piles		Sampler: LM		Receive	11:30	4/8/2014	
Sample ID	25911.114628 COMPOST					<i>Receiving Tem</i>	23.0 °C
	Grab	Sample Date	Tim	08-Apr-14	10:20		
Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time	
AR	Total Solids	46.81 %	1 %	EPA 160.3	<i>Preparation</i>	08-Apr-14	12:30
					<i>Analysis</i>	09-Apr-14	13:30
					<i>Completed</i>	09-Apr-14	13:30
1/8/14							
Sample ID	25911.114629 COMPOST					<i>Receiving Tem</i>	23.0 °C
	Grab	Sample Date	Tim	08-Apr-14	10:20		
Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time	
AR	Total Solids	59.64 %	1 %	EPA 160.3	<i>Preparation</i>	08-Apr-14	12:30
					<i>Analysis</i>	09-Apr-14	13:30
					<i>Completed</i>	09-Apr-14	13:30
1/16/14							
Sample ID	25911.114630 COMPOST					<i>Receiving Tem</i>	23.0 °C
	Grab	Sample Date	Tim	08-Apr-14	10:20		
Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time	
AR	Total Solids	58.25 %	1 %	EPA 160.3	<i>Preparation</i>	08-Apr-14	12:30
					<i>Analysis</i>	09-Apr-14	13:30
					<i>Completed</i>	09-Apr-14	13:30
1/2/14							
Sample ID	25911.114631 COMPOST					<i>Receiving Tem</i>	23.0 °C
	Grab	Sample Date	Tim	08-Apr-14	10:20		
Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time	
AR	Total Solids	53.16 %	1 %	EPA 160.3	<i>Preparation</i>	08-Apr-14	12:30
					<i>Analysis</i>	09-Apr-14	13:30
					<i>Completed</i>	09-Apr-11	13:30
2014-1-72							
Sample ID	25911.114632 COMPOST					<i>Receiving Tem</i>	23.0 °C
	Grab	Sample Date	Tim	08-Apr-14	10:20		
Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time	
AR	Total Solids	64.71 %	1 %	EPA 160.3	<i>Preparation</i>	08-Apr-14	12:30
					<i>Analysis</i>	09-Apr-14	13:30
					<i>Completed</i>	09-Apr-14	13:30
1/29/14							
Sample ID	25911.114633 COMPOST					<i>Receiving Tem</i>	23.0 °C
	Grab	Sample Date	Tim	08-Apr-14	10:20		
Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time	
AR	Total Solids	63.06 %	1 %	EPA 160.3	<i>Preparation</i>	08-Apr-14	12:30
					<i>Analysis</i>	09-Apr-14	13:30
					<i>Completed</i>	09-Apr-14	13:30
2014-1-67							

Dean F. Richards
Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



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OF UTAH**

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Fax: (801) 451-6836

KAYSVILLE, UT 84037

SAMPLE SITE: Compost Piles

Sampler: LM

Receive 11:30 4/8/2014

Sample ID 25911.114634 COMPOST

Receiving Tem 23.0 °C

Grab Sample Date Tim 08-Apr-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	50.12 %	1 %	EPA 160.3	Preparation	08-Apr-14 12:30
					Analysis	09-Apr-14 13:30
					Completed	09-Apr-14 13:30

2014-1-63

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
OF UTAH**

45 North 100 East Pleasant Grove UT 84062 (801) 785-2500

All samples tested according to NELAP requirements

Date Report Printed Tuesday, May 20, 2014

CENTRAL DAVIS SEWER DISTRICT

2200 SOUTH SUNSET DRIVE
KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:	Revised Report	Sampler:	LM	Receive	5/14/2014	12:05	
Sample ID	20096.87991 Compost pile					Receiving Temp	23.5 °C
	Date and Time Sample		5/14/2014	10:25			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:		
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00	
					Analysis	19-May-14 11:00	
					Completed	19-May-14 11:00	
2014-2-96							
Sample ID	20096.87992 Compost pile					Receiving Temp	23.5 °C
	Date and Time Sample		5/14/2014	10:25			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:		
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00	
					Analysis	19-May-14 11:00	
					Completed	19-May-14 11:00	
201-2-97							
Sample ID	20096.87993 Compost pile					Receiving Temp	23.5 °C
	Date and Time Sample		5/14/2014	10:25			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:		
AR AR	Salmonella	<1.70	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00	
					Analysis	19-May-14 11:00	
					Completed	19-May-14 11:00	
2014-2-37							
Sample ID	20096.87994 Compost pile					Receiving Temp	23.5 °C
	Date and Time Sample		5/14/2014	10:25			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:		
AR AR	Salmonella	<1.70	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00	
					Analysis	19-May-14 11:00	
					Completed	19-May-14 11:00	
2014-2-39							
Sample ID	20096.87995 Compost pile					Receiving Temp	23.5 °C
	Date and Time Sample		5/14/2014	10:25			
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:		
AR AR	Salmonella	<1.70	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00	
					Analysis	19-May-14 11:00	
					Completed	19-May-14 11:00	
2014-2-45							

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Central Davis Sewer

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



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OF UTAH**

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All samples tested according to NELAP requirements

Date Report Printed Tuesday, May 20, 2014

CENTRAL DAVIS SEWER DISTRICT

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KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE: Revised Report

Sampler: LM

Receive

5/14/2014

12:05

Sample ID 20096.87996 Compost pile

Receiving Temp 23.5 °C

Date and Time Sample 5/14/2014 10:25

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.90	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00
					Analysis	19-May-14 11:00
					Completed	19-May-14 11:00

2014-2-38

Sample ID 20096.87997 Compost pile

Receiving Temp 23.5 °C

Date and Time Sample 5/14/2014 10:25

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.90	3 MPN/4 g dry	SM 9260	Preparation	14-May-14 11:00
					Analysis	19-May-14 11:00
					Completed	19-May-14 11:00

2014-2-41

Revised Report

Dean F Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
OF UTAH**

45 NORTH 100 EAST Pleasant Grove UT 84062 (801) 785-2500

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Date Report Printed Monday, May 19, 2014

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Fax: (801) 451-6836

KAYSVILLE, UT 84037

SAMPLE SITE: Compost Piles

Sampler: LM

Receive 12:05 5/14/2014

Sample ID 20096.87991 Compost pile **Receiving Tem** 23.5 °C
Grab **Sample Date** Tim 14-May-14 10:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	67.39 %	1 %	EPA 160.3	Preparation	14-May-14 11:00
					Analysis	15-May-14 12:00
					Completed	15-May-14 12:00

2014-2-96

Sample ID 20096.87992 Compost pile **Receiving Tem** 23.5 °C
Grab **Sample Date** Tim 14-May-14 10:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	66.54 %	1 %	EPA 160.3	Preparation	14-May-14 11:00
					Analysis	15-May-14 12:00
					Completed	15-May-14 12:00

201-2-97

Sample ID 20096.87993 Compost pile **Receiving Tem** 23.5 °C
Grab **Sample Date** Tim 14-May-14 10:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	69.56 %	1 %	EPA 160.3	Preparation	14-May-14 11:00
					Analysis	15-May-14 12:00
					Completed	15-May-14 12:00

2014-2-37

Sample ID 20096.87994 Compost pile **Receiving Tem** 23.5 °C
Grab **Sample Date** Tim 14-May-14 10:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	72.61 %	1 %	EPA 160.3	Preparation	14-May-14 11:00
					Analysis	15-May-14 12:00
					Completed	15-May-14 12:00

2014-2-39

Sample ID 20096.87995 Compost pile **Receiving Tem** 23.5 °C
Grab **Sample Date** Tim 14-May-14 10:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	71.47 %	1 %	EPA 160.3	Preparation	14-May-14 11:00
					Analysis	15-May-14 12:00
					Completed	15-May-14 12:00

2014-2-45

Sample ID 20096.87996 Compost pile **Receiving Tem** 23.5 °C
Grab **Sample Date** Tim 14-May-14 10:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	62.92 %	1 %	EPA 160.3	Preparation	14-May-14 11:00
					Analysis	15-May-14 12:00
					Completed	15-May-14 12:00

2014-2-38

Dean F Richards



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Fax: (801) 451-6836

KAYSVILLE, UT 84037

SAMPLE SITE: Compost Piles

Sampler: LM

Receive 12:05 5/14/2014

Sample ID	20096.87997 Compost pile				Receiving Tem	23.5 °C
	Grab	Sample Date	Tim	14-May-14	10:25	
Lab Techs	Test	Test Results		MRL	Method	Sample Date: Time
AR	Total Solids	62.32	%	1 %	EPA 160.3	<i>Preparation</i> 14-May-14 11:00
						<i>Analysis</i> 15-May-14 12:00
						<i>Completed</i> 15-May-14 12:00

2014-2-41

Dean F Richards

Dean F. Richards
Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
OF UTAH**

45 North 100 East Pleasant Grove UT 84062 (801) 785-2500

All samples tested according to NELAP requirements

Date Report Printed *Thursday, June 05, 2014*

CENTRAL DAVIS SEWER DISTRICT

2200 SOUTH SUNSET DRIVE
KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:	Sampler:	LM	Receive	6/2/2014	11:25
Sample ID	20150.88165 Compost pile			Receiving Temp 26.5 °C	
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.60	3 MPN/4 g dry	SM 9260	Preparation 02-Jun-14 11:45
					Analysis 05-Jun-14 9:00
2014-3-57					Completed 05-Jun-14 9:00
Sample ID	20150.88166 Compost pile			Receiving Temp 23.5 °C	
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.60	3 MPN/4 g dry	SM 9260	Preparation 02-Jun-14 11:45
					Analysis 05-Jun-14 9:00
2014-3-80					Completed 05-Jun-14 9:00
Sample ID	20150.88167 Compost pile			Receiving Temp 23.5 °C	
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.50	3 MPN/4 g dry	SM 9260	Preparation 02-Jun-14 11:45
					Analysis 05-Jun-14 9:00
2014-3-67					Completed 05-Jun-14 9:00
Sample ID	20150.88168 Compost pile			Receiving Temp 23.5 °C	
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.70	3 MPN/4 g dry	SM 9260	Preparation 02-Jun-14 11:45
					Analysis 05-Jun-14 9:00
2014-3-90					Completed 05-Jun-14 9:00
Sample ID	20150.88169 Compost pile			Receiving Temp 23.5 °C	
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.50	3 MPN/4 g dry	SM 9260	Preparation 02-Jun-14 11:45
					Analysis 05-Jun-14 9:00
2014-3-4					Completed 05-Jun-14 9:00

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



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45 North 100 East Pleasant Grove UT 84062 (801) 785-2500

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KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:	Sampler:	LM	Receive	6/2/2014	11:25
Sample ID	20150.88170 Compost pile			<i>Receiving Temp</i>	23.5 °C
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.50	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 02-Jun-14 11:45
					<i>Analysis</i> 05-Jun-14 9:00
2014-3-41					<i>Completed</i> 05-Jun-14 9:00
Sample ID	20150.88171 Compost pile			<i>Receiving Temp</i>	23.5 °C
	Date and Time Sample		6/2/2014	10:10	
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.40	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 02-Jun-14 11:45
					<i>Analysis</i> 05-Jun-14 9:00
2014-3-25					<i>Completed</i> 05-Jun-14 9:00

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



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KAYSVILLE, UT 84037

SAMPLE SITE:	Sampler:	LM	Receive	11:25	6/2/2014
Sample ID	20150.88165 Compost pile				Receiving Tem 26.5 °C
Grab	Sample Date	Tim	02-Jun-14	10:10	
Lab Techs	Test	Test Results	MRL	Method	Sample Date: Time
AR	Total Solids	76.53 %	1 %	EPA 160.3	Preparation 02-Jun-14 11:45
					Analysis 03-Jun-14 13:00
					Completed 03-Jun-14 13:00
2014-3-57					
Sample ID	20150.88166 Compost pile				Receiving Tem 23.5 °C
Grab	Sample Date	Tim	02-Jun-14	10:10	
Lab Techs	Test	Test Results	MRL	Method	Sample Date: Time
AR	Total Solids	75.54 %	1 %	EPA 160.3	Preparation 02-Jun-14 11:45
					Analysis 03-Jun-14 13:00
					Completed 03-Jun-14 13:00
2014-3-80					
Sample ID	20150.88167 Compost pile				Receiving Tem 23.5 °C
Grab	Sample Date	Tim	02-Jun-14	10:10	
Lab Techs	Test	Test Results	MRL	Method	Sample Date: Time
AR	Total Solids	80.41 %	1 %	EPA 160.3	Preparation 02-Jun-14 11:45
					Analysis 03-Jun-14 13:00
					Completed 03-Jun-14 13:00
2014-3-67					
Sample ID	20150.88168 Compost pile				Receiving Tem 23.5 °C
Grab	Sample Date	Tim	02-Jun-14	10:10	
Lab Techs	Test	Test Results	MRL	Method	Sample Date: Time
AR	Total Solids	71.29 %	1 %	EPA 160.3	Preparation 02-Jun-14 11:45
					Analysis 03-Jun-14 13:00
					Completed 03-Jun-14 13:00
2014-3-90					
Sample ID	20150.88169 Compost pile				Receiving Tem 23.5 °C
Grab	Sample Date	Tim	02-Jun-14	10:10	
Lab Techs	Test	Test Results	MRL	Method	Sample Date: Time
AR	Total Solids	79.13 %	1 %	EPA 160.3	Preparation 02-Jun-14 11:45
					Analysis 03-Jun-14 13:00
					Completed 03-Jun-14 13:00
2014-3-4					
Sample ID	20150.88170 Compost pile				Receiving Tem 23.5 °C
Grab	Sample Date	Tim	02-Jun-14	10:10	
Lab Techs	Test	Test Results	MRL	Method	Sample Date: Time
AR	Total Solids	81.63 %	1 %	EPA 160.3	Preparation 02-Jun-14 11:45
					Analysis 03-Jun-14 13:00
					Completed 03-Jun-14 13:00
2014-3-41					

Dean F. Richards

Dean F. Richards
Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
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45 NORTH 100 EAST Pleasant Grove UT 84062 (801) 785-2500

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KAYSVILLE, UT 84037

SAMPLE SITE: Sampler: LM Receive 11:25 6/2/2014

Sample ID 20150.88171 Compost pile *Receiving Tem* 23.5 °C
Sample Date Tim 02-Jun-14 10:10

<i>Lab Techs</i>	<i>Test</i>	<i>Test Results</i>	<i>MRL</i>	<i>Method</i>	<i>Sample Date:</i>	<i>Time</i>
AR	Total Solids	84.50 %	1 %	EPA 160.3	<i>Preparation</i> 02-Jun-14	11:45
					<i>Analysis</i> 03-Jun-14	13:00
					<i>Completed</i> 03-Jun-14	13:00

2014-3-25

Dean F Richards

Dean F. Richards
Richards Industrial Microbiology Laboratory, Inc.



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2200 SOUTH SUNSET DRIVE
KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:	Sampler:	LM	Receive	6/9/2014	11:35	
Sample ID	20197.88393 Compost pile				Receiving Temp	24.0 °C
	Date and Time Sample		6/9/2014	10:20		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:	
AR AR	Salmonella	<1.15	3 MPN/4 g dry	SM 9260	Preparation	09-Jun-14 12:00
					Analysis	12-Jun-14 10:00
					Completed	12-Jun-14 10:00
2014-4-24						
Sample ID	20197.88394 Compost pile				Receiving Temp	24.0 °C
	Date and Time Sample		6/9/2014	10:20		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:	
AR AR	Salmonella	<1.19	3 MPN/4 g dry	SM 9260	Preparation	09-Jun-14 12:00
					Analysis	12-Jun-14 10:00
					Completed	12-Jun-14 10:00
2014-4-68						
Sample ID	20197.88395 Compost pile				Receiving Temp	24.0 °C
	Date and Time Sample		6/9/2014	10:20		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:	
AR AR	Salmonella	<1.19	3 MPN/4 g dry	SM 9260	Preparation	09-Jun-14 12:00
					Analysis	12-Jun-14 10:00
					Completed	12-Jun-14 10:00
2014-4-29						
Sample ID	20197.88396 Compost pile				Receiving Temp	24.0 °C
	Date and Time Sample		6/9/2014	10:20		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:	
AR AR	Salmonella	<1.07	3 MPN/4 g dry	SM 9260	Preparation	09-Jun-14 12:00
					Analysis	12-Jun-14 10:00
					Completed	12-Jun-14 10:00
2014-4-17						
Sample ID	20197.88397 Compost pile				Receiving Temp	24.0 °C
	Date and Time Sample		6/9/2014	10:20		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:	
AR AR	Salmonella	<1.11	3 MPN/4 g dry	SM 9260	Preparation	09-Jun-14 12:00
					Analysis	12-Jun-14 10:00
					Completed	12-Jun-14 10:00
2014-4-28						

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
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45 North 100 East Pleasant Grove UT 84062 (801) 785-2500

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KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:		Sampler: LM		Receive		6/9/2014 11:35	
<i>Sample ID</i>	20197.88398 Compost pile					<i>Receiving Temp</i> 24.0 °C	
		Date and Time Sample	6/9/2014 10:20				
<i>Lab Techs</i>	<i>Test</i>	<i>Test Results</i>	<i>MRL Units</i>	<i>Method</i>	<i>Analysis Date:</i>		<i>Time:</i>
AR AR	Salmonella	<1.20	3 MPN/4 g dry	SM 9260	<i>Preparation</i>	09-Jun-14	12:00
					<i>Analysis</i>	12-Jun-14	10:00
					<i>Completed</i>	12-Jun-14	10:00
2014-4-41							
<i>Sample ID</i>	20197.88399 Compost pile					<i>Receiving Temp</i> 24.0 °C	
		Date and Time Sample	6/9/2014 10:20				
<i>Lab Techs</i>	<i>Test</i>	<i>Test Results</i>	<i>MRL Units</i>	<i>Method</i>	<i>Analysis Date:</i>		<i>Time:</i>
AR AR	Salmonella	<1.18	3 MPN/4 g dry	SM 9260	<i>Preparation</i>	09-Jun-14	12:00
					<i>Analysis</i>	12-Jun-14	10:00
					<i>Completed</i>	12-Jun-14	10:00
2014-4-11							

Dean F Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



**RICHARDS LABORATORIES
OF UTAH**

45 NORTH 100 EAST Pleasant Grove UT 84062 (801) 785-2500

All samples tested according to NELAP requirements

Date Report Printed Thursday, June 12, 2014

CENTRAL DAVIS SEWER DISTRICT
2200 SOUTH SUNSET DRIVE

Phone: 801 451-2190
Fax: (801) 451-6836

KAYSVILLE, UT 84037

SAMPLE SITE: Sampler: LM Receive 11:35 6/9/2014

Sample ID 20197.88393 Compost pile Receiving Tem 24.0 °C
Grab Sample Date Tim 09-Jun-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	69.27 %	1 %	EPA 160.3	Preparation	09-Jun-14 12:00
					Analysis	10-Jun-14 13:00
					Completed	10-Jun-14 13:00

2014-4-24
Sample ID 20197.88394 Compost pile Receiving Tem 24.0 °C
Grab Sample Date Tim 09-Jun-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	67.43 %	1 %	EPA 160.3	Preparation	09-Jun-14 12:00
					Analysis	10-Jun-14 13:00
					Completed	10-Jun-14 13:00

2014-4-68
Sample ID 20197.88395 Compost pile Receiving Tem 24.0 °C
Grab Sample Date Tim 09-Jun-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	66.80 %	1 %	EPA 160.3	Preparation	09-Jun-14 12:00
					Analysis	10-Jun-14 13:00
					Completed	10-Jun-14 13:00

2014-4-29
Sample ID 20197.88396 Compost pile Receiving Tem 24.0 °C
Grab Sample Date Tim 09-Jun-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	74.64 %	1 %	EPA 160.3	Preparation	09-Jun-14 12:00
					Analysis	10-Jun-14 13:00
					Completed	10-Jun-14 13:00

2014-4-17
Sample ID 20197.88397 Compost pile Receiving Tem 24.0 °C
Grab Sample Date Tim 09-Jun-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	71.77 %	1 %	EPA 160.3	Preparation	09-Jun-14 12:00
					Analysis	10-Jun-14 13:00
					Completed	10-Jun-14 13:00

2014-4-28
Sample ID 20197.88398 Compost pile Receiving Tem 24.0 °C
Grab Sample Date Tim 09-Jun-14 10:20

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	66.84 %	1 %	EPA 160.3	Preparation	09-Jun-14 12:00
					Analysis	10-Jun-14 13:00
					Completed	10-Jun-14 13:00

2014-4-41

Dean F Richards

Dean F. Richards
Richards Industrial Microbiology Laboratory, Inc.



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KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:

Sampler: LM

Receive

11:35

6/9/2014

Sample ID 20197.88399 Compost pile

Receiving Tem 24.0 °C

Grab

Sample Date Tim 09-Jun-14 10:20

<i>Lab Techs</i>	<i>Test</i>	<i>Test Results</i>	<i>MRL</i>	<i>Method</i>	<i>Sample</i>	<i>Date:</i>	<i>Time</i>
AR	Total Solids	68.02 %	1 %	EPA 160.3	<i>Preparation</i>	09-Jun-14	12:00
					<i>Analysis</i>	10-Jun-14	13:00
					<i>Completed</i>	10-Jun-14	13:00

2014-4-11

Dean F Richards

Dean F. Richards

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KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE:	Sampler:	LM	Receive	8/11/2014	14:48
Sample ID 20423.89277	Compost pile			<i>Receiving Temp</i>	23.5 °C
Date and Time Sample		8/11/2014	13:25		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.70	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 11-Aug-14 15:00
					<i>Analysis</i> 15-Aug-14 13:00
					<i>Completed</i> 15-Aug-14 13:00
2014-5-83					
Sample ID 20423.89278	Compost pile			<i>Receiving Temp</i>	23.5 °C
Date and Time Sample		8/11/2014	13:25		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 11-Aug-14 15:00
					<i>Analysis</i> 15-Aug-14 13:00
					<i>Completed</i> 15-Aug-14 13:00
2014-5-12					
Sample ID 20423.89279	Compost pile			<i>Receiving Temp</i>	23.5 °C
Date and Time Sample		8/11/2014	13:25		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 11-Aug-14 15:00
					<i>Analysis</i> 15-Aug-14 13:00
					<i>Completed</i> 15-Aug-14 13:00
2014-5-74					
Sample ID 20423.89280	Compost pile			<i>Receiving Temp</i>	23.5 °C
Date and Time Sample		8/11/2014	13:25		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.60	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 11-Aug-14 15:00
					<i>Analysis</i> 15-Aug-14 13:00
					<i>Completed</i> 15-Aug-14 13:00
2014-5-20					
Sample ID 20423.89281	Compost pile			<i>Receiving Temp</i>	23.5 °C
Date and Time Sample		8/11/2014	13:25		
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	<i>Preparation</i> 11-Aug-14 15:00
					<i>Analysis</i> 15-Aug-14 13:00
					<i>Completed</i> 15-Aug-14 13:00
2014-5-9					

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AUG 28 2014

Central Davis Sewer

Dean F Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



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45 North 100 East Pleasant Grove UT 84062 (801) 785-2500

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KAYSVILLE, UT 84037

Phone: 801 451-2190

Fax: (801) 451-6836

SAMPLE SITE: Sampler: LM Receive 8/11/2014 14:48
Sample ID 20423.89282 Compost pile Receiving Temp 23.5 °C
 Date and Time Sample 8/11/2014 13:25

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.70	3 MPN/4 g dry	SM 9260	Preparation	11-Aug-14 15:00
					Analysis	15-Aug-14 13:00
					Completed	15-Aug-14 13:00

2014-5-89
Sample ID 20423.89283 Compost pile Receiving Temp 23.5 °C
 Date and Time Sample 8/11/2014 13:25

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation	11-Aug-14 15:00
					Analysis	15-Aug-14 13:00
					Completed	15-Aug-14 13:00

2014-5-82

Dean F Richards

Dean F. Richards Director
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KAYSVILLE, UT 84037

SAMPLE SITE: Sampler: LM Receive 14:48 8/11/2014

Sample ID 20423.89277 Compost pile Receiving Tem 23.5 °C
Grab Sample Date Tim 11-Aug-14 13:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	69.27 %	1 %	EPA 160.3	Preparation	11-Aug-14 15:00
					Analysis	12-Aug-14 16:00
					Completed	12-Aug-14 16:00

2014-5-83

Sample ID 20423.89278 Compost pile Receiving Tem 23.5 °C
2 Sample Date Tim 11-Aug-14 13:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	67.43 %	1 %	EPA 160.3	Preparation	11-Aug-14 15:00
					Analysis	12-Aug-14 16:00
					Completed	12-Aug-14 16:00

2014-5-12

Sample ID 20423.89279 Compost pile Receiving Tem 23.5 °C
Grab Sample Date Tim 11-Aug-14 13:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	66.84 %	1 %	EPA 160.3	Preparation	11-Aug-14 15:00
					Analysis	12-Aug-14 16:00
					Completed	13-Aug-14 16:00

2014-5-74

Sample ID 20423.89280 Compost pile Receiving Tem 23.5 °C
Grab Sample Date Tim 11-Aug-14 13:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	74.64 %	1 %	EPA 160.3	Preparation	11-Aug-14 15:00
					Analysis	12-Aug-14 16:00
					Completed	12-Aug-14 16:00

2014-5-20

Sample ID 20423.89281 Compost pile Receiving Tem 23.5 °C
Grab Sample Date Tim 11-Aug-14 13:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	68.02 %	1 %	EPA 160.3	Preparation	11-Aug-14 15:00
					Analysis	12-Aug-14 16:00
					Completed	12-Aug-14 16:00

2014-5-9

Sample ID 20423.89282 Compost pile Receiving Tem 23.5 °C
Grab Sample Date Tim 11-Aug-14 13:25

Lab Techs	Test	Test Results	MRL	Method	Sample Date:	Time
AR	Total Solids	71.77 %	1 %	EPA 160.3	Preparation	11-Aug-14 15:00
					Analysis	12-Aug-14 16:00
					Completed	12-Aug-14 16:00

2014-5-89

Dean F Richards



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Fax: (801) 451-6836

SAMPLE SITE:

Sampler: LM

Receive 14:48 8/11/2014

Sample ID 20423.89283 Compost pile

Receiving Tem 23.5 °C

Grab

Sample Date Tim 11-Aug-14 13:25

<i>Lab Techs</i>	<i>Test</i>	<i>Test Results</i>	<i>MRL</i>	<i>Method</i>	<i>Sample Date:</i>	<i>Time</i>
AR	Total Solids	66.80 %	1 %	EPA 160.3	<i>Preparation</i>	11-Aug-14 15:00
					<i>Analysis</i>	12-Aug-14 16:00
					<i>Completed</i>	12-Aug-14 16:00

2014-5-82

Dean F Richards



**RICHARDS LABORATORIES
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45 North 100 East Pleasant Grove UT 84062 (801) 785-2500

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2200 SOUTH SUNSET DRIVE
KAYSVILLE, UT 84037

Phone: 801 451-2190
Fax: (801) 451-6836

SAMPLE SITE:	Sampler:	LM	Receive	10/20/2014	11:40
Sample ID 20631.90227	Compost pile			Receiving Temp 23.5 °C	
Date and Time Sample 10/20/2014 9:30					
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation 20-Oct-14 12:00
					Analysis 23-Oct-14 10:00
					Completed 23-Oct-14 10:00
2014-6-70					
Sample ID 20631.90228	Compost pile			Receiving Temp 23.5 °C	
Date and Time Sample 10/20/2014 9:30					
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation 20-Oct-14 12:00
					Analysis 23-Oct-14 10:00
					Completed 23-Oct-14 10:00
2014-6-40					
Sample ID 20631.90229	Compost pile			Receiving Temp 23.5 °C	
Date and Time Sample 10/20/2014 9:30					
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation 20-Oct-14 12:00
					Analysis 23-Oct-14 10:00
					Completed 23-Oct-14 10:00
2014-6-22					
Sample ID 20631.90230	Compost pile			Receiving Temp 23.5 °C	
Date and Time Sample 10/20/2014 9:30					
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation 20-Oct-14 12:00
					Analysis 23-Oct-14 10:00
					Completed 23-Oct-14 10:00
2014-6-16					
Sample ID 20631.90231	Compost pile			Receiving Temp 23.5 °C	
Date and Time Sample 10/20/2014 9:30					
Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date: Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	Preparation 20-Oct-14 12:00
					Analysis 23-Oct-14 10:00
					Completed 23-Oct-14 10:00
2014-6-42					

Dean F. Richards

Dean F. Richards Director
Richards Industrial Microbiology Laboratory, Inc.



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KAYSVILLE, UT 84037

Phone: 801 451-2190
Fax: (801) 451-6836

SAMPLE SITE:	Sampler: LM	Receive	10/20/2014	11:40
Sample ID 20631.90232 Compost pile				<i>Receiving Temp</i> 23.5 °C
	Date and Time Sample		10/20/2014	9:30

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	<i>Preparation</i>	20-Oct-14 12:00
					<i>Analysis</i>	23-Oct-14 10:00
					<i>Completed</i>	23-Oct-14 10:00

2014-6-85

Sample ID 20631.90233 Compost pile					<i>Receiving Temp</i> 23.5 °C
	Date and Time Sample		10/20/2014	9:30	

Lab Techs	Test	Test Results	MRL Units	Method	Analysis Date:	Time:
AR AR	Salmonella	<1.80	3 MPN/4 g dry	SM 9260	<i>Preparation</i>	20-Oct-14 12:00
					<i>Analysis</i>	23-Oct-14 10:00
					<i>Completed</i>	23-Oct-14 10:00

2014-6-18

**Central Davis Sewer District
Compost Pile # 131202**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, December 02, 2013			Compost Pile QC		
Temperature Monitoring	Monday, December 09, 2013			Meets Time		[Signature]
	Tuesday, December 10, 2013			Meets Temperature		[Signature]
	Wednesday, December 11, 2013			Meets Turning		[Signature]
	Thursday, December 12, 2013					
	Friday, December 13, 2013			8:30 AM	60	DVH
	Saturday, December 14, 2013			8:10 AM	65°	JW
	Sunday, December 15, 2013			8:05 AM	64°	JW
	Monday, December 16, 2013			8:45 AM	65°	JW
	Tuesday, December 17, 2013		J	8:05 AM	63°	JW
	Wednesday, December 18, 2013			8:00 AM	64°	JW
	Thursday, December 19, 2013			9:21 AM	65°	(JW)
	Friday, December 20, 2013			8:00 AM	65°	J
	Saturday, December 21, 2013			9:30 AM	55°	JW
	Sunday, December 22, 2013			9:20 AM	56°	JW
Regulatory Period	Monday, December 23, 2013			8:10 AM	70°	JW
	Tuesday, December 24, 2013		JW	8:19 AM	59°	B
	Wednesday, December 25, 2013			1:29 pm	55°	UC
	Thursday, December 26, 2013		DB	8:23 AM	64°	UC
	Friday, December 27, 2013		DB	8:15 AM	55°	UC
	Saturday, December 28, 2013		DB	8:28 AM	55°	UC
	Sunday, December 29, 2013		DB	2:08 pm	64°	UC
	Monday, December 30, 2013			8:25 AM	61°	JW
	Tuesday, December 31, 2013			8:20 AM	62°	JW
	Wednesday, January 01, 2014			8:20 AM	62°	JW
	Thursday, January 02, 2014			8:15 AM	62°	JW
	Friday, January 03, 2014			8:25 AM	60°	JW
	Saturday, January 04, 2014			9:00 AM		
	Sunday, January 05, 2014			8:20 AM	62°	B
	Monday, January 06, 2014			8:05 AM	60	J
	Tuesday, January 07, 2014			8:10 AM	61°	J
	Wednesday, January 08, 2014			8:15 AM	57°	J
Pile Complete	Thursday, January 09, 2014			8:05 AM	55°	JW

**Central Davis Sewer District
Compost Pile # 131216**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, December 16, 2013					
Temperature Monitoring	Monday, December 23, 2013					
	Tuesday, December 24, 2013					
	Wednesday, December 25, 2013					
	Thursday, December 26, 2013					
	Friday, December 27, 2013					
	Saturday, December 28, 2013					
	Sunday, December 29, 2013					
	Monday, December 30, 2013			8:25 AM	66°	JW
	Tuesday, December 31, 2013					
	Wednesday, January 01, 2014			8:20 AM	67°	JW
	Thursday, January 02, 2014			8:15 AM	66°	JW
	Friday, January 03, 2014			8:15 AM	67°	JW
	Saturday, January 04, 2014			9:00 AM	67°	JW
	Sunday, January 05, 2014			8:21 AM	67°	JW
Regulatory Period	Monday, January 06, 2014		JW	8:05 AM	68°	JW
	Tuesday, January 07, 2014		JW	8:10 AM	70°	JW
	Wednesday, January 08, 2014		JW	8:15 AM	70°	JW
	Thursday, January 09, 2014		JW	8:00 AM	71°	JW
	Friday, January 10, 2014		JW	8:05 AM	70°	JW
	Saturday, January 11, 2014			8:30 AM	66°	JW
	Sunday, January 12, 2014			8:55 AM	65°	JW
	Monday, January 13, 2014			8:05 AM	65°	JW
	Tuesday, January 14, 2014			8:00 AM	63°	JW
	Wednesday, January 15, 2014			7:55 AM	64°	JW
	Thursday, January 16, 2014			8:10 AM	64°	JW
	Friday, January 17, 2014					
	Saturday, January 18, 2014					
	Sunday, January 19, 2014					
	Monday, January 20, 2014					
	Tuesday, January 21, 2014			8:27 AM	66°	JW
	Wednesday, January 22, 2014			8:05 AM	67°	JW
Pile Complete	Thursday, January 23, 2014			7:15 PM	63°	JW

Compost Pile QC

Meets Time	JW
Meets Temperature	JW
Meets Turning	JW

**Central Davis Sewer District
Compost Pile # 131230**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, December 30, 2013			Compost Pile QC		
Temperature Monitoring	Monday, January 06, 2014			Meets Time		SW
	Tuesday, January 07, 2014			Meets Temperature		SW
	Wednesday, January 08, 2014			Meets Turning		SW
	Thursday, January 09, 2014			0		
	Friday, January 10, 2014			8:05 AM	75°	SW
	Saturday, January 11, 2014			8:30 AM	72°	SW
	Sunday, January 12, 2014			8:55 AM	64°	SW
	Monday, January 13, 2014			8:05 AM	68°	SW
	Tuesday, January 14, 2014			8:00 AM	67°	SW
	Wednesday, January 15, 2014			7:55 AM	65°	SW
	Thursday, January 16, 2014			8:10 AM	66°	SW
	Friday, January 17, 2014					
	Saturday, January 18, 2014		DVH	8:51 AM	68°	DVH
	Sunday, January 19, 2014		DVH	7:41 AM	58°	DVH
Regulatory Period	Monday, January 20, 2014		DVH	8:37 AM	70°	DVH
	Tuesday, January 21, 2014			8:27 AM	70°	SW
	Wednesday, January 22, 2014		SW	8:05 AM	71°	SW
	Thursday, January 23, 2014		SW	7:15 AM	70°	SW
	Friday, January 24, 2014			7:50 AM	70°	SW
	Saturday, January 25, 2014			8:00 AM	70°	SW
	Sunday, January 26, 2014			8:30 AM	57°	NO
	Monday, January 27, 2014			7:47 AM	60°	SW
	Tuesday, January 28, 2014			8:44 AM	61°	SW
	Wednesday, January 29, 2014			8:05 AM	62°	SW
	Thursday, January 30, 2014			8:35 AM	63°	SW
	Friday, January 31, 2014			8:40 AM	62°	SW
	Saturday, February 01, 2014			8:25 AM	65°	SW
	Sunday, February 02, 2014			7:46 AM	65°	SW
	Monday, February 03, 2014			8:47 AM	65°	SW
	Tuesday, February 04, 2014			8:15 AM	63°	SW
	Wednesday, February 05, 2014			7:55 AM	57°	SW
Pile Complete	Thursday, February 06, 2014			8:10 AM	59°	SW

**Central Davis Sewer District
Compost Pile # 140113**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, January 13, 14					
Temperature Monitoring	Monday, January 20, 14					
	Tuesday, January 21, 14					
	Wednesday, January 22, 14					
	Thursday, January 23, 14					
	Friday, January 24, 14			7:50 AM	75°	JW
	Saturday, January 25, 14			8:00 AM	73°	JW
	Sunday, January 26, 14			8:30 AM	73°	ne
	Monday, January 27, 14			7:47 AM	75°	OW
	Tuesday, January 28, 14			8:44 AM	73°	OW
	Wednesday, January 29, 14			8:05 AM	70°	JW
	Thursday, January 30, 14			8:35 AM	60°	ne
	Friday, January 31, 14			8:46 AM	61°	JW
	Saturday, February 1, 14			8:25 AM	61°	JW
	Sunday, February 2, 14			7:45 AM	63°	BA
Regulatory Period	Monday, February 3, 14			8:47 AM	58°	OW
	Tuesday, February 4, 14			8:15 AM	57°	JW
	Wednesday, February 5, 14			7:55 AM	58°	JW
	Thursday, February 6, 14			8:10 AM	65°	JW
	Friday, February 7, 14			8:52 AM	66°	OW
	Saturday, February 8, 14			8:30 AM	68°	OW
	Sunday, February 9, 14			8:28 AM	58°	OW
	Monday, February 10, 14			9:00 AM	58°	JW
	Tuesday, February 11, 14			8:30 AM	59°	DB
	Wednesday, February 12, 14			7:55 AM	57°	JW
	Thursday, February 13, 14			8:05 AM	59°	JW
	Friday, February 14, 14			6:25 AM	58°	OW
	Saturday, February 15, 14			10:00 AM	75°	OVH
	Sunday, February 16, 14			8:10 AM	75°	OVH
	Monday, February 17, 14			8:13 AM	75°	OVH
	Tuesday, February 18, 14			8:00 AM	64°	JW
	Wednesday, February 19, 14			7:55 AM	69°	JW
Pile Complete	Thursday, February 20, 14			7:45 AM	71°	JW

Compost Pile QC

Meets Time
Meets Temperature
Meets Turning

**Central Davis Sewer District
Compost Pile # 140127**

Action Item	Date	Piling Turning		Temperature			
		Turning Required	Operator Initials	Time	Temperature	Operator Initials	
Begin Pile Construction	Monday, January 27, 14			Compost Pile QC			
Temperature Monitoring	Monday, February 3, 14			Meets Time		JM	
	Tuesday, February 4, 14			Meets Temperature		JM	
	Wednesday, February 5, 14			Meets Turning		JM	
	Thursday, February 6, 14			8:10 AM	69°	J	
	Friday, February 7, 14			8:52 AM	71°	JD	
	Saturday, February 8, 14			8:30 AM	56°	BJ	
	Sunday, February 9, 14			8:28 AM	62°	BJ	
	Monday, February 10, 14			9:00 AM	67°	JW	
	Tuesday, February 11, 14			8:30 AM	67°	JD	
	Wednesday, February 12, 14			7:55 AM	68°	JW	
	Thursday, February 13, 14			8:05 AM	68°	JW	
	Friday, February 14, 14			6:25 AM	66°	JD	
	Saturday, February 15, 14	XXXXXXXXXX		10:00 AM	70°	DVH	
	Sunday, February 16, 14			8:10 AM	70°	DVH	
	Regulatory Period	Monday, February 17, 14	mmmm	↑ JW	8:13 AM	70°	DVH
		Tuesday, February 18, 14		JW	8:00 AM	68°	JW
		Wednesday, February 19, 14	mmmm	JD	7:55 AM	70°	JW
	Thursday, February 20, 14			7:45 AM	72°	JW	
	Friday, February 21, 14	mmmm	BJ	8:20 AM	70°	BJ	
	Saturday, February 22, 14		JW	7:10 AM	73°	J	
	Sunday, February 23, 14			7:00 AM	72°	JW	
	Monday, February 24, 14	mmmm	BJ	8:38 AM	65°	BJ	
	Tuesday, February 25, 14			8:15 AM	65°	BJ	
	Wednesday, February 26, 14	mmmm	JW	8:50 AM	66°	J	
	Thursday, February 27, 14			8:05 AM	65°	JW	
	Friday, February 28, 14			7:10 AM	64°	JW	
	Saturday, March 1, 14			7:15 AM	70°	BJ	
	Sunday, March 2, 14			8:05 AM	70°	BJ	
	Monday, March 3, 14			7:50 AM	70°	JW	
	Tuesday, March 4, 14			8:05 AM	65°	JW	
	Wednesday, March 5, 14			7:55 AM	65°	JW	
Pile Complete	Thursday, March 6, 14			8:00 AM	70°	JW	

**Central Davis Sewer District
Compost Pile # 140210**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, February 10, 14			Compost Pile QC		
Temperature Monitoring	Monday, February 17, 14			Meets Time		JW
	Tuesday, February 18, 14			Meets Temperature		JW
	Wednesday, February 19, 14			Meets Turning		JW
	Thursday, February 20, 14					
	Friday, February 21, 14			9:15 Am	65°	BJ
	Saturday, February 22, 14			7:10 Am	64°	JW
	Sunday, February 23, 14			7:00 Am	71°	JW
	Monday, February 24, 14			8:34 Am	75°	BJ
	Tuesday, February 25, 14			8:15 Am	75°	BJ
	Wednesday, February 26, 14			7:50 Am	75°	JW
	Thursday, February 27, 14			8:05 Am	74°	JW
	Friday, February 28, 14			7:16 Am	77°	JW
	Saturday, March 1, 14			7:14 Am	65°	BJ
	Sunday, March 2, 14			8:06 Am	70°	BJ
Regulatory Period	Monday, March 3, 14		JW	7:50 Am	72°	JW
	Tuesday, March 4, 14			8:05 Am	70°	JW
	Wednesday, March 5, 14		JW	7:55 Am	70°	JW
	Thursday, March 6, 14			8:00	68°	DVH
	Friday, March 7, 14		DVH	8:30 ^{Am}	68°	DVH
	Saturday, March 8, 14			8:05 Am	67°	JW
	Sunday, March 9, 14			8:15 Am	66°	JW
	Monday, March 10, 14			8:10 Am	68°	JW
	Tuesday, March 11, 14		JW	8:00 Am	68°	JW
	Wednesday, March 12, 14			7:50 Am	70°	JW
	Thursday, March 13, 14		JW	8:00 Am	70°	JW
	Friday, March 14, 14			7:50 Am	70°	JW
	Saturday, March 15, 14			7:49 Am	68°	DVH
	Sunday, March 16, 14			7:43 Am	68°	DVH
	Monday, March 17, 14			8:00 Am	67°	JW
	Tuesday, March 18, 14			7:55 Am	67°	JW
	Wednesday, March 19, 14			8:30 Am	67°	JW
Pile Complete	Thursday, March 20, 14			9:04 Am	62°	JW

**Central Davis Sewer District
Compost Pile # 140224**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, February 24, 14			Compost Pile QC		
Temperature Monitoring	Monday, March 3, 14			Meets Time		
	Tuesday, March 4, 14			Meets Temperature		
	Wednesday, March 5, 14			Meets Turning		
	Thursday, March 6, 14					
	Friday, March 7, 14			8:05 AM	70°	JW
	Saturday, March 8, 14			9:46 AM	69°	JW
	Sunday, March 9, 14			8:15 AM	66°	JW
	Monday, March 10, 14			8:10 AM	67°	JW
	Tuesday, March 11, 14			8:00 AM	68°	JW
	Wednesday, March 12, 14			7:50 AM	68°	JW
	Thursday, March 13, 14			8:00 AM	70°	JW
	Friday, March 14, 14			7:50 AM	70°	JW
	Saturday, March 15, 14			7:49 AM	63°	DVH
	Sunday, March 16, 14			7:43 AM	61°	DVH
Regulatory Period	Monday, March 17, 14	XXXXXX	JW	8:00 AM	64°	JW
	Tuesday, March 18, 14			7:55 AM	62°	JW
	Wednesday, March 19, 14	XXXXXX	JW	8:30 AM	60°	JW
	Thursday, March 20, 14			9:04 AM	62°	JH
	Friday, March 21, 14	XXXXXX	JW	7:30 AM	64°	JW
	Saturday, March 22, 14			8:39 AM	59°	MC
	Sunday, March 23, 14			8:15 AM	57°	JW
	Monday, March 24, 14			8:53 AM	58°	BJ
	Tuesday, March 25, 14	XXXXXX	JW	8:35 AM	64°	JH
	Wednesday, March 26, 14			9:07 AM	66°	JD
	Thursday, March 27, 14	XXXXXX	JW	8:5 AM	65°	JW
	Friday, March 28, 14			8:20 AM	60°	JW
	Saturday, March 29, 14			8:35 AM	62°	JW
	Sunday, March 30, 14			8:33 AM	65°	BJ
	Monday, March 31, 14			8:40 AM	65°	JW
	Tuesday, April 1, 14			8:15 AM	60°	JW
	Wednesday, April 2, 14			8:00 AM	58°	JW
Pile Complete	Thursday, April 3, 14			8:00 AM	54°	JW

**Central Davis Sewer District
Compost Pile # 140310**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, March 10, 14			Meets Time		[Handwritten Signature]
Temperature Monitoring	Monday, March 17, 14			Meets Temperature		
	Monday, March 17, 14			Meets Turning		
	Tuesday, March 18, 14					
	Wednesday, March 19, 14					
	Thursday, March 20, 14			10:00 AM	65°	SW
	Friday, March 21, 14			7:30 AM	65°	SW
	Saturday, March 22, 14			8:39 AM	64°	NE
	Sunday, March 23, 14			8:15 AM	60°	SW
	Monday, March 24, 14			8:54 AM	65°	BD
	Tuesday, March 25, 14			8:35 AM	68°	JH
	Wednesday, March 26, 14			9:07 AM	70°	SW
	Thursday, March 27, 14			8:55 AM	67°	SW
	Friday, March 28, 14			8:20 AM	65°	SW
	Saturday, March 29, 14			8:35 AM	62°	SW
	Sunday, March 30, 14			8:31 AM	57°	BD
Regulatory Period	Monday, March 31, 14	[Scribble]	SW	8:00 AM	60°	SW
	Tuesday, April 1, 14			8:15 AM	60°	SW
	Wednesday, April 2, 14	[Scribble]	SW	8:00 AM	60°	SW
	Thursday, April 3, 14			8:00 AM	58°	SW
	Friday, April 4, 14	[Scribble]	SW	8:10 AM	65°	SW
	Saturday, April 5, 14			8:10 AM	61°	BD
	Sunday, April 6, 14			8:35 AM	68°	BD
	Monday, April 7, 14			8:15 AM	67°	SW
	Tuesday, April 8, 14	[Scribble]	DVH	8:13 AM	65°	DVH
	Wednesday, April 9, 14			8:15 AM	65°	SW
	Thursday, April 10, 14	[Scribble]	SW	7:25 AM	60°	SW
	Friday, April 11, 14			8:19 AM	62°	BD
	Saturday, April 12, 14			8:37 AM	63°	DVH
	Sunday, April 13, 14			7:55 AM	63°	DVH
	Monday, April 14, 14			8:50 AM	65°	BD
	Tuesday, April 15, 14			8:30 AM	65°	SW
	Wednesday, April 16, 14			8:05 AM	63°	SW
Pile Complete	Thursday, April 17, 14			8:20 AM	56°	NE

**Central Davis Sewer District
Compost Pile # 140324**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, March 24, 14					
Temperature Monitoring	Monday, March 31, 14					
	Tuesday, April 1, 14					
	Wednesday, April 2, 14					
	Thursday, April 3, 14			8:00pm	65°	SW
	Friday, April 4, 14			8:20AM	65°	SW
	Saturday, April 5, 14			8:40AM	66°	BA
	Sunday, April 6, 14			8:35AM	60°	BA
	Monday, April 7, 14			8:15AM	60°	SW
	Tuesday, April 8, 14			8:16AM	60°	BA
	Wednesday, April 9, 14			8:15AM	57°	SW
	Thursday, April 10, 14			7:25AM	62°	SW
	Friday, April 11, 14			8:21AM	70°	BA
	Saturday, April 12, 14			8:37AM	72°	DVH
	Sunday, April 13, 14			7:55AM	72°	DVH
Regulatory Period	Monday, April 14, 14		BA	8:53 AM	58°	BA
	Tuesday, April 15, 14			8:30 AM	58°	SW
	Wednesday, April 16, 14		JW	8:05 AM	57°	SW
	Thursday, April 17, 14			8:20 AM	68°	MC
	Friday, April 18, 14		JW	7:25 AM	63°	SW
	Saturday, April 19, 14			8:00 AM	59°	SW
	Sunday, April 20, 14			8:00	57°	MC
	Monday, April 21, 14		SW	8:42 AM	59°	BA
	Tuesday, April 22, 14		↓	8:40 AM	61°	SW
	Wednesday, April 23, 14			8:15 AM	60°	SW
	Thursday, April 24, 14		SW	8:25 AM	65°	SW
	Friday, April 25, 14			8:21 AM	55°	DVH
	Saturday, April 26, 14			7:10 AM	55°	BA
	Sunday, April 27, 14			7:50 AM	55°	BA
	Monday, April 28, 14			8:15 AM	55°	SW
	Tuesday, April 29, 14			8:05 AM	60°	SW
	Wednesday, April 30, 14			8:30 AM	58°	SW
Pile Complete	Thursday, May 1, 14			8:05 AM	55°	SW

Compost Pile QC

Meets Time		
Meets Temperature		
Meets Turning		

**Central Davis Sewer District
Compost Pile # 140407**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, April 7, 14					
Temperature Monitoring	Monday, April 14, 14					
	Tuesday, April 15, 14					
	Wednesday, April 16, 14					
	Thursday, April 17, 14			8:20	69°	
	Friday, April 18, 14			7:25	65°	SW
	Saturday, April 19, 14			8:00	69°	NE
	Sunday, April 20, 14			8:00	69°	NE
	Monday, April 21, 14			8:42AM	71°	SW
	Tuesday, April 22, 14			8:40AM	70°	SW
	Wednesday, April 23, 14			8:15AM	70°	SW
	Thursday, April 24, 14			8:25AM	69°	SW
	Friday, April 25, 14			8:21 AM	75°	DVH
	Saturday, April 26, 14			7:05AM	75°	BA
	Sunday, April 27, 14			8:00 AM	72°	BA
Regulatory Period	Monday, April 28, 14		SW	8:15 AM	75°	SW
	Tuesday, April 29, 14			8:05 AM	68°	SW
	Wednesday, April 30, 14			8:30 AM	65°	SW
	Thursday, May 1, 14			8:05 AM	66°	SW
	Friday, May 2, 14		SW	8:50 AM	68°	SW
	Saturday, May 3, 14		SW	8:15 AM	69°	SW
	Sunday, May 4, 14			8:20 AM	65°	SW
	Monday, May 5, 14			8:40 AM	69°	NE
	Tuesday, May 6, 14		NE	8:16 AM	70°	NE
	Wednesday, May 7, 14			8:22 AM	69°	SW
	Thursday, May 8, 14		SW	8:25 AM	67°	SW
	Friday, May 9, 14			8:48 AM	66°	SW
	Saturday, May 10, 14			8:07 AM	53°	DVH
	Sunday, May 11, 14			7:26 AM	62°	DVH
	Monday, May 12, 14			7:55 AM	65°	SW
	Tuesday, May 13, 14			8:35 AM	60°	SW
	Wednesday, May 14, 14			7:55 AM	61°	SW
Pile Complete	Thursday, May 15, 14			8:55 AM	70°	DVH

Compost Pile QC

Meets Time		
Meets Temperature		
Meets Turning		

**Central Davis Sewer District
Compost Pile # 140421**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, April 21, 14			Completed	Pile QC	
Temperature Monitoring	Monday, April 28, 14			Meets Time		
	Tuesday, April 29, 14			Meets Temperature		
	Wednesday, April 30, 14			Meets Turning		
	Thursday, May 1, 14			8:05 AM	73°	JW
	Friday, May 2, 14			8:50 AM	74°	JW
	Saturday, May 3, 14			9:15 AM	70°	JW
	Sunday, May 4, 14			8:20 AM	70°	JW
	Monday, May 5, 14			8:40 AM	66°	MC
	Tuesday, May 6, 14			8:16 AM	67°	MC
	Wednesday, May 7, 14			8:22 AM	68°	MC
	Thursday, May 8, 14			8:25 AM	68°	JW
	Friday, May 9, 14			8:48 AM	65°	MC
	Saturday, May 10, 14			8:07 AM	61°	DVH
	Sunday, May 11, 14			7:26 AM	65°	DVH
Regulatory Period	Monday, May 12, 14	XXXXXXXXXX	XXXXXXXXXX	7:55 AM	60°	JW
	Tuesday, May 13, 14			8:35 AM	60°	JW
	Wednesday, May 14, 14	mmmm	JW	7:55 AM	60°	JW
	Thursday, May 15, 14			8:55 AM	68°	DVH
	Friday, May 16, 14	mmmm	DVH	7:37 AM	65°	BJ
	Saturday, May 17, 14			8:10 AM	67°	MC
	Sunday, May 18, 14			9:15 AM	62°	MC
	Monday, May 19, 14		JW	8:15 AM	60°	JW
	Tuesday, May 20, 14	mmmm		8:05 AM	60°	JW
	Wednesday, May 21, 14		JW	8:30 AM	61°	JW
	Thursday, May 22, 14	mmmm		7:11 AM	58°	BJ
	Friday, May 23, 14			8:40 AM	62°	MC
	Saturday, May 24, 14			8:15 AM	62°	JW
	Sunday, May 25, 14		BJ	7:00 AM	65°	BJ
	Monday, May 26, 14			8:40 AM	60°	JW
	Tuesday, May 27, 14			7:35 PM	60°	JW
	Wednesday, May 28, 14			7:40 AM	60°	JW
Pile Complete	Thursday, May 29, 14			7:46 AM	56°	DVH

**Central Davis Sewer District
Compost Pile # 140811**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, August 11, 14					
Temperature Monitoring	Monday, August 18, 14	Compost Pile QC				
	Tuesday, August 19, 14	Meets Time				
	Tuesday, August 19, 14	Meets Temperature				
	Tuesday, August 19, 14	Meets Turning				
	Wednesday, August 20, 14					
	Thursday, August 21, 14			1:50 PM	57°	S
	Friday, August 22, 14			8:25 AM	59°	S
	Saturday, August 23, 14			8:35 AM	59°	MD
	Sunday, August 24, 14			8:35 AM	57°	MD
	Monday, August 25, 14	WMM	S	7:46 AM	58°	S
	Tuesday, August 26, 14			8:25 AM	59°	S
	Wednesday, August 27, 14	WMM	DVH	7:50 AM	60°	S
	Thursday, August 28, 14			8:20 AM	55°	DVH
	Friday, August 29, 14	WMM	DVH	6:15 AM	60°	DVH
	Saturday, August 30, 14			8:06 AM	60°	DVH
	Sunday, August 31, 14			7:50 AM	61°	DVH
Regulatory Period	Monday, September 1, 14			7:55 AM	61°	DVH
	Tuesday, September 2, 14	WMM	S	9:10 AM	67°	BA
	Wednesday, September 3, 14			7:10 AM	65°	S
	Thursday, September 4, 14	WMM	DVH	8:30 AM	65°	BA
	Friday, September 5, 14			9:05 AM	56°	MC
	Saturday, September 6, 14			7:38 AM	62°	BA
	Sunday, September 7, 14			8:20 AM	60°	BA
	Monday, September 8, 14			8:05 AM	60°	S
	Tuesday, September 9, 14			9:30 AM	61°	S
	Wednesday, September 10, 14			8:15 AM	59°	S
	Thursday, September 11, 14			8:00 AM	57°	S
	Friday, September 12, 14			8:05 AM	59°	S
	Saturday, September 13, 14			8:30 AM	59°	DVH
	Sunday, September 14, 14			8:46 AM	59°	DVH
	Monday, September 15, 14			8:25 AM	59°	BA
	Tuesday, September 16, 14			8:20 AM	59°	MD
	Wednesday, September 17, 14			8:00 AM	57°	S
Pile Complete	Thursday, September 18, 14			7:30 AM	56°	S

**Central Davis Sewer District
Compost Pile # 140825**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, August 25, 14			Compost Pile QC		
Temperature Monitoring	Monday, September 1, 14			Meets Time		<i>JM</i>
				Meets Temperature		<i>JM</i>
				Meets Turning		<i>JM</i>
	Tuesday, September 2, 14					
	Wednesday, September 3, 14					
	Thursday, September 4, 14					
	Friday, September 5, 14			9:05 AM	71°	<i>nc</i>
	Saturday, September 6, 14			7:40 AM	65°	<i>nc</i>
	Sunday, September 7, 14			8:21 AM	58°	<i>nc</i>
	Monday, September 8, 14	<i>mm</i>	<i>DVH</i>	8:05 AM	59°	<i>nc</i>
	Tuesday, September 9, 14			9:30 AM	62°	<i>nc</i>
	Wednesday, September 10, 14	<i>mm</i>	<i>DVH</i>	8:15 AM	60°	<i>nc</i>
	Thursday, September 11, 14			8:00 AM	61°	<i>nc</i>
	Friday, September 12, 14	<i>mm</i>	<i>DVH</i>	8:05 AM	59°	<i>nc</i>
	Saturday, September 13, 14			8:30 AM	72°	<i>DVH</i>
	Sunday, September 14, 14			8:40 AM	72°	<i>DVH</i>
Regulatory Period	Monday, September 15, 14			8:22 AM	70°	<i>nc</i>
	Tuesday, September 16, 14	<i>mm</i>	<i>DB</i>	8:19 AM	67°	<i>nc</i>
	Wednesday, September 17, 14			8:00 AM	66°	<i>nc</i>
	Thursday, September 18, 14	<i>mm</i>	<i>DVH</i>	7:30 AM	59°	<i>nc</i>
	Friday, September 19, 14			8:30 AM	60°	<i>DVH</i>
	Saturday, September 20, 14			8:00 AM	61°	<i>nc</i>
	Sunday, September 21, 14			8:20 AM	63°	<i>nc</i>
	Monday, September 22, 14			8:15 AM	62°	<i>nc</i>
	Tuesday, September 23, 14			8:07 AM	62°	<i>nc</i>
	Wednesday, September 24, 14			8:20 AM	60°	<i>nc</i>
	Thursday, September 25, 14			8:30 AM	58°	<i>nc</i>
	Friday, September 26, 14			7:35 AM	56°	<i>nc</i>
	Saturday, September 27, 14			7:30 AM	57°	<i>nc</i>
	Sunday, September 28, 14			8:40 AM	56°	<i>nc</i>
	Monday, September 29, 14			8:25 AM	56°	<i>nc</i>
	Tuesday, September 30, 14			8:10 AM	58°	<i>nc</i>
	Wednesday, October 1, 14			8:15 AM	58°	<i>nc</i>
Pile Complete	Thursday, October 2, 14			8:25 AM	57°	<i>nc</i>

**Central Davis Sewer District
Compost Pile # 140908**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, September 8, 14			Compost Pile QC		
Temperature Monitoring	Monday, September 15, 14			Meets Time	JW	
				Meets Temperature	JW	
				Meets Turning	JW	
	Tuesday, September 16, 14					
	Wednesday, September 17, 14					
	Thursday, September 18, 14			7:30 AM	64°	SW
	Friday, September 19, 14			8:30 AM	61°	DVH
	Saturday, September 20, 14			8:00 AM	64°	SW
	Sunday, September 21, 14			8:20 AM	65°	SW
	Monday, September 22, 14	mm	NS	8:14 AM	60°	NS
	Tuesday, September 23, 14			8:07 AM	59°	NC
	Wednesday, September 24, 14	mm	SW	8:20 AM	61°	SW
	Thursday, September 25, 14			8:30 AM	65°	NC
	Friday, September 26, 14	mm	NC	7:35 AM	65°	NC
	Saturday, September 27, 14			7:36 AM	50°	NS
	Sunday, September 28, 14			8:40 AM	56°	NS
Regulatory Period	Monday, September 29, 14			8:25 AM	58°	JW
	Tuesday, September 30, 14	mm	JW	8:10 AM	59°	JW
	Wednesday, October 1, 14			8:15 AM	63°	SW
	Thursday, October 2, 14	mm	DVH	8:25 AM	60°	SW
	Friday, October 3, 14			8:45 AM	55°	DVH
	Saturday, October 4, 14			7:58 AM	61°	DVH
	Sunday, October 5, 14			7:20 AM	65°	NS
	Monday, October 6, 14			7:10 AM	64°	NC
	Tuesday, October 7, 14			8:50 AM	65°	SW
	Wednesday, October 8, 14			9:25 AM	62°	SW
	Thursday, October 9, 14			7:45 AM	61°	SW
	Friday, October 10, 14			7:55 AM	65°	SW
	Saturday, October 11, 14			8:16 AM	59°	NC
	Sunday, October 12, 14			8:18 AM	60°	NC
	Monday, October 13, 14			8:00 AM	61°	JW
	Tuesday, October 14, 14			8:25 AM	61°	JW
	Wednesday, October 15, 14			9:16 AM	60°	JW
Pile Complete	Thursday, October 16, 14			8:32 AM	61°	DVH

**Central Davis Sewer District
Compost Pile # 140922**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, September 22, 14			Compost Pile QC		
Temperature Monitoring	Monday, September 29, 14		Meets Time			
	Tuesday, September 30, 14		Meets Temperature			
	Wednesday, October 1, 14		Meets Turning			
	Thursday, October 2, 14			8:30 AM	74°	J
	Friday, October 3, 14			9:00	64	DVH
	Saturday, October 4, 14			7:58 AM	61	DVH
	Sunday, October 5, 14			7:21 AM	62°	BA
	Monday, October 6, 14			9:20 AM	60°	nc
	Tuesday, October 7, 14			8:50 AM	60°	JW
	Wednesday, October 8, 14			9:25 AM	61°	JH
	Thursday, October 9, 14			7:45 AM	62°	J
	Friday, October 10, 14			7:55 AM	60°	J
	Saturday, October 11, 14			8:16 AM	57°	nc
	Sunday, October 12, 14			8:18 AM	56°	nc
Regulatory Period	Monday, October 13, 14	mm	J	8:00 AM	57°	J
	Tuesday, October 14, 14			8:25 AM	60°	JW
	Wednesday, October 15, 14	mm	J	1:30 PM	55	JW
	Thursday, October 16, 14			8:32 AM	60	JW
	Friday, October 17, 14	mm	DVH	9:50	61	JW
	Saturday, October 18, 14			8:23 AM	56°	DVH
	Sunday, October 19, 14			8:40 AM	55°	J
	Monday, October 20, 14	mm		8:45 AM	57°	J
	Tuesday, October 21, 14	mm		7:10 AM	56°	J
	Wednesday, October 22, 14	mm		8:45 AM	66	JW
	Thursday, October 23, 14			8:15 AM	61	J
	Friday, October 24, 14	mm	J	8:51 AM	59°	J
	Saturday, October 25, 14			8:25 AM	58°	J
	Sunday, October 26, 14			9:40 AM	58°	J
	Monday, October 27, 14			8:20 AM	62°	J
	Tuesday, October 28, 14			8:32 AM	66°	J
	Wednesday, October 29, 14			1:20 PM	65°	J
Pile Complete	Thursday, October 30, 14			8:00 AM	67°	J

**Central Davis Sewer District
Compost Pile # 141006**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, October 6, 14					
Temperature Monitoring	Monday, October 13, 14					
	Tuesday, October 14, 14					
	Wednesday, October 15, 14					
	Thursday, October 16, 14					
	Friday, October 17, 14			3:20 PM	60°	DVH
	Saturday, October 18, 14			8:23 AM	60°	DVH
	Sunday, October 19, 14			8:40 AM	61°	JD
	Monday, October 20, 14			8:45 AM	63°	J
	Tuesday, October 21, 14			7:45 AM	65°	J
	Wednesday, October 22, 14			8:45 AM	66°	J
	Thursday, October 23, 14			8:15 AM	59°	J
	Friday, October 24, 14			8:52 AM	58°	JD
	Saturday, October 25, 14			8:25 AM	55°	J
	Sunday, October 26, 14			8:40 AM	56°	J
Regulatory Period	Monday, October 27, 14	M	J	8:20 AM	56°	J
	Tuesday, October 28, 14			8:32 AM	58°	JD
	Wednesday, October 29, 14	M	J			
	Thursday, October 30, 14			8:00 AM	56°	J
	Friday, October 31, 14	M	J	3:30 PM	45°	J
	Saturday, November 1, 14			8:00 AM	33°	J
	Sunday, November 2, 14			7:45 AM	40°	J
	Monday, November 3, 14			8:12 AM	44°	JD
	Tuesday, November 4, 14	M	J	9:10 AM	45°	J
	Wednesday, November 5, 14			8:05 AM	38°	J
	Thursday, November 6, 14	M	J	8:15 AM	39°	J
	Friday, November 7, 14			7:45 AM	20°	J
	Saturday, November 8, 14			8:30 AM	18°	J
	Sunday, November 9, 14			8:10 AM	20°	J
	Monday, November 10, 14			7:50 AM	15°	J
	Tuesday, November 11, 14			9:05 AM	55°	J
	Wednesday, November 12, 14			8:30 AM	19°	J
Pile Complete	Thursday, November 13, 14			7:10 AM	22°	J

Compost Pile QC

Meets Time	NO
Meets Temperature	NO
Meets Turning	J

PILING APPROVED

**Central Davis Sewer District
Compost Pile # 141020**

Action Item	Date	Piling Turning		Temperature		
		Turning Required	Operator Initials	Time	Temperature	Operator Initials
Begin Pile Construction	Monday, October 20, 14			Compost Pile QC		
Temperature Monitoring	Monday, October 27, 14					<i>JW</i>
	Tuesday, October 28, 14					<i>JW</i>
	Wednesday, October 29, 14					<i>JW</i>
	Thursday, October 30, 14					
	Friday, October 31, 14			8:10 AM	68°	<i>JW</i>
	Saturday, November 1, 14			8:00 AM	69°	<i>JW</i>
	Sunday, November 2, 14			8:10 AM	66°	JW
	Monday, November 3, 14			8:12 AM	66°	<i>JW</i>
	Tuesday, November 4, 14			8:41 AM	60°	<i>JW</i>
	Wednesday, November 5, 14			8:05 AM	62°	<i>JW</i>
	Thursday, November 6, 14			9:15 AM	61°	<i>JW</i>
	Friday, November 7, 14	<i>m</i>	<i>JW</i>	8:45 AM	60°	<i>JW</i>
	Saturday, November 8, 14			8:30 AM	62°	<i>JW</i>
	Sunday, November 9, 14			8:10 AM	62°	<i>JW</i>
Regulatory Period	Monday, November 10, 14	<i>m</i>	<i>JW</i>	7:55 AM	61°	<i>JW</i>
	Tuesday, November 11, 14			9:00 AM	55°	<i>JW</i>
	Wednesday, November 12, 14	<i>m</i>	<i>JW</i>	8:30 AM	55°	<i>JW</i>
	Thursday, November 13, 14			7:10 AM	58°	<i>JW</i>
	Friday, November 14, 14	<i>m</i>	<i>JW</i>	7:10 AM	58°	<i>JW</i>
	Saturday, November 15, 14			1:30 PM	59°	<i>JW</i>
	Sunday, November 16, 14			8:50 AM	58°	<i>JW</i>
	Monday, November 17, 14			8:25 AM	58°	<i>JW</i>
	Tuesday, November 18, 14	<i>m</i>	<i>BA</i>	8:45 AM	56°	<i>JW</i>
	Wednesday, November 19, 14			3:20 PM	35°	<i>JW</i>
	Thursday, November 20, 14	<i>m</i>	<i>BA</i>	11:30 AM	35°	<i>JW</i>
	Friday, November 21, 14			9:00 AM	25°	<i>JW</i>
	Saturday, November 22, 14			8:45 AM	25°	<i>JW</i>
	Sunday, November 23, 14			3:20 PM	25°	<i>JW</i>
	Monday, November 24, 14			8:10 AM	31°	<i>JW</i>
	Tuesday, November 25, 14			8:20 AM	30°	<i>JW</i>
	Wednesday, November 26, 14			8:30 AM	33°	<i>JW</i>
Pile Complete	Thursday, November 27, 14			8:40 AM	54°	<i>JW</i>

**Central Davis Sewer District
Compost Pile # 141013**

Action Item	Date	Temperature								
		Time	Temperature	Operator Initials						
Begin Pile Construction	Monday, October 13, 14									
Temperature Monitoring	Monday, October 20, 14	1:20 PM	61°	J						
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border: 1px solid red; padding: 2px;">Compost Pile QC</div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 30px; height: 30px;">Meets Time</td> <td style="width: 30px; height: 30px;">Meets Temperature</td> <td style="width: 30px; height: 30px;">Meets Turning</td> </tr> <tr> <td style="font-size: 2em;">✓</td> <td style="font-size: 2em;">✓</td> <td style="font-size: 2em;">N/A</td> </tr> </table> </div>	Meets Time	Meets Temperature	Meets Turning	✓	✓	N/A	Tuesday, October 21, 14	7:50 AM	65°	J
	Meets Time	Meets Temperature	Meets Turning							
	✓	✓	N/A							
	Wednesday, October 22, 14	8:45 AM	56°	AW						
	Thursday, October 23, 14	8:15 AM	60°	J						
	Friday, October 24, 14	8:52 AM	61°	J						
	Saturday, October 25, 14	8:25 AM	60°	J						
	Sunday, October 26, 14	9:40 AM	63°	J						
	Monday, October 27, 14	8:20 AM	65°	J						
	Tuesday, October 28, 14	8:32 AM	71°	J						
	Wednesday, October 29, 14	1:20 PM	70°	J						
	Thursday, October 30, 14	8:00 AM	70°	J						
	Friday, October 31, 14	8:10 AM	70°	J						
	Saturday, November 1, 14	8:00 AM	70°	J						
	Sunday, November 2, 14	7:50 AM	75°	J						
	Monday, November 3, 14	8:12 AM	74°	J						
	Tuesday, November 4, 14	8:14 AM	73°	J						
	Wednesday, November 5, 14	8:05 AM	73°	J						
	Thursday, November 6, 14	8:15 AM	72°	J						
	Friday, November 7, 14	7:45 AM	71°	J						
Saturday, November 8, 14	8:44 AM	56°	NC							
Sunday, November 9, 14	10:15 AM	56°	NC							
Pile Complete	Monday, November 10, 14	7:55 AM	58°	J						

**Central Davis Sewer District
Compost Pile # 141027**

Action Item	Date	Temperature		
		Time	Temperature	Operator Initials
Begin Pile Construction	Monday, October 27, 14			
Temperature Monitoring	Monday, November 3, 14	9:15 Am	70°	JH
	Tuesday, November 4, 14	8:47 Am	72°	CO
	Wednesday, November 5, 14	8:10 Am	71°	J
	Thursday, November 6, 14	8:20 Am	70°	J
	Friday, November 7, 14	7:45 Am	72°	J
	Saturday, November 8, 14	8:44 Am	69°	MC
	Sunday, November 9, 14	10:15 Am	73°	MC
	Monday, November 10, 14	7:55 Am	70°	J
	Tuesday, November 11, 14	9:00 Am	72°	J
	Wednesday, November 12, 14	8:25 Am	72°	J
	Thursday, November 13, 14	7:15 Am	70°	J
	Friday, November 14, 14	7:10 Am	70°	J
	Saturday, November 15, 14	8:35 Am	68°	J
	Sunday, November 16, 14	8:48 Am	69°	J
	Monday, November 17, 14	8:20 Am	66°	J
	Tuesday, November 18, 14	8:45 Am	61°	JH
	Wednesday, November 19, 14	9:20 Am	58°	J
	Thursday, November 20, 14	9:00 Am	55°	JH
	Friday, November 21, 14	8:45 Am	60°	JH
	Saturday, November 22, 14	8:45 Am	60°	JH
	Sunday, November 23, 14	3:20 Pm	61°	JH
Pile Complete	Monday, November 24, 14	8:10 Am	64°	J

Compost Pile QC

Meets Time	JH
Meets Temperature	JH
Meets Turning	N/A

**Central Davis Sewer District
Compost Pile # 141110**

Action Item	Date	Temperature								
		Time	Temperature	Operator Initials						
Begin Pile Construction	Monday, November 10, 14	8:00 AM	55°	Jr						
Temperature Monitoring	Monday, November 17, 14	9:30 AM	65°	BJ						
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border: 1px solid red; padding: 2px;">Compost Pile QC</div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 30px; height: 30px;">Meets Time</td> <td style="width: 30px; height: 30px;">Meets Temperature</td> <td style="width: 30px; height: 30px;">Meets Turning</td> </tr> <tr> <td>Jan</td> <td>Jan</td> <td>N/A</td> </tr> </table> </div>	Meets Time	Meets Temperature	Meets Turning	Jan	Jan	N/A	Tuesday, November 18, 14	8:45 AM	61°	Jh
	Meets Time	Meets Temperature	Meets Turning							
	Jan	Jan	N/A							
	Wednesday, November 19, 14	9:15 AM	60°	BJ						
	Thursday, November 20, 14	9:00 AM	57°	Jh						
	Friday, November 21, 14	8:45 AM	62°	Jh						
	Saturday, November 22, 14	8:45 AM	60°	Jh						
	Sunday, November 23, 14	3:20 PM	70°	Jh						
	Monday, November 24, 14	9:10 AM	70°	J						
	Tuesday, November 25, 14	8:20 AM	65°	J						
	Wednesday, November 26, 14	7:30 AM	67°	J						
	Thursday, November 27, 14	8:40 AM	66°	nc						
	Friday, November 28, 14	7:50 AM	64°	Jw						
	Saturday, November 29, 14	7:35 AM	68°	J						
	Sunday, November 30, 14	8:45 AM	67°	NU						
	Monday, December 1, 14	8:29 AM	65°	Jw						
	Tuesday, December 2, 14	8:08 AM	61°	nc						
	Wednesday, December 3, 14	8:21 AM	61°	nc						
	Thursday, December 4, 14	7:50 AM	60°	J						
	Friday, December 5, 14	8:22 AM	59°	nc						
Saturday, December 6, 14	8:35 AM	58°	nc							
Sunday, December 7, 14	8:30 AM	55°	BJ							
Pile Complete	Monday, December 8, 14	8:05 AM	57°	J						

**Central Davis Sewer District
Compost Pile # 141124**

Action Item	Date	Temperature		
		Time	Temperature	Operator Initials
Begin Pile Construction	Monday, November 24, 14	10:50 AM	55°	BA
Temperature Monitoring	Monday, December 1, 14	10:50 AM	55°	BA
	Tuesday, December 2, 14	8:08 AM	56°	BA
	Wednesday, December 3, 14	8:21 AM	57°	BA
	Thursday, December 4, 14	7:30 AM	58°	S
	Friday, December 5, 14	8:22 AM	57°	BA
	Saturday, December 6, 14	8:35 AM	55°	BA
	Sunday, December 7, 14	8:37 AM	55°	BA
	Monday, December 8, 14	8:05 AM	56°	S
	Tuesday, December 9, 14	7:50 AM	57°	S
	Wednesday, December 10, 14	8:30 AM	56°	BA
	Thursday, December 11, 14	9:05 AM	59°	S
	Friday, December 12, 14	7:55 AM	61°	S
	Saturday, December 13, 14	8:00 AM	60°	S
	Sunday, December 14, 14	8:46 AM	67°	S
	Monday, December 15, 14	8:30 AM	51°	S
	Tuesday, December 16, 14	8:25 AM	55°	S
	Wednesday, December 17, 14	8:10 AM	56°	S
	Thursday, December 18, 14	8:15 AM	57°	S
	Friday, December 19, 14	8:00 AM	55°	S
	Saturday, December 20, 14	8:55 AM	57°	S
	Sunday, December 21, 14	8:40 AM	55°	S
Pile Complete	Monday, December 22, 14	8:36 AM	60°	BA

Compost Pile QC

Meets Time	Meets Temperature	Meets Turning
BA	BA	BA

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Vector Attraction Reduction Compliance Documentation

1. 2014 Anaerobic Digester Volatile Solids Reductions Calculations
2. Compost VAR Time and Temperature (This requirement is met as a part of the windrow/ASP time and temperature pathogen reduction records requirements).

Central Davis Sewer District
Aerobic Biosolids
2014 Anaerobic VAR Summary

Date	Volatile Solids Reduction
1st Quarter	
Date 1/9/14	45%
Quarter Average	
	45%
2nd Quarter	
Date 4/8/14	83%
Quarter Average	
	83%
3rd Quarter	
Date 7/8/14	53%
Quarter Average	
	53%
4th Quarter	
Date 10/10/14	63%
Quarter Average	
	63%
Annual Average	
	61%

10/17/14 1:21 PM

Macintosh HD:Users:lelandmyers:Documents>Data Files:Biosolids - Consolidated Data:Biosolids Report -
 Calendar Year 2014:VAR Records:VSR Summary 2014.xlsx

Central Davis Sewer District 2014 Biosolids Percent Solids Analysis

	Aerobic Press		Anaerobic & Thickened		Primary to Digester		Digester to Thickening	
1st Quarter								
Date	% Solids	%VS	% Solids	% VS	% Solids	% VS	% Solids	% VS
1/9/14	13.5%	85.1%	7.5%	66.1%	1.6%	64.3%	1.8%	49.5%
Quarter Average	13.5%	85.1%	7.5%	66.1%	1.6%	64.3%	1.8%	49.5%
2nd Quarter								
Date	% Solids	%VS	% Solids	% VS	% Solids	% VS	% Solids	% VS
4/16/14	13.0%	82.9%	6.2%	69.5%	0.9%	91.8%	1.2%	63.7%
Quarter Average	13.0%	82.9%	6.2%	69.5%	0.9%	91.8%	1.2%	63.7%
3rd Quarter								
Date	% Solids	%VS	% Solids	% VS	% Solids	% VS	% Solids	% VS
7/13/14	14.1%	82.2%	7.3%	69.7%	2.6%	82.2%	1.6%	68.3%
Quarter Average	14.1%	82.2%	7.3%	69.7%	2.6%	82.2%	1.6%	68.3%
4th Quarter								
Date	% Solids	%VS	% Solids	% VS	% Solids	% VS	% Solids	% VS
10/10/14	13.2%	82.1%	9.6%	67.2%	2.2%	85.4%	1.6%	68.2%
Quarter Average	13.2%	82.1%	9.6%	67.2%	2.2%	85.4%	1.6%	68.2%
Annual Average	13.5%	83.1%	7.7%	68.1%	1.8%	80.9%	1.6%	62.4%

Central Davis Co. Sewer District

VS Reduction

Van Kleeck Equation- White House Manual

Date Tested: 1/9/2014

$$FVSR = 1 - \frac{VS_b \times (1 - VS_f)}{VS_f \times (1 - VS_b)}$$

Where Digester solids as a fraction 0.4957
 Primary solids as a fraction 0.6433

0.3567
0.5043

$$1 - \frac{0.17681619}{0.32441619}$$

$$1 - 0.545028872$$

Reduction 0.4550 45%

Central Davis Co. Sewer District

VS Reduction

Van Kleeck Equation- White House Manual

Date Tested: 4/8/2014

$$FVSR = 1 - \frac{VS_b \times (1 - VS_f)}{VS_f \times (1 - VS_b)}$$

Where Digester solids as a fraction 0.6368
 Primary solids as a fraction 0.9117

0.0883
0.3632

$$1 - \frac{0.05622944}{0.33112944}$$

$$1 - 0.169811056$$

Reduction 0.8302 83%

QA Checked

by Jim

date 4/16/2014

Central Davis County Sewer District

Total Solids-Method 2540 B

Fixed and Volatile Solids-Method 22540 E

Date Tests run 4-7-14 SRM TV _____ Limits _____

aerobic sampled - 4-2-14
all other " - 4-4-14

Operator	BL	BY	CA	Jace W.	Jace W.
Bottle #					
Location	Aerobic	Aerobic	Aerobic	Prem. Sludge	Respiator
Dish + Sludge	57.9787	45.0386	50.3448	55.8444	56.1505
Dish Weight	55.9830	43.5764	46.7997	54.6878	54.4549
Sample Weight Line 3- Line 4	1.9957	1.5222	3.5451	1.1566	1.6956
Dish + Dry Res.	56.2398	43.7146	47.0206	54.6980	54.4750
Dish Weight	55.9830	43.5764	46.7997	54.6878	54.4549
Dry Res. Weight Line 6- Line 7	0.2568	0.1982	0.2209	0.0102	0.0201
% Total Solids Line 8 x 100/Line 5	12.8677	13.0206	6.2811	0.8819	1.1854
Dish + Ash	56.0271	43.5502	46.8671	54.6887	54.1622
Volatile Solids Wt. Line 6- Line 10	0.2127	0.1644	0.1535	0.0093	0.0128
% Volatile Solids Line 11 x 100/Line 8	82.8271	82.9465	69.4884	91.1764	69.6815

TS Aerobic - 12.9442
TVS Aerobic - 82.8868

$\frac{82.9465 - 82.8868}{82.8868} \times 100 = 0.07\% \text{ variation}$

$\frac{82.8271 + 82.9465}{2} = 82.8868 \text{ average}$

Central Davis Co. Sewer District

VS Reduction

Van Kleek Equation- White House Manual

Date Tested: 7/8/2014

$$FVSR = 1 - \frac{VS_b \times (1 - VS_f)}{VS_f \times (1 - VS_b)}$$

Where	Digester solids as a fraction	0.6829
	Primary solids as a fraction	0.8223
	(used Aerobic no primary available)	
		0.1777
		0.3171

$$1 - \frac{0.12135133}{0.26075133}$$

$$1 - 0.46539103$$

Reduction 0.5346 53%

QA Checked

by DM

date 7/13/14

Central Davis County Sewer District

Total Solids-Method 2540 B

Fixed and Volatile Solids-Method 22540 E

Date Tests run 7-8-14

SRM TV

Limits

1	Operator																					
2	Bottle #																					
3	Location	Aerobic	Aerobic	Aerobic																		
4	Dish + Sludge	52.2344	57.3583	57.6110																		
5	Dish Weight	50.0344	54.4552	54.6877																		
6	Sample Weight	2.2000	1.9031	2.9233																		
7	Dish + Dry Res.	50.3448	54.7201	54.9014																		
8	Dish Weight	50.0344	54.4552	54.6877																		
9	Dry Res. Weight	0.3104	0.2649	0.2137																		
10	Line 6- Line 7	14.1091	13.9193	7.3102																		
11	% Total Solids	50.0895	54.5023	54.7524																		
12	Line 8 x 100/Line 5	0.2553	0.2178	0.1490																		
13	Dish + Ash	82.2487	82.2197	69.7239																		
14	Volatile Solids Wt.																					
15	Line 6- Line 10																					
16	% Volatile Solids																					
17	Line 11 x 100/Line 8																					

82.2487
+ 82.2197
164.4684 / 2 = 82.2342 average

82.2487 - 82.2342
82.2342
100 = 0.02% variation

82.2487 - 82.2342
82.2342
100 = 0.02% variation

TS Aerobic average 82.2342
TS " " 14.0142

Central Davis Co. Sewer District

VS Reduction

Van Kleek Equation- White House Manual

Date Tested: 10/10/2014

$$FVSR = 1 - \frac{VS_b \times (1 - VS_f)}{VS_f \times (1 - VS_b)}$$

Where	Digester solids as a fraction	0.682
	Primary solids as a fraction	0.854

0.146
0.318

$$1 - \frac{0.099572}{0.271572}$$

$$1 - 0.366650465$$

Reduction 0.6333 63%

QA Checked

by JK

date 10/16/2014

Central Davis County Sewer District

Total Solids-Method 2540 B

Fixed and Volatile Solids-Method 22540 E

Date Tests run 10-9-14 SRM TV _____ Limits _____

Aerobic Sampled 10-7-14
All others " 10-8-14

Operator	B ₅	B ₆	YIC	JH	YIC
Bottle #					
Location					
Dish + Sludge	Aerobic	Aerobic	Anaerobic	Prem. Sludge	Digester
Dish Weight	52.3679	45.5020	57.5968	57.2842	58.9212
Sample Weight	50.6309	43.5767	55.0583	54.4554	55.9836
Line 3- Line 4	1.7370	1.9853	2.5385	2.8288	2.9376
Dish + Dry Res.	50.8601	43.7790	55.3031	54.5798	56.0314
Dish Weight	50.6309	43.5767	55.0583	54.4554	55.9836
Dry Res. Weight					
Line 6- Line 7	0.2292	0.2623	0.2448	0.6644	0.0478
% Total Solids	13.1952	13.2121	9.6435	2.2766	1.6272
Line 8 x 100/Line 5	50.6309	43.5767	55.0583	54.4554	55.9836
Dish + Ash	54.4554	43.5767	55.1385	54.4648	55.9988
Line 10	0.1880	0.2157	0.1646	0.0550	0.0326
Line 11 x 100/Line 8	82.0244	82.2341	67.2386	85.4037	68.2008

82.0244
 + 82.2341
 164.2585 / 2 = 82.1293 average

82.2341 - 82.1293
 82.1293

100 = 0.1293 variation

Aerobic Average Total Solids - 13.2036
 Aerobic Av. VS - 82.1293

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Biosolids and Biosolids Derived Production

1. 2014 Anaerobic Land Applied
Biosolids Production
2. 2014 Aerobic Biosolids Production
3. 2014 Compost Biosolids Derived
Production

Central Davis Sewer District 2014 Anaerobic Biosolids Spreader Loads

<u>Zone</u>	<u>Anaerobic Loads Spreader</u>
Zone 1	58
Zone 2	382
Zone 9	452
Year Totals	
Load Total	892
% Solids	7.7%
Dry Weigh(lbs)	760,476
English Tons	380
Metric Tons	346

**Central Davis Sewer District
Aerobic Biosolids 2014 Loads**

Month	Aerobic Loads	
	Mixer Truck	Dump Truck
January	193	0
February	152	0
March	142	0
April	191	0
May	214	0
June	171	0
July	214	0
August	168	0
September	172	0
October	173	0
November	173	0
December	160	0
Year Totals		
Load Total	2123	0
% Solids	13.5%	0.0%
Dry Weigh(lbs)	1,146,420	0
English Tons	573	0
Metric Tons	521	0
Total Tons per Year - Metric	521	

**CENTRAL DAVIS SEWER DISTRICT
Compost Production Analysis
2014**

2013 Compost Balance

Screened	517	Metric Tons
Unscreened	<u>825</u>	Metric Tons

Total	1,342	Metric Tons
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Compost Screened 4/8/2014

2013 Year	<u>327</u>	Metric Tons
	327	Metric Tons

Compost Screened 5/19/2014

2013 Year	<u>393</u>	Metric Tons
	393	Metric Tons

Compost Screened 6/9/2014

2013 Year	105	Metric Tons
2014 Year	<u>229</u>	Metric Tons
	334	Metric Tons

Compost Screened 6/12/2014

2014 Year	431	Metric Tons
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Compost Screened 8/18/2014

2014 Year	508	Metric Tons
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Compost Screened 10/20/2014

2014 Year	<u>588</u>	Metric Tons
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Compost Screened

2014 Year	<u>-</u>	Metric Tons
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Remaining At End 2014

2014 Screened	709	MT Measured
2014 Unscr&Tested	490	MT Measured
2014 Unscreened	<u>1,573</u>	MT Estimated

Total Remaining	2,772	Metric Tons
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Compost Production in 2014

3,819

Compost Sold During 2014

2,389 Metric Tons

COMPOST PILE MEASUREMENT

Screened compost

Date of Pile Completion and Measurement

4/8/14



Compost Pile Dimensions:		values in Feet
	Width	60
	Length	50
	Height	12

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	36,000	Cubic Feet
	1,333	Cubic Yards

Dry Weight per Cubic Yard	540	pounds/CY
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Pile Weight	720,000	pounds
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English tons of Compost	360	Tons-E
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Metric Tons of Compost	327	Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Screened compost

Date of Pile Completion and Measurement

5/19/14



Compost Pile Dimensions:	values in Feet
Width	80
Length	45
Height	12

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	43,200 Cubic Feet
	1,600 Cubic Yards

Dry Weight per Cubic Yard	540 pounds/CY
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Pile Weight	864,000 pounds
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English tons of Compost	432 Tons-E
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Metric Tons of Compost	393 Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Screened compost

Date of Pile Completion and Measurement

6/9/14



Compost Pile Dimensions:	values in Feet
Width	90
Length	34
Height	12

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	36,720 Cubic Feet
	1,360 Cubic Yards

Dry Weight per Cubic Yard	540 pounds/CY
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Pile Weight	734,400 pounds
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English tons of Compost	367 Tons-E
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Metric Tons of Compost	334 Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Screened compost

Date of Pile Completion and Measurement

6/12/14



Compost Pile Dimensions:		values in Feet
	Width	49
	Length	88
	Height	11

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	47,432	Cubic Feet
	1,757	Cubic Yards

Dry Weight per Cubic Yard	540	pounds/CY
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Pile Weight	948,640	pounds
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English tons of Compost	474	Tons-E
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Metric Tons of Compost	431	Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Screened compost

Date of Pile Completion and Measurement

8/18/14



Compost Pile Dimensions:	Values in Feet	
Width		35
Length		133
Height		12

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	55,860	Cubic Feet
	2,069	Cubic Yards

Dry Weight per Cubic Yard	540	pounds/CY
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Pile Weight	1,117,200	pounds
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English tons of Compost	559	Tons-E
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Metric Tons of Compost	508	Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Screened compost

Date of Pile Completion and Measurement

10/20/14



Compost Pile Dimensions:	Values in Feet
Width	55
Length	98
Height	12

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	64,680 Cubic Feet
	2,396 Cubic Yards
Dry Weight per Cubic Yard	540 pounds/CY
Pile Weight	1,293,600 pounds
English tons of Compost	647 Tons-E
Metric Tons of Compost	588 Tons-M

Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Screened, Tested and Stored 12-29-2014



Compost Pile Dimensions:		values in Feet
	Width	60
	Length	130
	Height	10

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	78,000	Cubic Feet
	2,889	Cubic Yards

Dry Weight per Cubic Yard	540	pounds/CY
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Pile Weight	1,560,000	pounds
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English tons of Compost	780	Tons-E
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Metric Tons of Compost	709	Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Un-screened, Un-tested In Process 12-29-2014



Compost Pile Dimensions:		Values in Feet
	Width	35
	Length	75
	Height	8

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume 10,500 Cubic Feet
 389 Cubic Yards

Storage Pile
 Dry Weight per Cubic Yard 540 pounds/CY

Pile Weight 210,000 pounds

English tons of Compost 105 Tons-E

Metric Tons of Compost/pile 95 Tons-M

Total Number of Piles 6

Metric Tons of Unscreened Compost 573 Tons-M
 630 Tons-E

Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Unscreened, Tested and Stored 12-29-2014



Compost Pile Dimensions:		values in Feet
	Width	70
	Length	70
	Height	10

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	49,000	Cubic Feet
	1,815	Cubic Yards

Dry Weight per Cubic Yard	540	pounds/CY
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Pile Weight	980,000	pounds
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English tons of Compost	490	Tons-E
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Metric Tons of Compost	445	Tons-M
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Pile Measured by: Leland Myers

COMPOST PILE MEASUREMENT

Unscreened & Untested But Stored 12-29-2014



Compost Pile Dimensions:		values in Feet
	Width	100
	Length	110
	Height	10

Note: Pile width and height are measured from a point mid-way up the slope each direction.

Pile Volume	110,000	Cubic Feet
	4,074	Cubic Yards

Dry Weight per Cubic Yard	540	pounds/CY
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Pile Weight	2,200,000	pounds
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English tons of Compost	1,100	Tons-E
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Metric Tons of Compost	1,000	Tons-M
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Pile Measured by: Leland Myers

Land Application Records - 2014

1. Zone 1 Information
2. Zone 2 Information
3. Zone 9 Information
4. Soil Sampling Results and Deep
Soil Monitoring Graphs

Application Analysis for Zone 1

Total Loads 211

Zone Number 1 Fertilizer Required per Acre (Based on Cropping Values) (for orchard grass and alfalfa mix) 7.09 Acres 400 lbs/acre Total Fertilizer Required 2836 lbs Fertilizer Available in Soil 2 ppm NO3-N Total NO3-N Available in Soil (Five times the NO3-N in Soil) 70.9 lbs Net Fertilizer Required for Zone 2765.1 lbs	Total Available Nitrogen - Anaerobic Biosolids Load Volume 1300 gal Weight per gallon 8.35 lbs. Specific Gravity 1.025 Weight per Load 11126 lbs NH4-N Concentration 472 ppm Volatilization Factor - Kv 50% Fertilizer Value per Load 2.6 lbs Organic Nitrogen Concentration (TKN-NH4-N) 4711.7 ppm Mineralization Rate 20% Organic - N per Load 10.5 lbs NO3 Concentration 0.0 ppm NO3-N per Load 0.0 lbs Total Available Nitrogen per Load 13.1 lbs	Load Analysis fertilizer required 2765.1 lbs nitrogen per load 13.1 lbs Total Loads - Calc 211 Whole Sludge Application Rate Analysis - Calculated Application Acres 7.09 Loads Per Acre 30 Percent Solids 7.7% Solids Per Load 857 lbs Application Rate 12.7 tons/acre Metric Rate 28.6 MT/Ha Whole Sludge Application Rate Analysis - Actual Total Loads Applied 215 Loads Per Acre 30.3 Application Rate 13.0 tons/acre Metric Rate 29.1 MT/Ha	
Anaerobic Sample - in ppm			
<u>Date</u>	<u>TKN (organic nitrogen)</u>	<u>NO3-N Nitrate+Nitrite as N</u>	<u>NH3-N Ammonia as N</u>
4/4/14	4,540	0.0	502
4/8/10	6240	0	480
7/16/10	4770	0	433
Total	15550	0	1415
Average	5183.3	0.0	471.67
Percent Solids:	TKN - NH3-N=organic N ppm		
7.70%	4711.7		

Date Application Began: 10/27/14

Date Application Ended:

Application Analysis for Zone 2

Total Loads 382

Zone Number 1 Fertilizer Required per Acre (Based on Cropping Values) (for orchard grass and alfalfa mix) Total Fertilizer Required 4068 lbs Fertilizer Available in Soil 2 ppm NO3-N Total NO3-N Available in Soil 101.7 lbs (Five times the NO3-N in Soil) Net Fertilizer Required for Zone 3966.3 lbs	Total Available Nitrogen - Anaerobic Biosolids Load Volume 1300 gal Weight per gallon 8.35 lbs. Specific Gravity 1.025 Weight per Load 11126 lbs NH4-N Concentration 550 ppm Volatilization Factor - Kv 50% Fertilizer Value per Load 3.1 lbs Organic Nitrogen Concentration (TKN-NH4-N) 3275.3 ppm Mineralization Rate 20% Organic - N per Load 7.3 lbs NO3 Concentration 2.3 ppm NO3-N per Load 0.0 lbs Total Available Nitrogen per Load 10.4 lbs	Load Analysis fertilizer required 3966.3 lbs nitrogen per load 10.4 lbs Total Loads - Calc 382 Whole Sludge Application Rate Analysis - Calculated Application Acres 10.17 Loads Per Acre 38 Percent Solids 5.9% Solids Per Load 656 lbs Application Rate 12.3 tons/acre Metric Rate 27.7 MT/Ha Whole Sludge Application Rate Analysis - Actual Total Loads Applied 382 Loads Per Acre 37.6 Application Rate 12.3 tons/acre Metric Rate 27.6 MT/Ha	
Anaerobic Sample - in ppm			
Date	<u>TKN</u> (organic nitrogen)	<u>NO3-N</u> Nitrate+Nitrite as N	<u>NH3-N</u> Ammonia as N
1/7/13	4,690	1.9	474
4/8/13	1295	4.9	596
7/8/13	5490	0	579
Total	11475	6.8	1649
Average	3825.0	2.3	549.67
Percent Solids:	TKN - NH3-N=organic N ppm		
5.90%	3275.3		

Date Application Began: 11/1/13
Date Application Ended: 5/2/14

Biosolids Application Record - Zone 2

Maximum Applied Loads - 382

Date	# Loads	Cummulative Loads	Inspection time	Operator	Signature
11-11-13	5	5	12:00	CH.	Cheryl Hess
11-11-13	8	13	2:34	C.H.	Cheryl Hess
11-8-13	8	21	2:30	CH	Cheryl Hess
11-11-13	4	25	11:20	CH.	Cheryl Hess
11-15-13	11	36	4:30	CH	Cheryl Hess
12-16-13	7	43	12:30	G.H.	Cheryl Hess
12-20-13	8	51	11:30	CH	Cheryl Hess
12-23-13	7	58	11:30	CH.	Cheryl Hess
12-27-13	8	66	12:00	CH.	Cheryl Hess
12-30-13	7	73	1:00	CH.	Cheryl Hess
12-26-13	3	76	2:00 pm	N.L.	Mike Goff
1-2-14	2	78	1:30 pm	MT	Mike Goff
1-3-14	12	90	3:35 pm	SW	Eric Woodman
1-5-14	3	93	11:00 AM	AW	John Woodman
1-16-14	9	102	3:40 pm	SW	Eric Woodman
1-10-14	10	112	1:30	CH.	Cheryl Hess
1-13-14	9	121	1:30	CH.	Cheryl Hess
1-17-14	8	129	12:00	CH.	Cheryl Hess
1-20-14	9	138	12:00	CH.	Cheryl Hess
1-24-14	10	148	1:30	CH	Cheryl Hess

148

Biosolids Application Record - Zone 2

Maximum Applied Loads - 382

Date	# Loads	Cummulative Loads	Inspection time	Operator	Signature
1-27-14	9	157	12:30	C.H.	<i>Chad Hess</i>
1-31-14	9	166	12:30	C.H.	<i>Chad Hess</i>
2-3-14	9	175	3:00	C.H.	<i>Chad Hess</i>
2-7-14	9	184	12:00	C.H.	<i>Chad Hess</i>
2-10-14	9	193	11:00	C.H.	<i>Chad Hess</i>
2-14-14	9	202	11:30	C.H.	<i>Chad Hess</i>
2-17-14	8	210	11:30	C.H.	<i>Chad Hess</i>
2-21-14	3	213	9:20	C.H.	<i>Chad Hess</i>
2-24-14	7	220	12:00	C.H.	<i>Chad Hess</i>
2-28-14	8	228	12:00	C.H.	<i>Chad Hess</i>
3-3-14	6	234	12:00	C.H.	<i>Chad Hess</i>
3-7-14	9	243	12:30	C.H.	<i>Chad Hess</i>
3-10-14	9	252	12:00	C.H.	<i>Chad Hess</i>
3-14-14	9	261	12:00	C.H.	<i>Chad Hess</i>
3-17-14	8	269	11:30	C.H.	<i>Chad Hess</i>
3-21-14	10	279	12:00	C.H.	<i>Chad Hess</i>
3-24-14	12	291	12:30	C.H.	<i>Chad Hess</i>
3-28-14	13	304	2:00	C.H.	<i>Chad Hess</i>
3-31-14	9	313	12:00	C.H.	<i>Chad Hess</i>
4-4-14	11	324	12:30	C.H.	<i>Chad Hess</i>

Biosolids Application Record - Zone 2

Maximum Applied Loads - 382

Date	# Loads	Cumulative Loads	Inspection time	Operator	Signature
4-7-14	10	334	12:00	CH	<i>[Signature]</i>
4-10-14	5	339	9:00 AM	JW	<i>[Signature]</i>
4-11-14	5	344	9:00 AM	NC	<i>[Signature]</i>
4-14-14	6	350	1:30	CH	<i>[Signature]</i>
4-18-14	7	357	10:30 AM	JW	<i>[Signature]</i>
4-21-14	6	363	10:30	CH	<i>[Signature]</i>
4-25-14	10	373	10:05 AM	JW	<i>[Signature]</i>
4-29-14	10 4	377	10:00	CH	<i>[Signature]</i>
5-2-14	5	382	11:00 AM	JW	<i>[Signature]</i>

Application Analysis for Zone 9

Total Loads 416

Zone Number	9			Total Available Nitrogen - Anaerobic Biosolids	Load Analysis		
Fertilizer Required per Acre (Based on Cropping Values) (for orchard grass and alfalfa mix)	12.5 Acres	400 lbs/acre		Load Volume	1300 gal		
Total Fertilizer Required	5000 lbs		Weight per gallon	8.35 lbs.	fertilizer required	4375 lbs	
Fertilizer Available in Soil	10 ppm NO3-N		Specific Gravity	1.025	nitrogen per load	10.5 lbs	
Total NO3-N Available in Soil (Five times the NO3-N in Soil)	625 lbs		Weight per Load	11126 lbs	Total Loads - Calc	416	
Net Fertilizer Required for Zone	4375 lbs		NH4-N Concentration	473 ppm	Whole Sludge Application Rate Analysis - Calculated		
Anaerobic Sample - in ppm				Volatilization Factor - Kv	50%	Application Acres	12.5
	<u>TKN</u> (organic nitrogen)	<u>NO3-N</u> Nitrate+Nitrite as N	<u>NH3-N</u> Ammonia as N	Fertilizer Value per Load	2.6 lbs	Loads Per Acre	33
Date				Organic Nitrogen Concentration (TKN-NH4-N)	3525.7 ppm	Percent Solids	7.0%
10/4/13	3567	14	518	Mineralization Rate	20%	Solids Per Load	779 lbs
1/6/14	3848	0	398	Organic - N per Load	7.8 lbs	Application Rate	12.9 tons/acre
4/8/14	4580	0	502	NO3 Concentration	4.7 ppm	Metric Rate	29.0 MT/Ha
Total	11995	14	1418	NO3-N per Load	0.1 lbs	Whole Sludge Application Rate Analysis - Actual	
Average	3998.3	4.7	472.67	Total Available Nitrogen per Load	10.5 lbs	Total Loads Applied	452
Percent Solids:	TKN - NH3-N=organic N ppm					Loads Per Acre	36.2
7.00%	3525.7					Application Rate	14.1 tons/acre

Date Application Began: 5/8/14
Date Application Ended: 10/25/14

Biosolids Application Record - Zone 9

Maximum Applied Loads - 416

Date	# Loads	Cummulative Loads	Inspection time	Operator	Signature
5-9-14	6	6	9:10 Am	JW	JW
5-11-14	3	3 9	8:00	DVH	D. Van H...
5-16-14	10	19	11:00 Am	JW	JW
5-19-14	4	23	9:00 Am	BA	M. B...
5-23-14	8	31	9:30 Am	S	S
5-26-14	10	41	9:30 Am	BW	B. W...
5-28-14	15	56	1:00 PM	S	S
5-30-14	4	60	9:00 Am	BA	M. B...
6/2/2014	8	68	4:00 p.m.	Jaw	J. Cant...
6/6/14	8	76	11:20 Am	JW	John W...
6/8/14	10	86	9:00 AM	M	M
6-13-14	8	94	10:00 Am	S	S
6/16/14	7	101	2:30 p.m.	Jaw	J. Cant...
6-26-14	5	106	9:40 Am	S	S
6-23-14	6	112	9:00	Jaw	J. Cant...
6-27-14	6	118	9:10 Am	S	S
6/30/14	8	126	9:00 A.M.	Jaw	J. Cant...
7/31/14	5	131	8:40 A.M.	Jaw	J. Cant...
7/7/14	8	139	9:10 A.M.	Jaw	J. Cant...
7/11/14	5	144	9:26 Am.	Jaw	J. Cant...

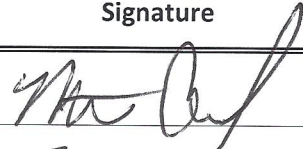






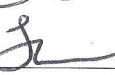

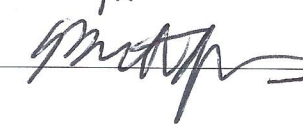
Biosolids Application Record - Zone 9

Maximum Applied Loads - 416

Date	# Loads	Cummulative Loads	Inspection time	Operator	Signature
7-18-14	5	149	11:05 AM	JW	JW
7/14/14	4	153	9:30 A.M.	JW	J. Carl with
7/21/14	4	157	8:30 A.M.	JW	J. Carl with
7/29/14	7	164	9:30 A.M.	JW	J. Carl with
8/4/14	2	166	9:30 AM.	JW	J. Carl with
8/11/14	5	171	8:45 AM	JW	J. Carl with
8/15/14	14	185	8:30 AM	Bar	R. J. G. J.
8/25-14	5	190	10:00 AM	JW	JW
8/29/14	5	195	9:00 AM	MC	MC
9-5-14	6	201	2:00 PM	JW	JW
9-8-14	9	210	9:00 AM	MC	MC
9-12-13	6	216	10:00 AM	JW	JW
9-15-14	10	226	9:00 AM	MC	MC
9-19-14	8	234	11:30 AM	JW	JW
9-26-14	9	343	7:00 AM	MC	MC
9-29-14	4	347	10:00 AM	JW	JW
9-30-14	9	356	1:00 PM	JW	JW
10-3-14	12	368	3:00 PM	DVH	D. J. V. H.
10-4-14	7	375	2:00	DVH	D. J. V. H.
10-5-14	7	382	2:00	DVH	D. J. V. H.

Biosolids Application Record - Zone 9

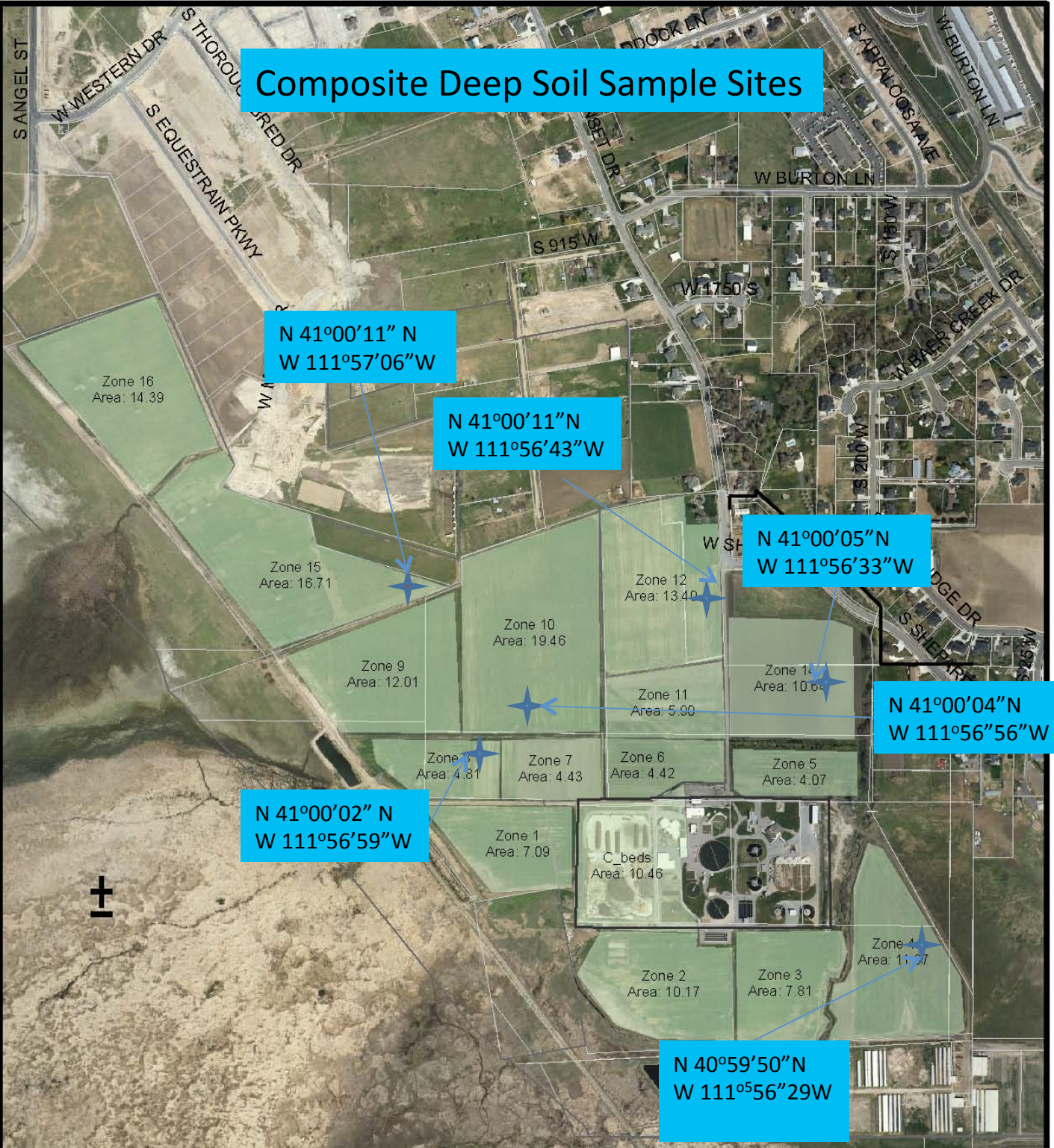
Maximum Applied Loads - 416

Date	# Loads	Cumulative Loads	Inspection time	Operator	Signature
10-8-14	11	391	4:00pm	Nate	
10-10-14	12	403	3:30pm	Sw	
10-13-14	6	409	9:00am	Brett	
10-14-14	10	419	3:30pm	Sw	
10-17-14	7	426	2:00pm	Nate	
10-20-14	9	435	2:00pm	Brett	
10-21-14	3	438	2:00pm	Jace	
10-23-14	2	440	2:00pm	Sw	
10-24-14	9	449	2:00pm	Brett	
10-25-14	3	452	9:00am	Brett	

Cleaning digester mostly water

Land Application Zones

Composite Deep Soil Sample Sites



Samples Taken October 8, 2014

2014 Soil Sampling

QA Consulting and Testing, LLC
PO Box 627
Salem, Utah 84653

801-423-1116

Name: Von Isaman

Date: October 15, 2014

Customer Sample ID	AB-DTPA	Chromotropic
	Extract	Acid
	Method	Method
	ppm P	ppm NO3-N
2014-1-1	1.00	1.00
2014-1-2	1.00	3.00
2014-1-3	1.00	1.00
2014-2-1	3.00	2.00
2014-2-2	1.00	1.00
2014-2-3	1.00	2.00
2014-2-4	1.00	1.00
2014-2-5	1.00	1.00
2014-3-1	25.00	1.00
2014-3-2	6.00	1.00
2014-3-3	1.00	1.00
2014-3-4	1.00	2.00
2014-3-5	2.00	1.00
2014-4-1	19.00	3.00
2014-4-2	1.00	1.00
2014-4-3	1.00	1.00
2014-4-4	1.00	1.00
2014-4-5	1.00	1.00
2014-5-1	11.00	2.00
2014-5-2	1.00	2.00
2014-5-3	1.00	1.00
2014-5-4	1.00	1.00
2014-5-5	1.00	1.00
2014-6-1	15.00	16.00
2014-6-2	13.00	11.00
2014-6-3	10.00	3.00
2014-C-1	14.00	2.00
2014-C-2	5.00	2.00
2014-C-3	5.00	1.00
2014-C-4	1.00	1.00
2014-C-5	1.00	1.00
2014-N/P	17.00	2.00

QA CONSULTING AND TESTING LLC

VON ISAMAN
 PO BOX 627 SALEM, UT 84653
 (801) 423-1116 FAX (801) 423-1813
www.qaconsultingandtesting.com
vonisaman@comcast.net

To: Central Davis Sewer District
 2200 S Sunset Dr
 Kaysville, UT 84037
 phone 801 451 2190 FAX 6836

Oct 15, 2014
 Project: Soils-Multiple Farm Fields
 Attn: Leland Myers
ljmyers@cdsewer.org

TOPSOIL NUTRIENT REPORT AND SPECIFICATION*

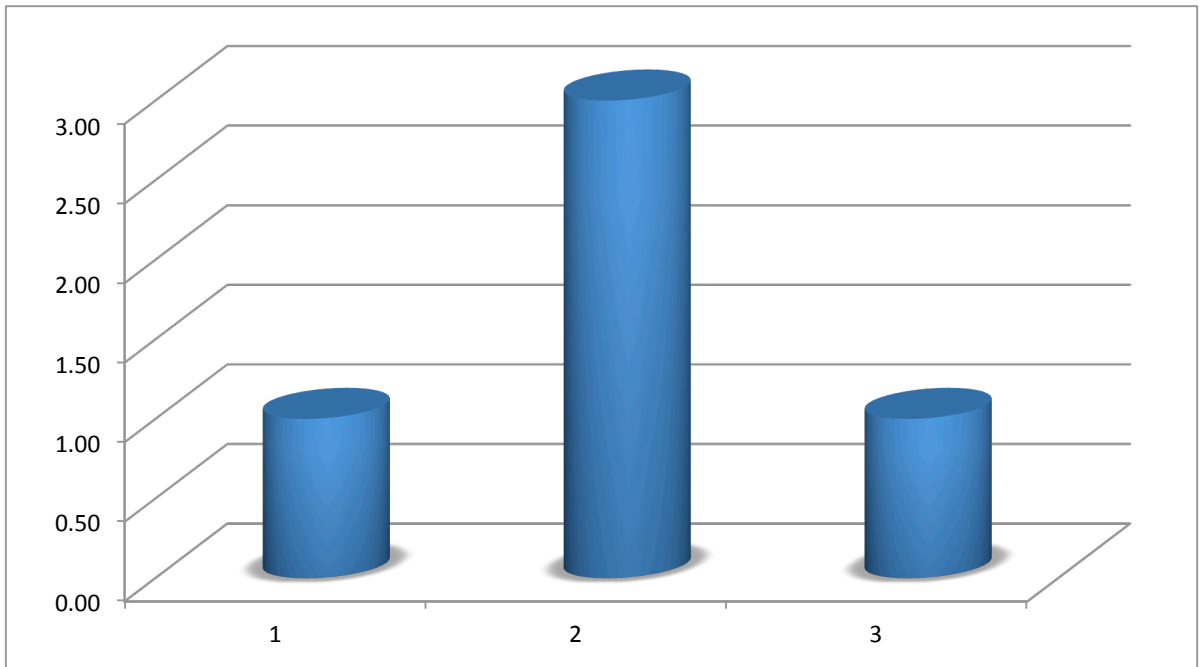
Sample Name	Nitrate Nitrogen ppm	Phosphorus ppm		Sample Name	Nitrate Nitrogen ppm	Phosphorus ppm
Site 1-1	1	1		Site 5-1	2	11
1-2	3	1		5-2	2	1
1-3	1	1		5-3	1	1
				5-4	1	1
				5-5	1	1
Site 2-1	2	3		Site 6-1	16	15
2-2	1	1		6-2	11	13
2-3	2	1		6-3	3	10
2-4	1	1		Site C-1	2	14
2-5	1	1		C-2	2	5
Site 3-1	1	25		C-3	1	5
3-2	1	6		C-4	1	1
3-3	1	1		C-5	1	1
3-4	2	1		Site N/P	2	17
3-5	1	2				
Site 4-1	3	19				
4-2	1	1				
4-3	1	1				
4-4	1	1				
4-5	1	1				
Specification	>20	>10			>20	>10

*from "Topsoil Quality Guidelines for Landscaping", June 2002, AG/SO-02, prepared by Rich Koenig, Utah State University cooperative Extension Soil Specialist, and Von Isaman, QA Consulting and Testing, LLC.

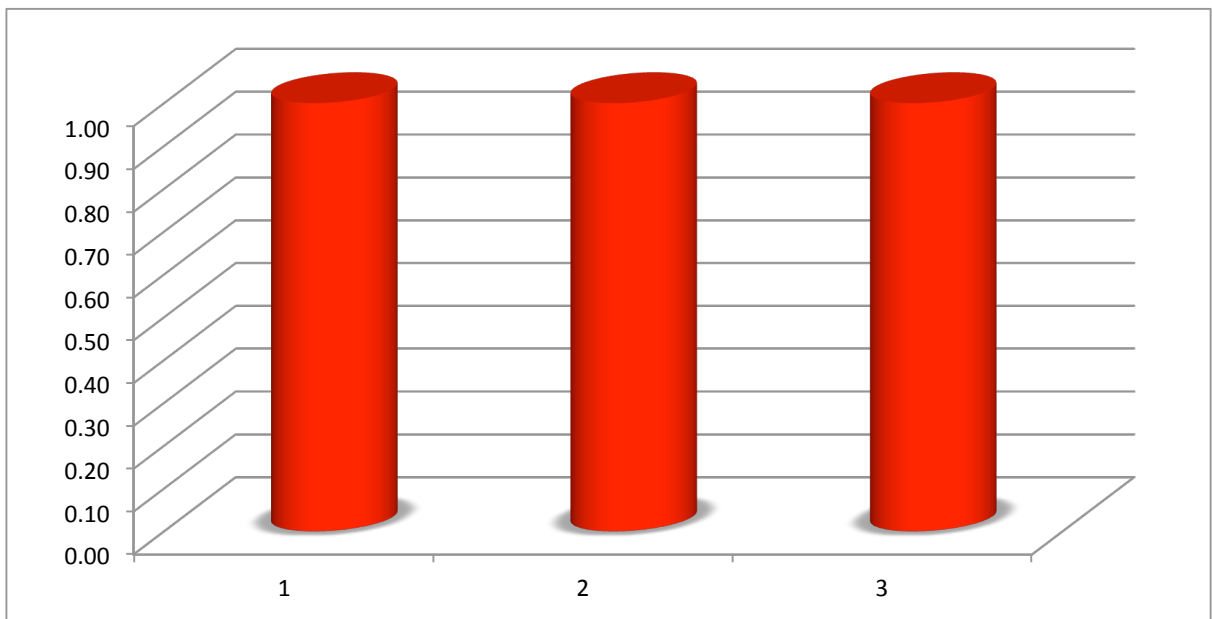
End.

CentralDavisSewerSoilNPTb14.O15

CSDS - Site 1 Deep Soil Sampling - To Confining Layer

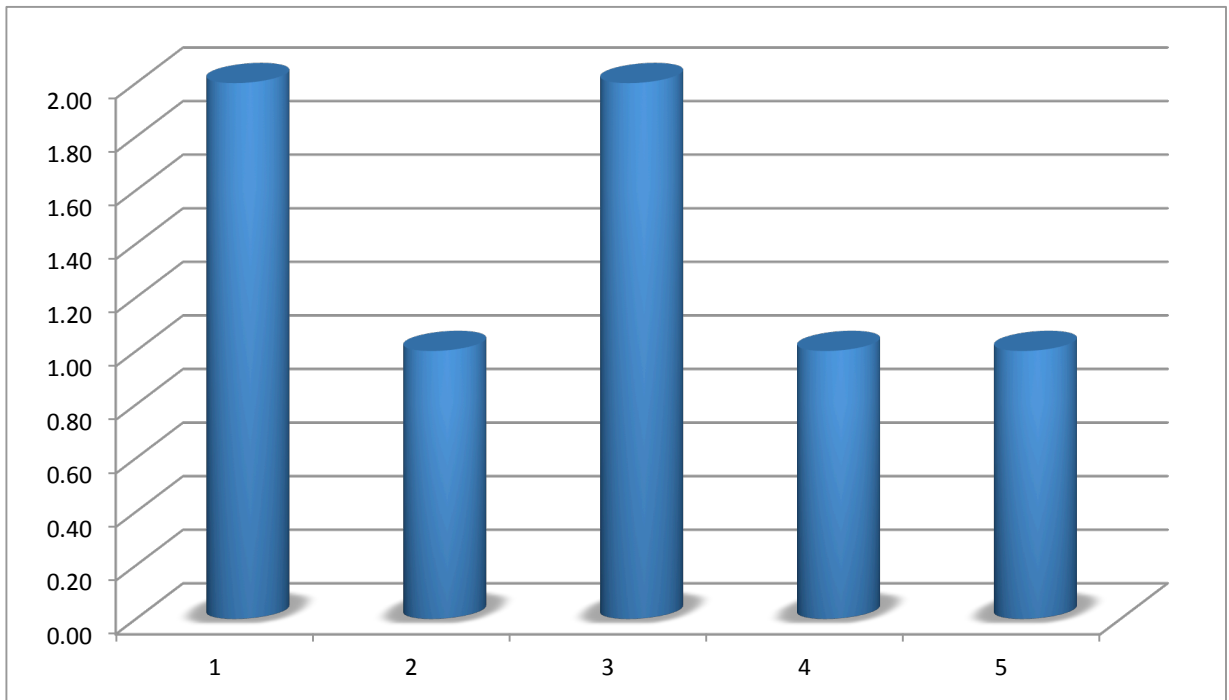


Nitrates

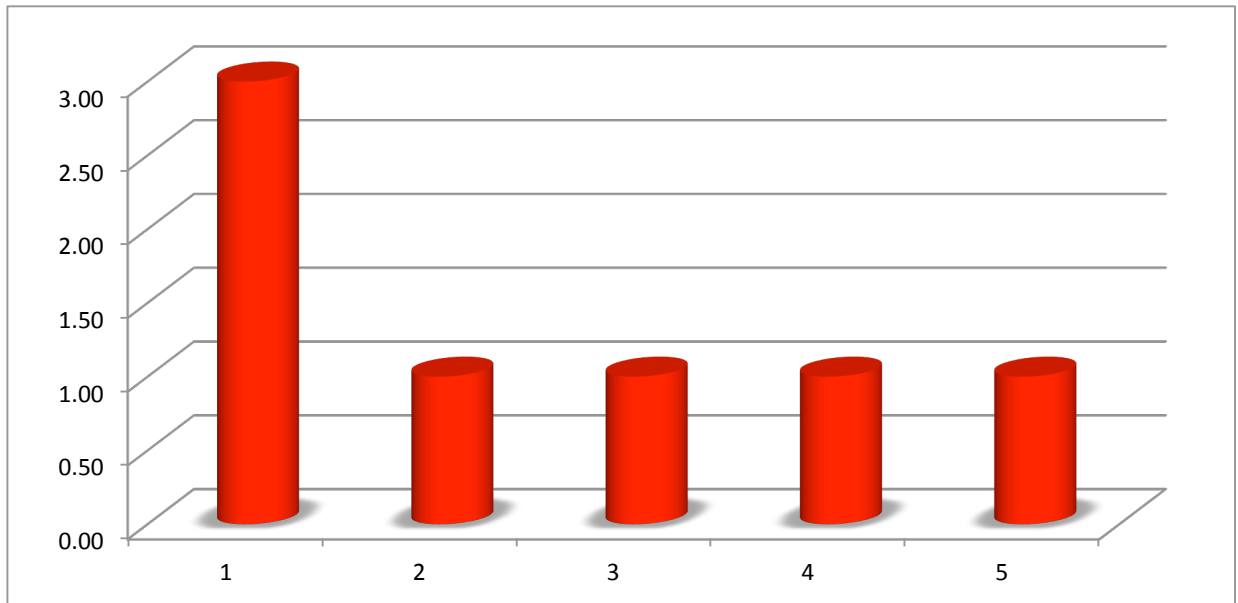


Phosphorus

CDS - Site 2 Deep Soil Sampling - To Confining Layer

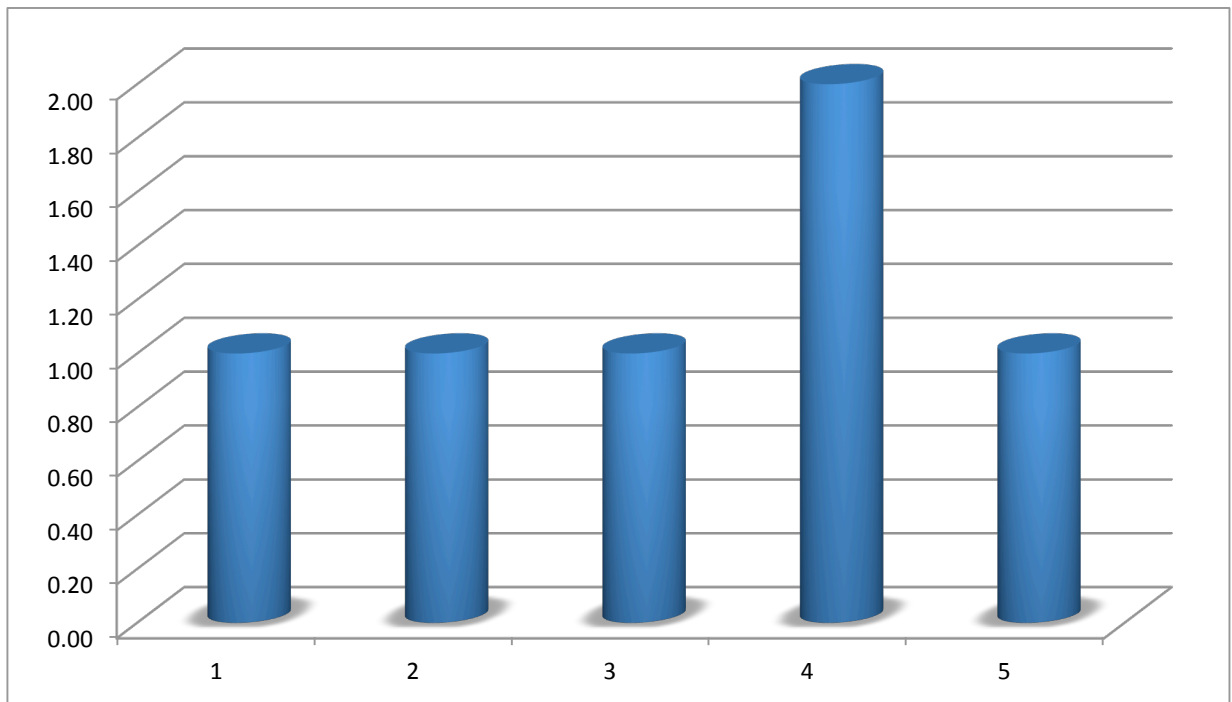


Nitrates

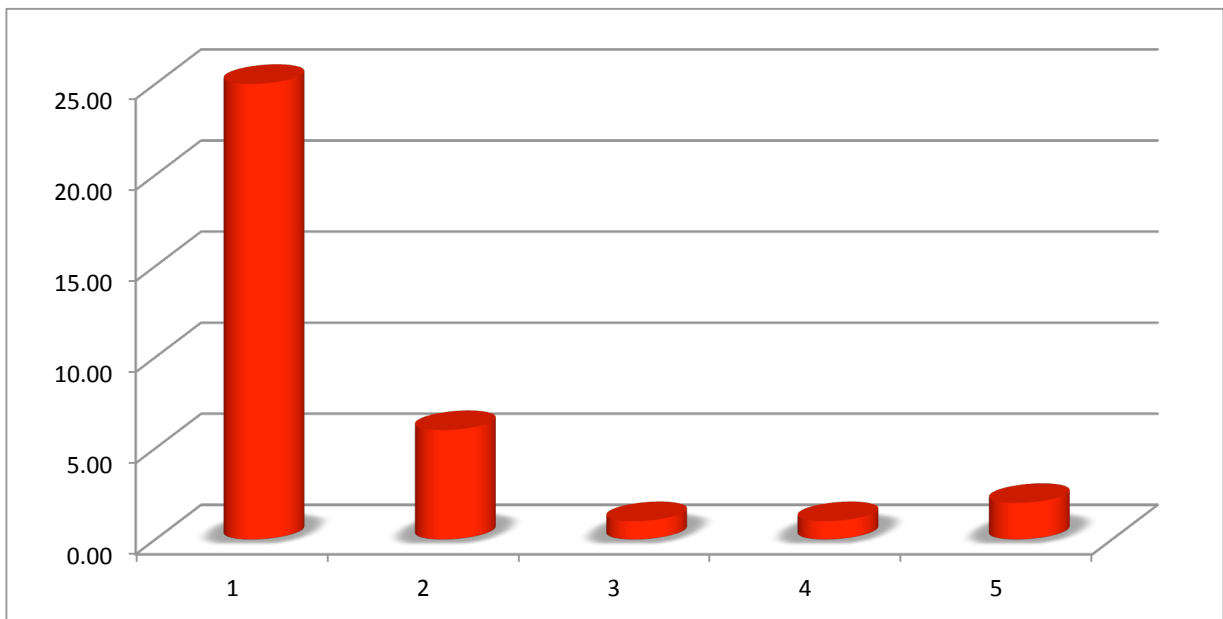


Phosphorus

CSDS - Site 3 Deep Soil Sampling - To Confining Layer

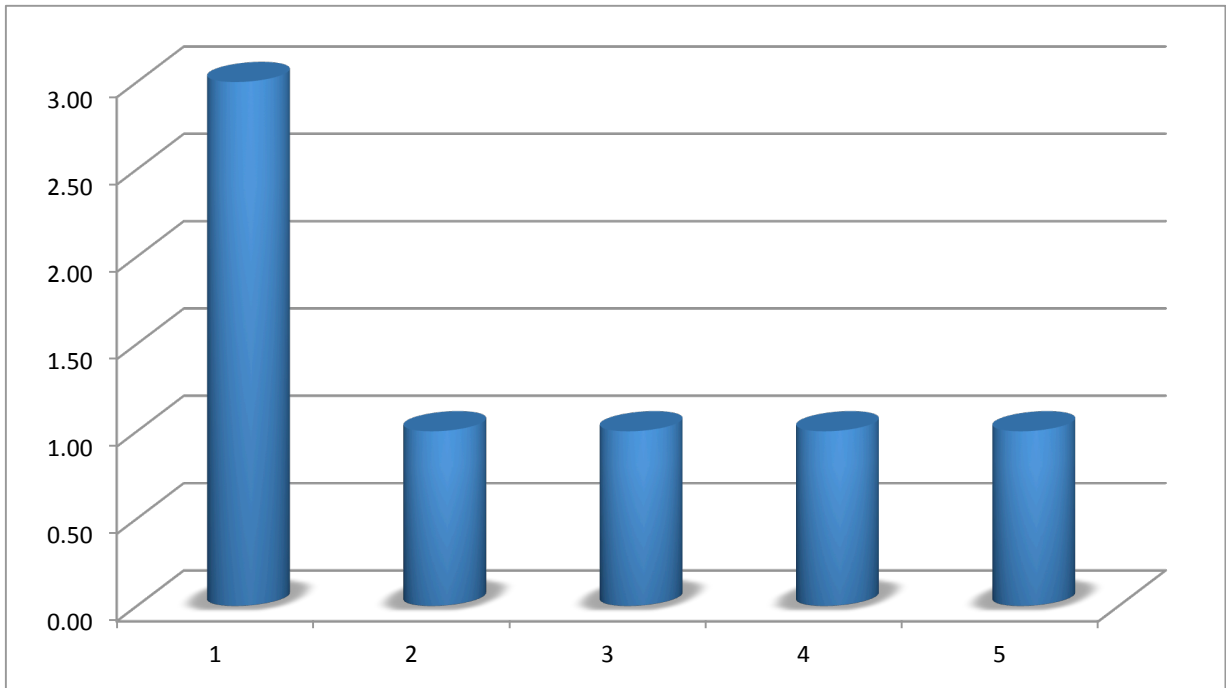


Nitrates

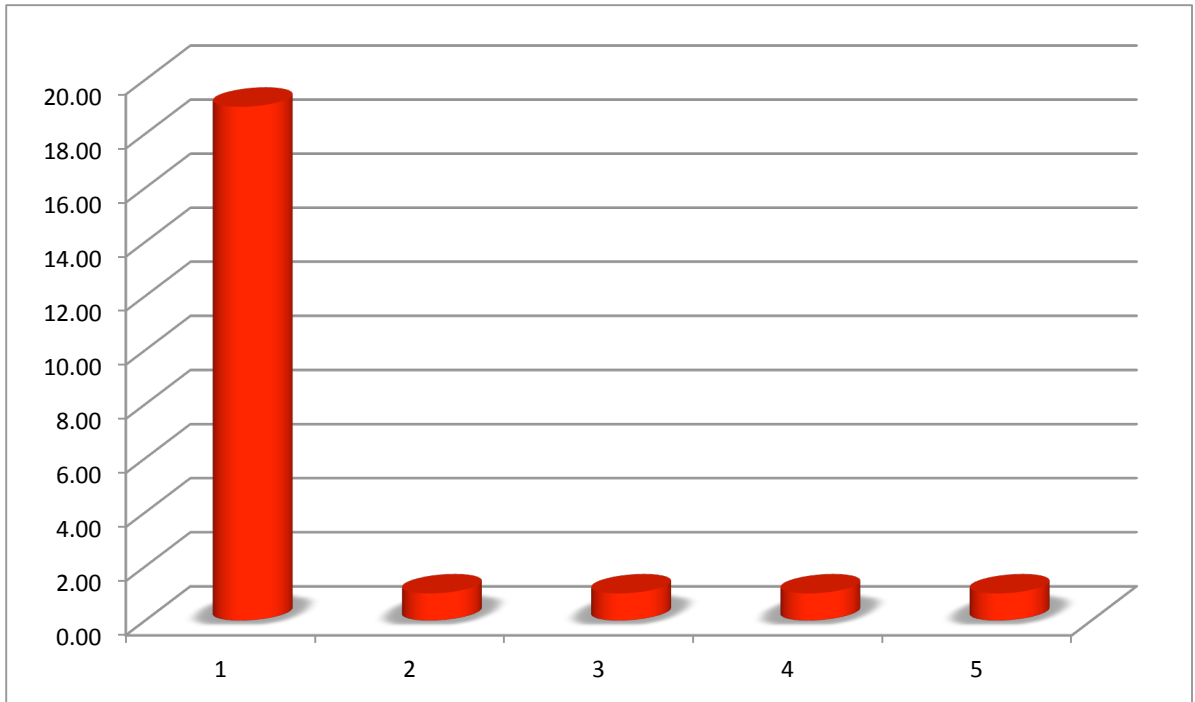


Phosphorus

CDS - Site 4 Deep Soil Sampling - To Confining Layer

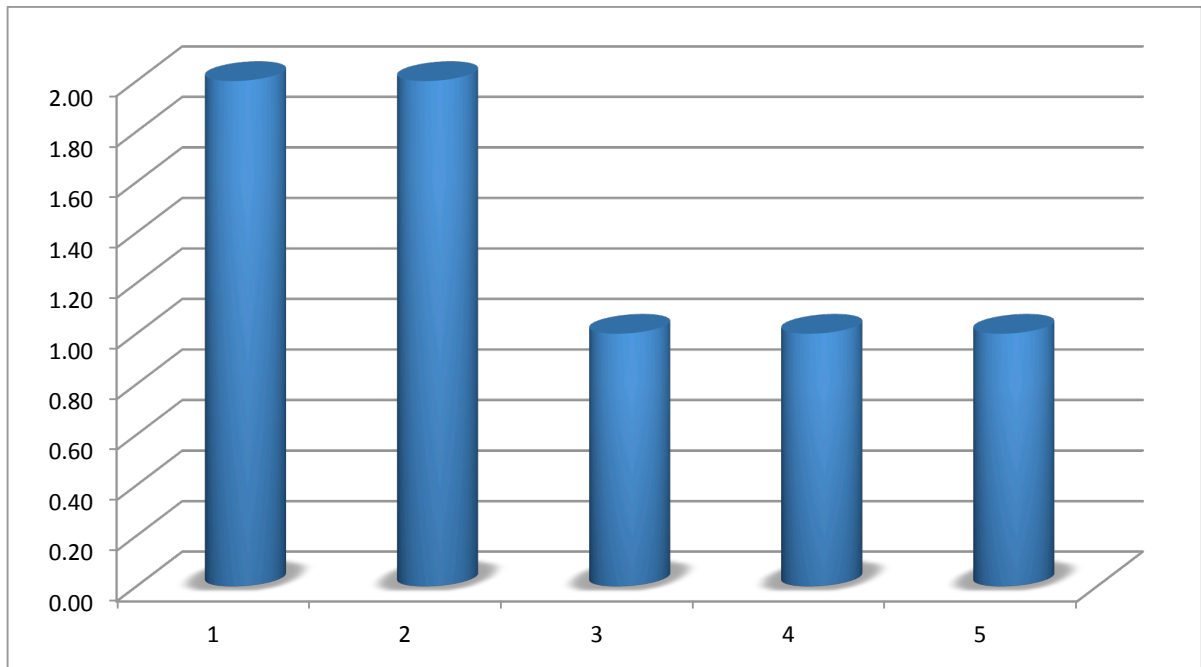


Nitrates

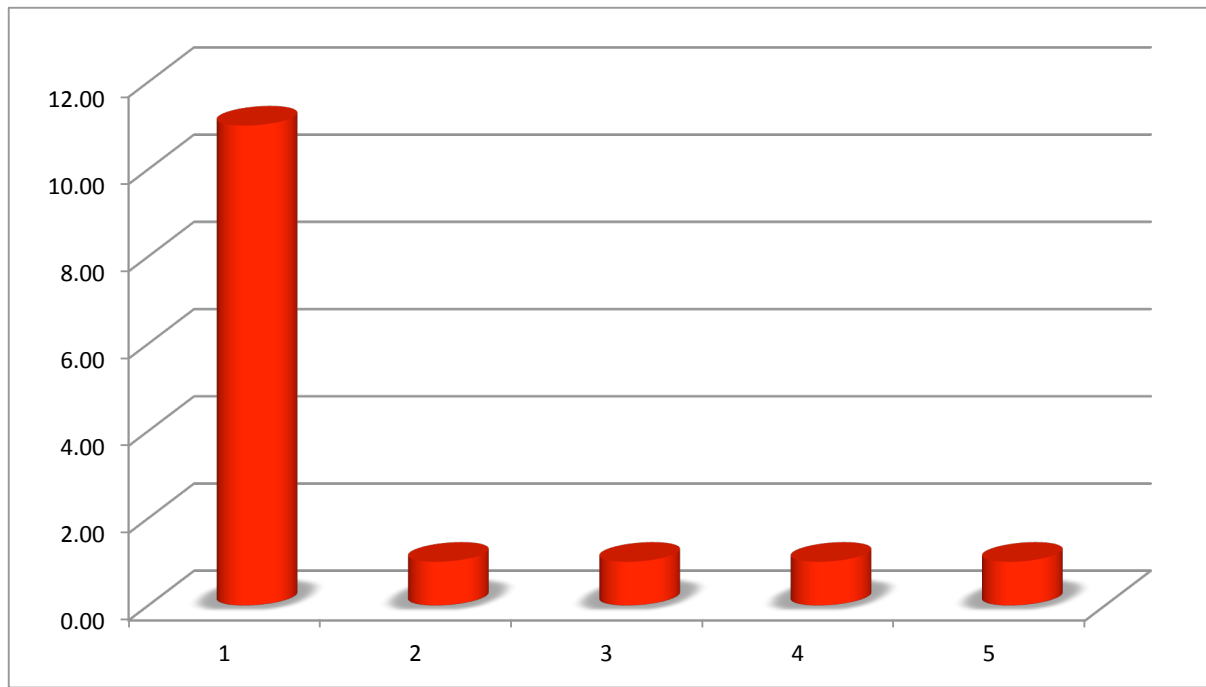


Phosphorus

CDSD - Site 5 Deep Soil Sampling - To Confining Layer

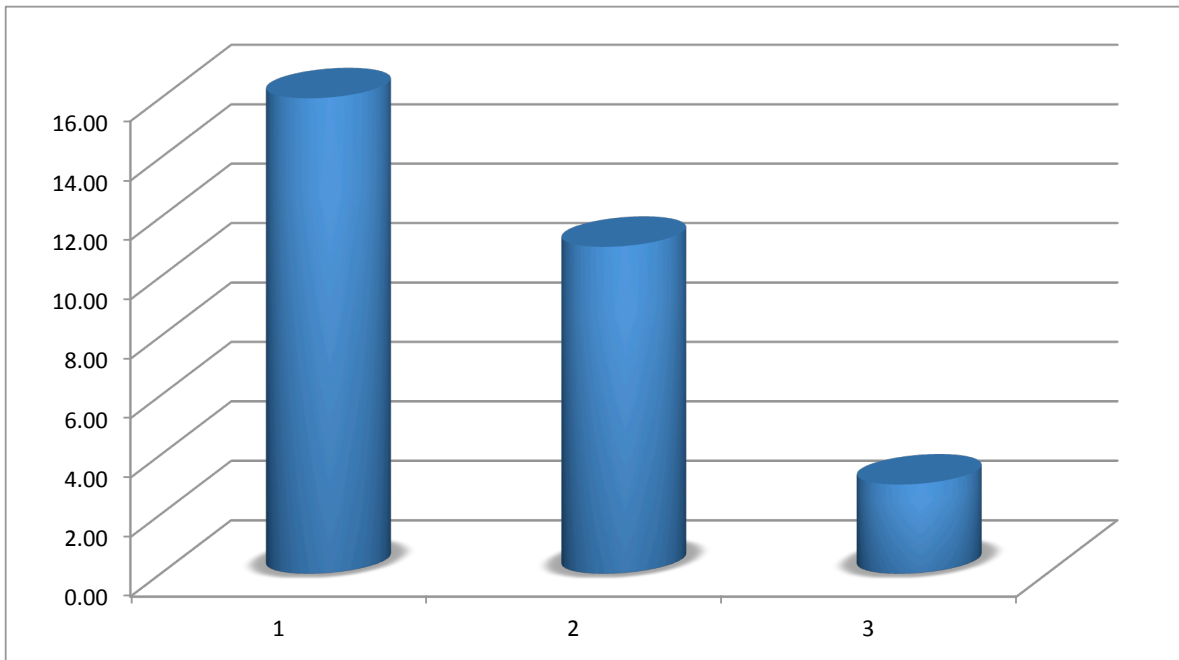


Nitrates

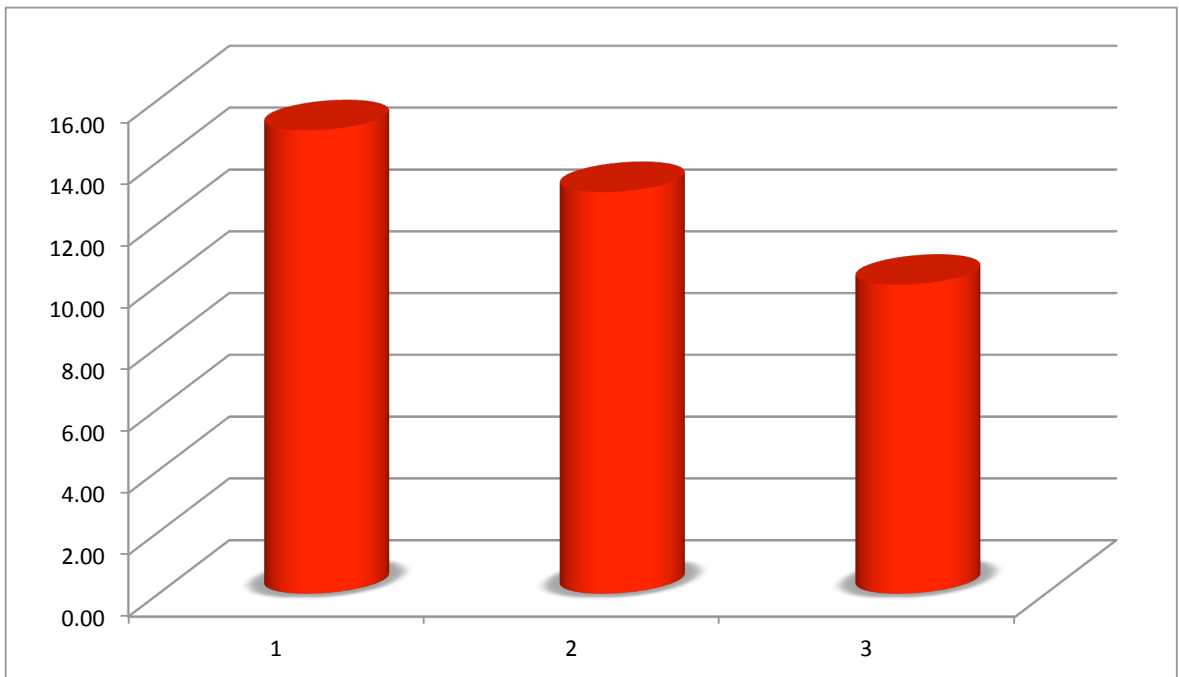


Phosphorus

CDSD - Site 6 Deep Soil Sampling - To Confining Layer

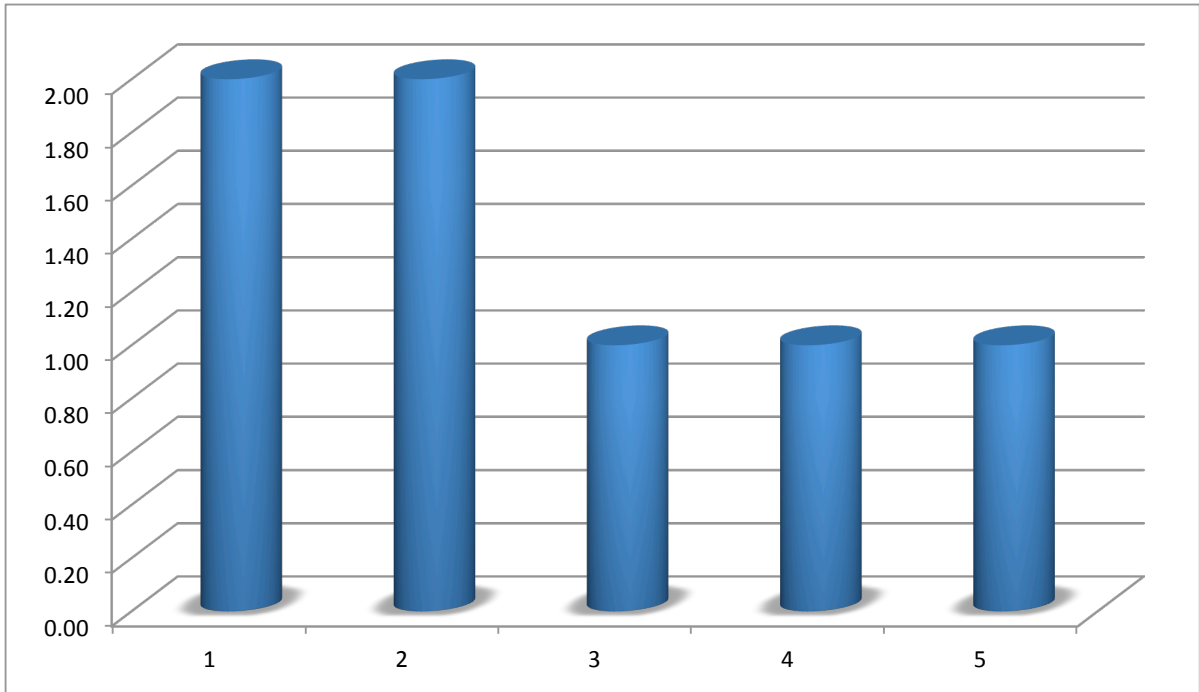


Nitrates

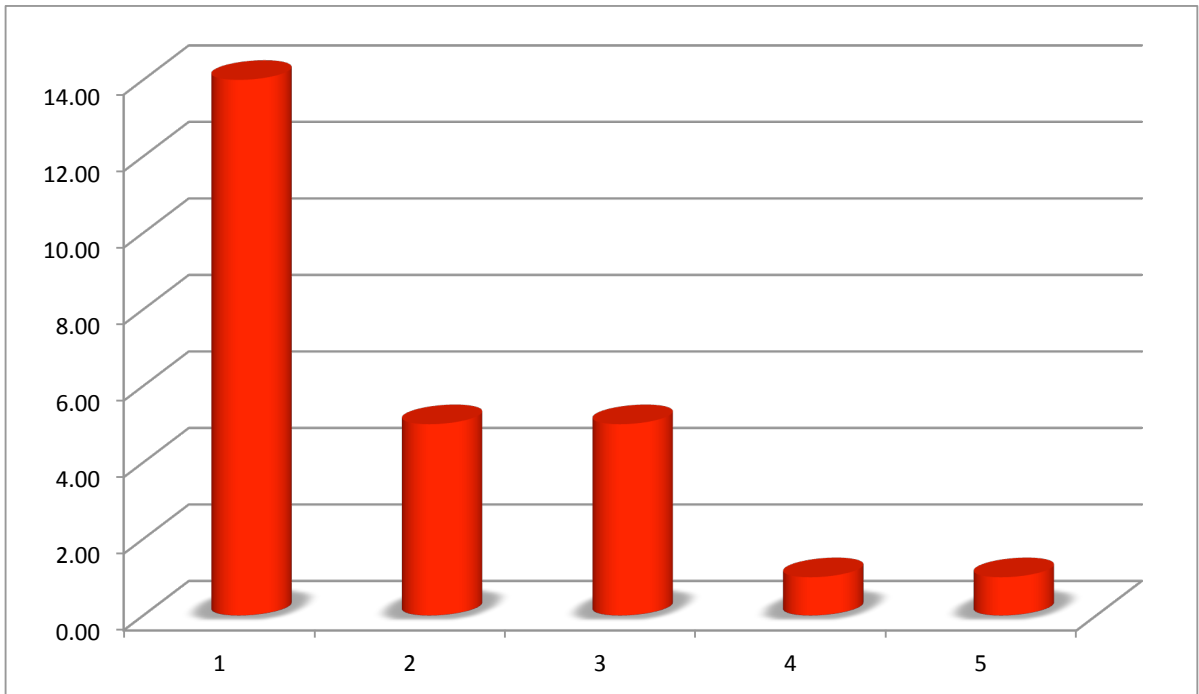


Phosphorus

CSDS - Composite Deep Soil Sampling - To Confining Layer



Nitrates



Phosphorus

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National Biosolids Partnership Annual Reports

1. Biosolids Management Report –
2014
2. Management Review – 2014
3. 2014 Goals Report
4. 2014 External Audit
6. 2014 Internal Audit

Central Davis Sewer District Biosolids Management Report 2014

This report will fulfill the requirement in Element 15 of the District's Biosolids EMS System. This report is submitted to the Board for Central Davis Sewer District in conjunction with the District's Annual Biosolids Report prepared for submission to Utah DWQ and EPA. The summary information contained in this report is supported by additional documentation in the Annual Report.

Chemical Pollutant Analysis

During 2014, Central Davis Sewer District tracked the chemical quality of biosolids produced by its wastewater treatment plant according to the method of treatment. Since each treatment method is tracked separately, the results are reported individually below.

Anaerobic Digested Biosolids

Metals analysis stipulated in 40 CFR Part 503 was performed quarterly by Central Davis Sewer District on anaerobic digested biosolids. Quarterly results, lab reports and quality control charts have been calculated and are included in a section of the biosolids annual report. All metals were in compliance with Table 3 Exceptional Quality Biosolids standards.

Compost Biosolids

Compost is sampled when the pile is ready for distribution and marketing. In 2014, six samples were taken and analyzed. The yearly averages and individual test values comply with Table 3 of the 503 regulations. A summary report, lab reports and quality charts are included in a separate section of the annual report.

Biosolids Pathogen Reduction

During 2014, Central Davis Sewer District met the permit and regulatory requirement for pathogen reduction in two separate ways. One method produces Class A compost and

the second method produces Class B anaerobic biosolids. All biosolids produced in 2014 met either Class A or Class B standards. In addition, since Class B biosolids must meet site restrictions, these requirements were also complied with in 2014.

Vector Attraction Reduction Requirement

Central Davis Sewer District evaluates VAR methods separately for the two biosolids production streams which operate at the plant. These two production streams are Trickling Filter - Anaerobic Digested Biosolids and Oxidation Ditch - Composted Biosolids. The anaerobic biosolids met the VAR requirement by complying with 38% reduction of volatile solids. The composted biosolids met VAR requirement by being in process for more than 14 days with temperatures higher than 45-degrees centigrade. All biosolids produced by the District met these standards.

Biosolids Production Rates

Central Davis Sewer District produced composted and anaerobic digested biosolids. The District maintained separate records for production of each type. The 2014 quantities of biosolids or biosolids derived material is 4,165 MT.

Contractor Activities

There were no contractors used in the biosolids value chain in 2014.

Goals and Objectives

For goals and objectives please refer to the separate report on this subject.

Internal Audit

The internal audit did not demonstrate any material weaknesses in the program. The internal audit report is included separately.

External Second Interim Audit

A third party audit was conducted by NSF International. The third party audit report is included in the annual biosolids report. There were three minor and no major

non-conformances identified in the third party audit report. The report also contained several opportunities for improvement that the District will use to improve the overall EMS program.

Central Davis Sewer District

Period: January 1, 2014 to December 31, 2014
Review Conducted by: Leland Myers

December 29, 2014

Annual Activities – Management Review

The following activities are described in the EMS Manual as required activities on a periodic or annual basis. In italics are quotations from the EMS Manual and below the quote is the Management Response.

The District Manager will bring the revisions to the Board of Trustees for consideration. Recommended revisions to the policy may also be included in the annual EMS Management Review.

The annual report and management review for 2014 will be presented to the Board on January 8, 2015. The Internal Audit was reviewed at the November 13, 2014 Board Meeting. The results of the seventh Interim Audit conducted by NSF International were presented to the Board at the same meeting in November 2014. There were no major and three minor non-conformances identified in the external audit. All of the minor non-conformances were corrected and the corrective action accepted within one week of the completion of the audit. In 2014 the District added aerated static pile composting in place of windrow composting. In addition, an odor reducing agent was added to the process and an SOP for this activity approved. The Board approved these actions during the summer of 2014.

Central Davis Sewer District Manager will review information in Table 3.1 on an annual basis, when there are regulatory changes or whenever major operational changes occur. The annual review will be conducted by February 28th each year.

Table 3.1 on critical control points is update and current as of the December 29, 2014. No additional changes to the process or operational requirements have been made during the past year. As stated above, composting methodology was changed and an odor reducing agent added to the SOP's.

Check with state biosolids coordinator at least annually on an informal basis

Numerous formal and informal contacts with Dan Griffin, the Utah State Biosolids Coordinator were made in 2014. Dan was also part of the EMS Internal Audit team and participated in the 2014 internal audit.

Central Davis Sewer District will set or revise goals and objectives for its biosolids program on an as-needed basis. Any new goals and strategies will be finalized no later than February 28th of each year.

The goals and objectives for 2014 were completed and the final goal report was presented to the Board on November 13, 2014 at a District Board Meeting. Goals specific to each of the four outcome areas were identified and completed. A list of potential goals for 2015 will be presented to the Board for consideration at the February 12, 2015 meeting. The selected goals for 2015 will be incorporated in the EMS manual.

Goals and objectives will be posted in the District office on the main bulletin board.

Goals are included in the manual that is posted on the District's web site at CDSewer.org. The EMS Manual and the associated goals and objectives are also on the desktop of all District Computers. In addition a paper copy is posted on the Main bulletin board. All employees are issued an electronic manual for individual use.

Roles and responsibilities for various individuals that are specific to the EMS are assigned by the District Manager. They are reviewed and updated as necessary on an annual basis (by February 28th of each year).

The roles and responsibilities as outlined in Element 7 are current. No changes are needed at this time. The Superintendent may shift the duties of the operator responsible for records or may split these duties on a periodic basis.

The District maintains several lists of individuals interested in Central Davis Sewer District biosolids program and/or EMS related activities. These lists include the Odor Complaint Log, attendance lists in the minutes of Board meetings, and a Telephone Log for specific concerns expressed by the public (not including queries about compost availability or pricing) and is maintained by the District Manager and the Accountant.

The accountant maintains the complaint log and the telephone query log. There were multiple queries about availability and pricing of compost that were not logged. There was several odor comments or complaints in 2014. The District has changed to aerated static pile composting and had begun the addition of an odor reduction agent. The District has frequent contact with individuals interested in odor issues. In addition, the District has sent flyers to the affected area and has a dedicated a phone line, text line and e-mail address to allow for notification of concerns.

Operational controls will be reviewed by the District Manager on an annual basis (by February 28th) or whenever significant changes in plant processes and/or operations occur. Revisions (if any) to Table 3.1 and associated SOP's and monitoring/measurements will be made by the District Manager following these reviews.

All operational controls appear to be adequate. No changes are currently needed. There were changes in composting method and addition of an odor reducing agent as detailed previously. No additional changes are proposed at the current time.

Significant changes will be documented in writing and will be noted in the annual biosolids program report and updated to the NBP and the 3rd party auditor.

There were no significant changes in the Biosolids EMS during 2014. Several minor changes were made in conjunction with Corrective Action Reports and audits, and as outlined previously for odor control, but these were insignificant in relation to the entire program.

Central Davis Sewer District Wastewater Treatment Plant has an Emergency Response Program which is reviewed yearly and updated as needed. Interim revisions to specific sections of the Emergency Response Program are made on an “as needed” basis. A specific biosolids section is included in the manual and covers impacts from significant load changes, slug loads, extreme weather conditions, and equipment failures.

The emergency response plan was updated in 2012 and implemented in 2013 and is current with present practices. The District continues to investigate the use of inherently safer technology for disinfection in place of gaseous chlorine. Changes from gaseous chlorine to a liquid disinfection will take place in 2015. In 2014 there were no incidents requiring emergency response. In January 2014 the District provided training on the emergency response program.

Important emergency contact information is kept by each phones and in the manual.

Emergency notice information is posted at each phone as of December 29, 2014. Periodic checks are made by the safety officer throughout the year to insure the phone information is current and not destroyed or removed.

Monitoring and measurement activities will be reviewed by the District Manager on an annual basis (by February 28th) or whenever significant changes in plant processes and/or operations occur. Revisions (if any) to Tables 3.1 and associated SOPs and monitoring/measurement documents will be made by the District Manager.

All current SOP's and associated documentation are adequate and current with EMS needs. The Manager reviewed all documentation associated with the annual report during the third week of December 2014. All activities comply with regulatory and permitted requirements.

The District Manager will prepare and submit a written report to the Board of Trustees by February 28th of each year, summarizing the internal audit results and corrective actions (if necessary) that have already been taken or will be taken to address any non-conformances.

This report will be submitted and reviewed with the Board on January 8, 2014. Corrective actions taken throughout the year have been discussed with the Board as needed.

The District Manager will prepare a written report on an annual basis that summarizes the performance of the biosolids management program. The performance report will be completed by February 28th of each year and will address performance during the previous calendar year. At a minimum, the report will contain the following information:

- a. Summaries of monitoring data and other measurements that demonstrate the performance of Central Davis Sewer District biosolids program relative to established goals, objectives and legal requirements.*
- b. Summary of relevant contractor activities (if any).*
- c. Summaries of actions that have been taken on a voluntary basis.*
- d. Progress towards achieving biosolids program goals and objectives.*
- e. A summary of internal audits.*
- f. A summary of independent third party audits (if applicable).*

The District's Annual Biosolids Report will be submitted to the Board for review by January 8, 2015. This report summarizes all needed regulatory compliance issues. The report contains information from the 2014 calendar year activities. The 2014 goals were discussed and approved by the Board during the November 13, 2014 Board meeting. 2015 Goals will be presented to the Board during the first Board Meeting in 2015.

The scope of the management review will include:

- a. Review monitoring data and other measurements that demonstrate the performance of Central Davis Sewer District biosolids program relative to established goals, objectives and legal requirements.*
- b. Review progress towards achieving biosolids goals and objectives.*
- c. Review internal audit results.*
- d. Review 3rd party audit results.*
- e. Review the need for changes in existing policy or the adoption of new policy to support the EMS and biosolids related activities.*

No changes to the current EMS Manual are needed. Changes to comply with non-conformances identified in the external audit were corrected and approved by the Board on November 13, 2014. The auditor also approved these changes.

Central Davis Sewer District

2014 Biosolids EMS Goals Report

Goal Number: 1

Outcome Area: Quality Biosolids Management Practice

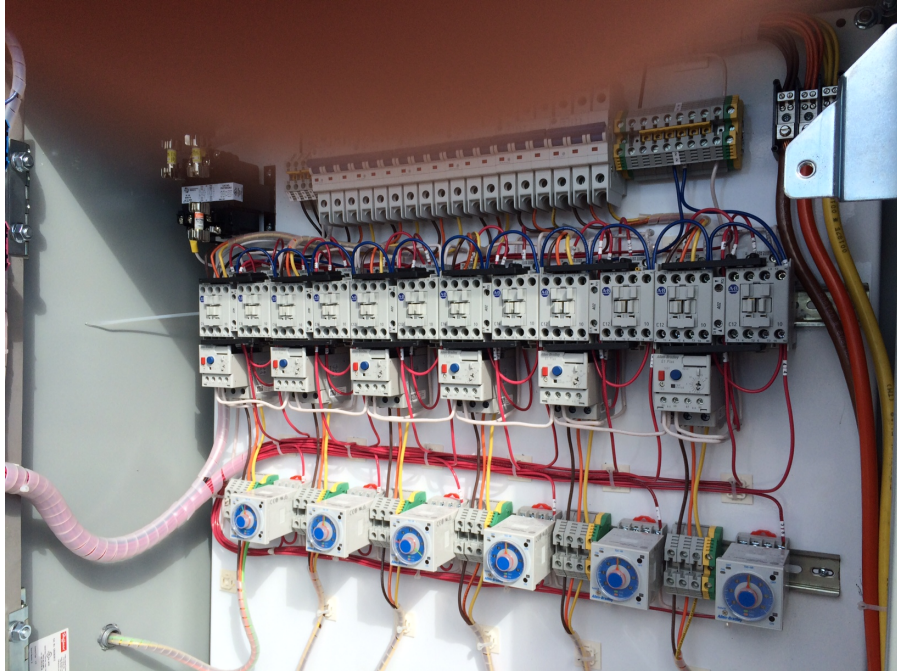
Goal: Change from Windrow to Aerated Static Pile for wintertime operation.

Objective: Some offsite odor issues have been experienced during the past two years when inversions occur during the wintertime. The objective of installation of aerated static piles is to reduce odor releases by eliminating mixing events during this critical time frame.

Report: District Staff have constructed and implemented an aerated static pile system for operations during fall, winter and spring time frame. This system will allow for compliance with 40 CFR Part 503 requirements and reduce odors. While we are sure odors will be reduced we are uncertain if the reduction is sufficient to meet concerns of neighbors. Following are pictures of the installation:



ASP Control Panel



ASP Timer Controls



Blower Housing



ASP Blower and Piping

Operations of ASP: Included are the following documents relating to the ASP process:

1. SOP #12 Class A ASP Compost
2. ASP Pile Temperatures Record

EMS Goal – Measuring Cost Savings: Based on financial records the cost for construction of the ASP system was about \$45,000 for materials with Staff handling constructing the installation. If this system works in conjunction with the odorant addition, the savings to the District will be about &2.5 million to avoid construction of thermal drying.

**Central Davis Sewer District
Biosolids EMS**

**Standard Operating Procedure #012
Class A EQ Composting – Aerated Static Piles**

Created/Approved: *October 12, 2014* **By:** *Leland Myers, District Manager*
Date issued: *October 12, 2014*
Date last reviewed: *October 12, 2014* **By** *Leland J. Myers*

Objective: The objective of this SOP is to insure adequate aerated static pile composting operation which produces compost meeting the exceptional quality, Class A pathogen standard and a Vector Attraction Reduction (VAR) standard. In order to do this, 40 CFR Part 503 Table 3 metal concentrations and aerated static pile compost time, temperature, and turning requirements must be met. Specifically using a the static aerated pile composting method, the temperature of the sewage sludge is maintained at 55 degrees Celsius or higher for three days, In addition, in order to meet VAR requirements the aerated static pile shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40 degrees Celsius and the average temperature of the sewage sludge shall be higher than 45 degrees Celsius.

Operating Requirements:

Wood Waste – Admixture Preparation

1. The District receives construction wood waste and yard waste periodically throughout the year. The wood waste and yard waste will be visually monitored for objectionable materials. Examples of objectionable materials are steel or hard objects which may harm the hammers(excludes nails) , plastics or other “garbage type material which does not readily biodegrade, root balls from trees, and wood waste such as railroad ties which may be spiked with steel objects or contain treatments which may impact the compost quality. Should objectionable materials be identified by any staff member, the District Manager should be immediately notified in order to require the supplier of the wood waste to take immediate action to eliminate objectionable items. If the supplier does not correct the problem, the supplier should be stopped from further delivery of waste materials.
2. Periodically throughout the year, the District will grind the wood waste in an in-line grinder or similar piece of equipment. Grinding is normally done by District staff, utilizing District equipment. However, in

emergency situations the District may use a contractor to complete the grinding. The grinding operation shall conform to SOP #9.

3. During the screening of finished compost, oversized compost wood chips will be stored and may be periodically re-ground in the tub grinder. Recycled wood chips will be returned to the composting process.
4. Fresh and recycled wood chips shall be used in the composting process.

Compost Preparation

1. Hooking the piping system up to the blower and covering the aeration pipe with wood chips two feet on each side of the pipe and one foot over the pipe prepares the aerated static pile bed.
2. Dewatered biosolids from the belt presses shall be mixed with wood chips in the truck mounted mixer. QuikSoil 2900 may be added to the mixture in accordance with SOP #11. If the truck mixer is out of service, a loader can be used as backup for the mixing process. Wood chips and compost are mixed in an approximate 3:1 ratio by volume or 1:1 by weight. This volume ratio may be adjusted by the operator based on current ambient temperatures, moisture of the wood waste, and other salient factors. Generally, adjustments are based on operator experience and the exact mix is not important.
3. About two weeks of production are combined into a single pile. Each day's production is stacked in the pile and capped with wood chips for odor control. Generally piles are about 20 feet at the base and 12 ft tall at the top and are in a triangular shape. A two week pile is about 120 ft long and there are six piles in the aerated static pile area. Actual pile dimension is flexible based on ambient conditions and operator judgment. At the end of the two week period, the aeration blowers are started and operated at an approximate ratio of 10 minutes on and 50 minutes off. Each pile is assigned a unique pile number by the operator responsible for records and the start date is recorded in the compost pile records. The pile number is normally the start date of the pile in month/day/year convention. A records sheet is prepared for each pile showing the pertinent information including pile temperatures during the fourteen-day regulatory period.

Compost Regulatory Period

1. The regulatory period shall be at least 14 days. During this period the compost shall be monitored to insure regulatory compliance.
2. Pile temperatures are to be recorded on the pile record sheet daily by the operators. The recorded temperature shall be the average of one or more temperature readings taken by the operator. The number of readings shall be sufficient, in the opinion of the operator based on visual and other indicators, to be representative of the pile. Compost temperature readings

should be taken at least three feet below the pile surface and in locations representative of the entire pile.

3. Once the regulatory period has been met, the operator responsible for records shall cease to maintain pile records.

Compost Curing and Screening

1. Compost will, generally, be cured in the individual piles for an additional few weeks before being moved to the screening area for final curing.
2. Final curing will take an additional two to six months more or less until a stable viable product is produced. The operator shall use best professional judgment in curing times. Temperature, visual moisture content, and odors will be used as part of the judgment process.
3. After curing, finished compost shall be periodically screened to produce an acceptable final product. Screened compost will be stockpiled for distribution and marketing.

Rev #	Brief Description	Date
1	SOP Written	10/12/2014

**Central Davis Sewer District
Compost Pile # 141222**

Action Item	Date	Temperature		
		Time	Temperature	Operator Initials
Begin Pile Construction	Monday, December 22, 14			
Temperature Monitoring	Monday, December 29, 14			
	Tuesday, December 30, 14			
	Wednesday, December 31, 14			
	Thursday, January 1, 15			
	Friday, January 2, 15			
	Saturday, January 3, 15			
	Sunday, January 4, 15			
	Monday, January 5, 15			
	Tuesday, January 6, 15			
	Wednesday, January 7, 15			
	Thursday, January 8, 15			
	Friday, January 9, 15			
	Saturday, January 10, 15			
	Sunday, January 11, 15			
	Monday, January 12, 15			
	Tuesday, January 13, 15			
	Wednesday, January 14, 15			
	Thursday, January 15, 15			
	Friday, January 16, 15			
	Saturday, January 17, 15			
	Sunday, January 18, 15			
Pile Complete	Monday, January 19, 15			

Central Davis Sewer District

2014 Biosolids EMS Goals Report

Goal Number: 2

Outcome Area: Relations with interested parties

Goal: The District had several complaints for odors at the beginning of 2014, due to atmospheric inversion conditions. The goal is to reduce odors through the addition of an odor reduction agent

Objective: Immediate action to reduce odor in the 2014 – 2015 winter with the addition of a composting odor reduction agent.

Report: District Staff have constructed and implemented an odorant addition system, procured odorant product call QuikSoil 2900 and began addition of odorant to mixer truck. Following are pictures of the installation:



Blend Tank and Metering Pump



Blend Tank and Distribution Piping

Operations of the Odorant System: Included are the following documents relating to the QuikSoil 2900 odor reduction agent process:

1. SOP #11 Odor Reduction Agent Addition
2. QuikSoil 2900 MSDS Sheet

EMS Goal – Measuring Cost Savings: Based on financial records the cost for construction of the odor reduction agent system is \$7,000 for materials with Staff constructing the installation. If this system works in conjunction with the aerated static piles, the savings to the District will be about \$2.5 million to avoid construction of thermal drying.

**Central Davis Sewer District
Biosolids EMS**

**Standard Operating Procedure #011
Odor Reduction Agent Addition**

Created/Approved: *October 12, 2014* **By:** *Leland Myers, District Manager*
Date issued: *October 12, 2014*
Date last reviewed: *October 13, 2014* **By:** *Myers and Staff*
Date last revised: *October 12, 2014* **By:** *Leland Myers, District Manager*

Objective: The objective of this SOP is to define procedures for adding QuikSoil 2900 to the aerobic biosolids and wood chips mixture as part of the composting process. This amendment will be added to the fresh compost when it is anticipated that odors may be a problem to neighbors. As guidance only, this addition period will generally be between mid October and mid March. This is based on regular climatic conditions and may be adjusted at the operators discretion.

Operating Requirements:

QuikSoil 2900 Addition

1. Operators involved in the chemical addition should use the standard safety precautions for all plant activities. In addition, during transfer and blending of the concentrated QuikSoil 2900 rubber gloves are also recommended.
2. The following steps should be followed in adding concentrated QuikSoil 2900 to the day tank:
 - a. The blend tank should be mostly empty with about 12-inches of blended liquid remaining. Water should be added to the blend tank until the tank is almost full. Be careful to monitor for excessive foam.
 - b. Using the transfer pump. Approximately 6.25-inches of concentrate from the drum should be pumped into the blend tank. The quantity transferred is about 10 gallons. This quantity can be adjusted if the blend tank is fuller when the transfer takes place.
 - c. After transfer of the concentrate the blend tank should be topped off and the water and concentrate stirred with the mixer for about 10 minutes. If it appears that the blended liquid is separated, the mixing process can be repeated.
3. Addition of the blended liquid to the mixer truck should follow the following steps:
 - a. Ground wood waste should be added to the mixer truck and the truck placed under the hopper discharge chute.

- b. The mixer in the truck box should be turned on and about 3,800 pounds of dewatered aerobic biosolids should be added to the mixer truck.
- c. During the mixing process, approximately 5 gallons of blended liquid QuikSoil 2900 should be added. Using the metering pump at 100% of speed, the addition of 5 gallons should take 2 minutes and 10 seconds. The metering pump should then be shut off and the addition line will be allowed to drain for another 45 seconds.
- d. After addition of the QuikSoil 2900 and the draining of the feed line, the hopper should be closed and the mixer truck will have approximately 4,000 pounds of aerobic biosolids in the mixer truck.
- e. The mixer truck can then be mixed and emptied as per the composting SOP.

No documentation is needed to substantiate compliance with this SOP.

Rev #	Brief Description	Date
1	Various historic actions prior to 10/9/2011	10/12/2014



Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)

Form Approved

OMB No. 1218-0072

Manufacturer's Name GOC® Technologies	Emergency Telephone Number (812) 334 2413
Address : 3910 W. Roll Avenue Bloomington, IN 47403 USA	Telephone Number for Information (812) 334 2413
QuikSoil® 2900	Date Prepared : Jan, 2014
Specifically for use as an additive to biosolids for odor control	Signature of Preparer

Section I – Physical/Chemical Characteristics

Boiling Point	100 C 212 F	Specific Gravity (H ₂ O = 1)	1.123 gr/ml
Vapor Pressure (mm Hg.)	15.7	pH	3.6 ± 0.5
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	0.893
Solubility in Water 100%			
Appearance and Odor dark chocolate brown liquid: organic smell, acetic acid odor, with light detergent			

Section II - Hazard Ingredients/Identity Information

Hazardous Ingredients	None	Eco-toxic ingredients	None
Alcohols	None	Carcinogens	None
Nonylphenol Ethoxylates	None	Benzaldehydes	None
This product contains no ingredients listed as toxic or hazardous under 313 40 CFR 327 SARA; 40 CFR 117.302 CERCLA, or TSCA (Toxic Substances Control Act).			
Basic formulation consists of amino acids, glacial acetic acid, humic acid, calcium, magnesium, iron sulfate, ribose, saponin, and sarsaponin. All other ingredients are proprietary.			

Section III - Fire and Explosion Hazard Data

Special Fire-fighting Procedures : NONE No LEL and UEL Limits have been established by OSHA or NIOSH.	Unusual Fire and Explosion Hazards : NONE Extinguishing Media: NA (Vaporization occurs prior to flashing)
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Section IV - Reactivity and Health Hazard Data

Route(s) of Entry:	Inhalation? yes	Skin? No	Ingestion? Yes
Health Hazards (<i>Acute and Chronic</i>) : NONE			
Signs and Symptoms of Exposure : Inhalation of the concentrate at close range may cause eye, nose, and throat irritation. Do not inhale concentrate from close range. Prolonged skin contact may cause dryness. Direct contact may irritate eyes. Ingestion of liquid may cause gastric disruption and indigestion.			
Medical Conditions Generally Aggravated by Exposure : Sensitive Skin			
Carcinogenicity: NONE	NTP? NONE	IARC Monographs? NO	OSHA Regulated? NO
Emergency and First Aid Procedures :			
Eyes : Flush thoroughly with fresh water; get medical attention if irritation persists.			
Skin : Flush with fresh water; remove any contaminated clothing.			
Ingestion : Give milk or water; induce vomiting; get medical attention if indigestion is severe or if amount ingested exceeds 100 milliliters.			

Section V - Precautions for Safe Handling and Use

If Material is Released or Spilled : Flush small amounts to drain. Collect large amounts and return to container.
Waste Disposal Method: Use until amount in container is minimal. Empty container to drain. Then triple rinse container with water.
Precautions in Handling and Storage: Do not freeze. If product freezes, contact manufacturer for corrective instructions.
Discharge to waterways: 2900 does not increase BOD and is not expected to have any adverse impact on water quality or water flora and fauna.

Section VI– Control Measures

Eye Protection : Safety glasses when handling concentrate.		
Protective Gloves : None required, recommended when handling concentrate..		
Respiratory Protection : Recommended when handling concentrate.		
Other Protective Clothing : None required.		
Ventilation	Local Exhaust : Normal air dilution	Special Ventilation: None required

Section VII– Shipping and Transport

DOT Special Requirements : None
UPS, or Postal Safe : Yes
UN Number : Not regulated or included as mineral and protein supplement
Hazard Class: Non-hazardous; Flammability 0, Toxicity 0, Body Contact 1, Reactivity 0

Section VIII– Classification Ratings

Flammability	0
Toxicity	0
Body Contact	1
Reactivity	0

Section IX– Recommended Usage

QuikSoil® 2900 is specifically designed for use as an additive to biosolids for the control of odors.
QuikSoil® 2900 should be diluted with water as to facilitate distribution. No specific dilution rate is essential. Water functions only as a carrier and distribution agent.
QuikSoil® 2900 concentrate should be applied at no less than 3 ounces per wet ton of biosolids and no greater than 9 ounces per wet ton of biosolids.
No other usage is recommended or implied.

Central Davis Sewer District

2014 Biosolids EMS Goals Report

Goal Number: 3

Outcome Area: Environmental Performance

Goal: Replace screen at West Farmington Pump Station to control and abate foreign objects from a large jail.

Objective: The existing screen at the West Farmington Pump Station is failing allowing foreign materials to escape from the pump station and contaminate biosolids at the wastewater treatment plant. The objective of this goal will be to replace the screen and associated equipment.

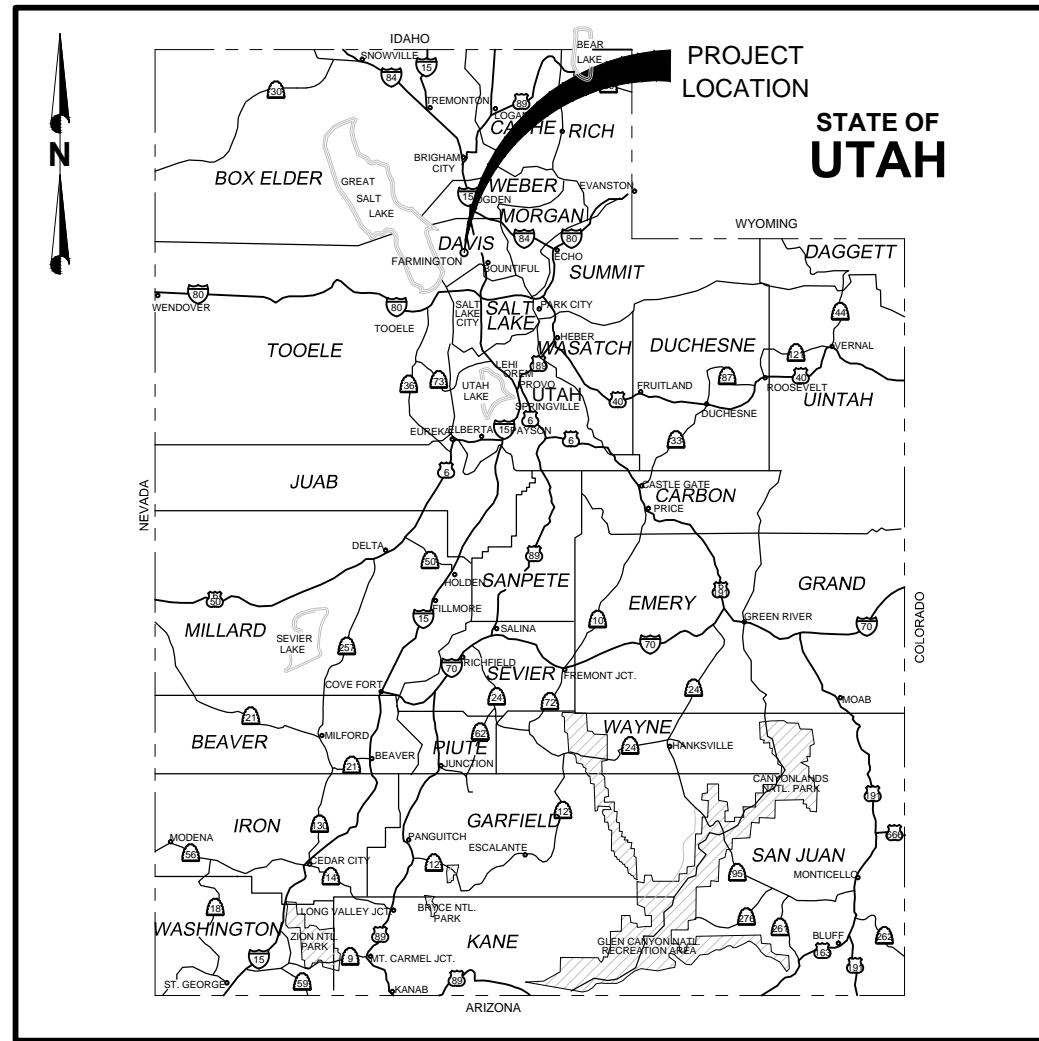
Report: The District engaged Forsgren Engineering to assist in the replacement of the West Farmington Screen and other pump station upgrades. Initial actions included the development of specifications for the replacement screen and a new standby power generator. The screen specs were used in the a request for quotation for supply of a screen. Bids were received and the contract was awarded to Huber Technologies. Specs for the generator were submitted to the approved State of Utah supplier for standby power generators and a generator was evaluated and procured. The delivery time for the screen was six months and for the generator was 5 months. As such, neither of these items will arrive in time for installation in 2014. Hence, this goal will continue into 2015. In addition to the screen and generator, the design engineer is still working on an upgrade to the building. This will be started once the screen is onsite and replacement can be done expeditiously.

EMS Goal – Measuring Cost Savings: Savings associated with this goal are not yet quantifiable as the goal will be completed in 2015.

WEST FARMINGTON PUMP STATION

PUMP STATION UPGRADES

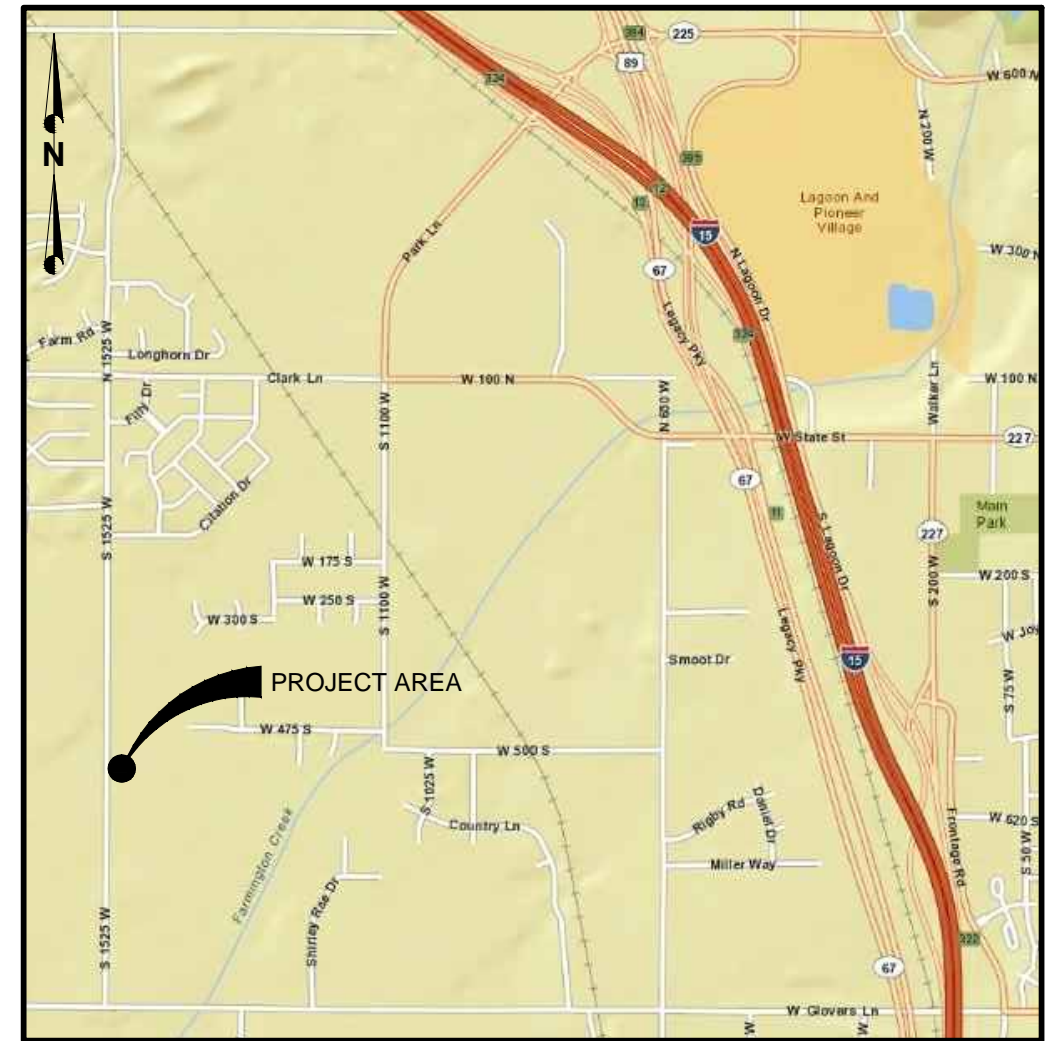
CENTRAL DAVIS COUNTY SEWER DISTRICT
FARMINGTON, UTAH



PROJECT LOCATION MAP

N.T.S.

SHEET INDEX	
NO.	TITLE
G-01	COVER SHEET



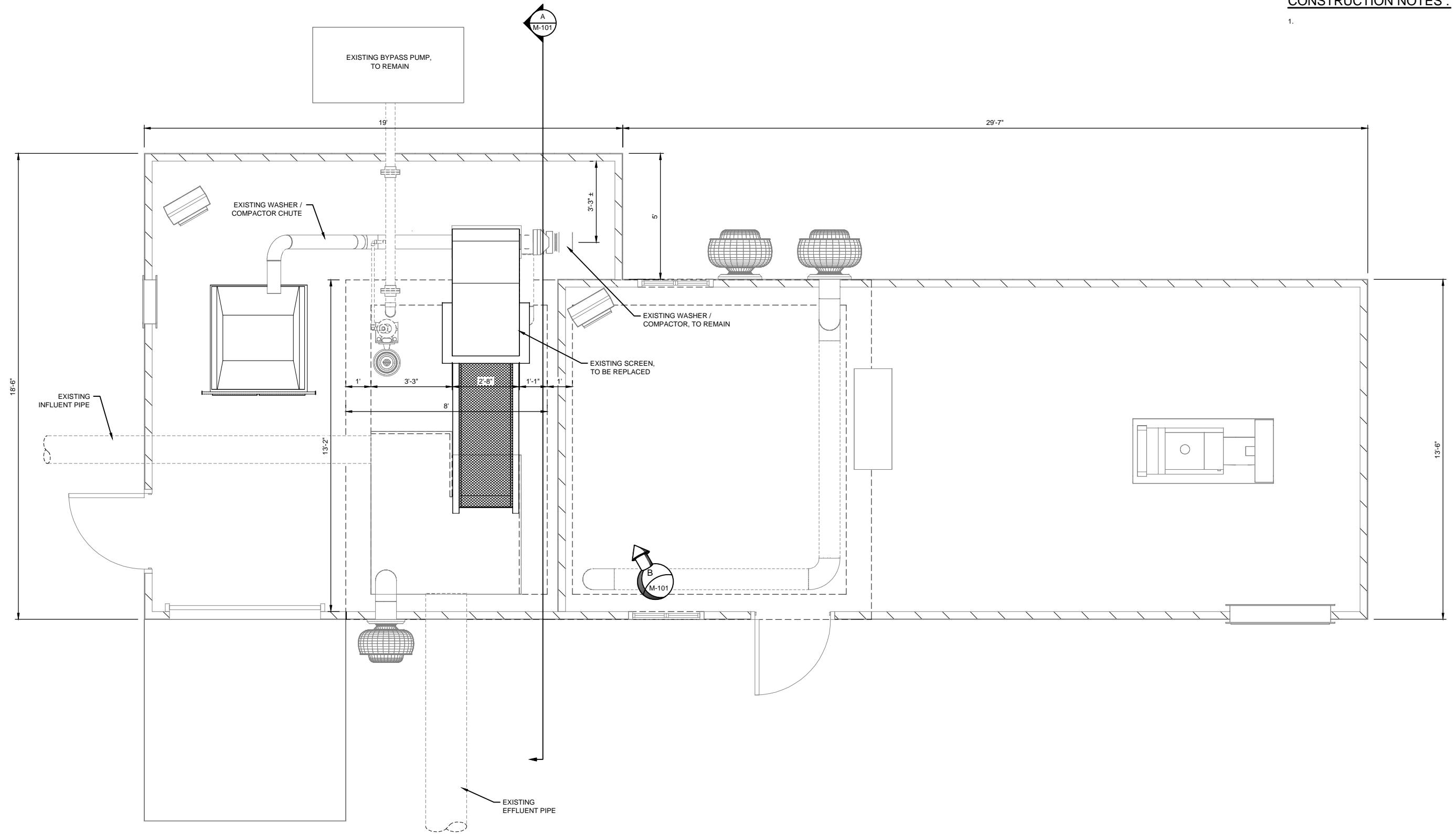
VICINITY MAP

N.T.S.

FA PROJECT NO. 05-14-0039
MAR. 2014

PRELIMINARY
DRAWING
NOT FOR
CONSTRUCTION

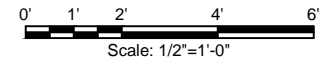
FORSGREN
Associates Inc.
370 EAST 500 SOUTH, STE 200, SALT LAKE CITY, UT 84111
PH: 801.364.4785 FAX: 801.364.4802



EXISTING PUMP STATION - MECHANICAL PLAN

SCALE: 1/2" = 1'-0"

GRAPHIC SCALE



30% DESIGN

P:\2014\05-14-0039 West Farmington Pump Station\CAD\Sheets\07-Mechanical\05140039_M-100.dwg - - - - 3/21/2014 10:57 AM

NO.	REVISIONS	BY	DATE

DRAWN N. PATTERSON
 DESIGNED N. PATTERSON
 APPROVED J. BROOME
 QA QA/QC

ATTENTION
 LINE IS 2 INCHES
 AT FULL SIZE
 (IF NOT 2" SCALE ACCORDINGLY)

**PRELIMINARY
 DRAWING
 NOT FOR
 CONSTRUCTION**

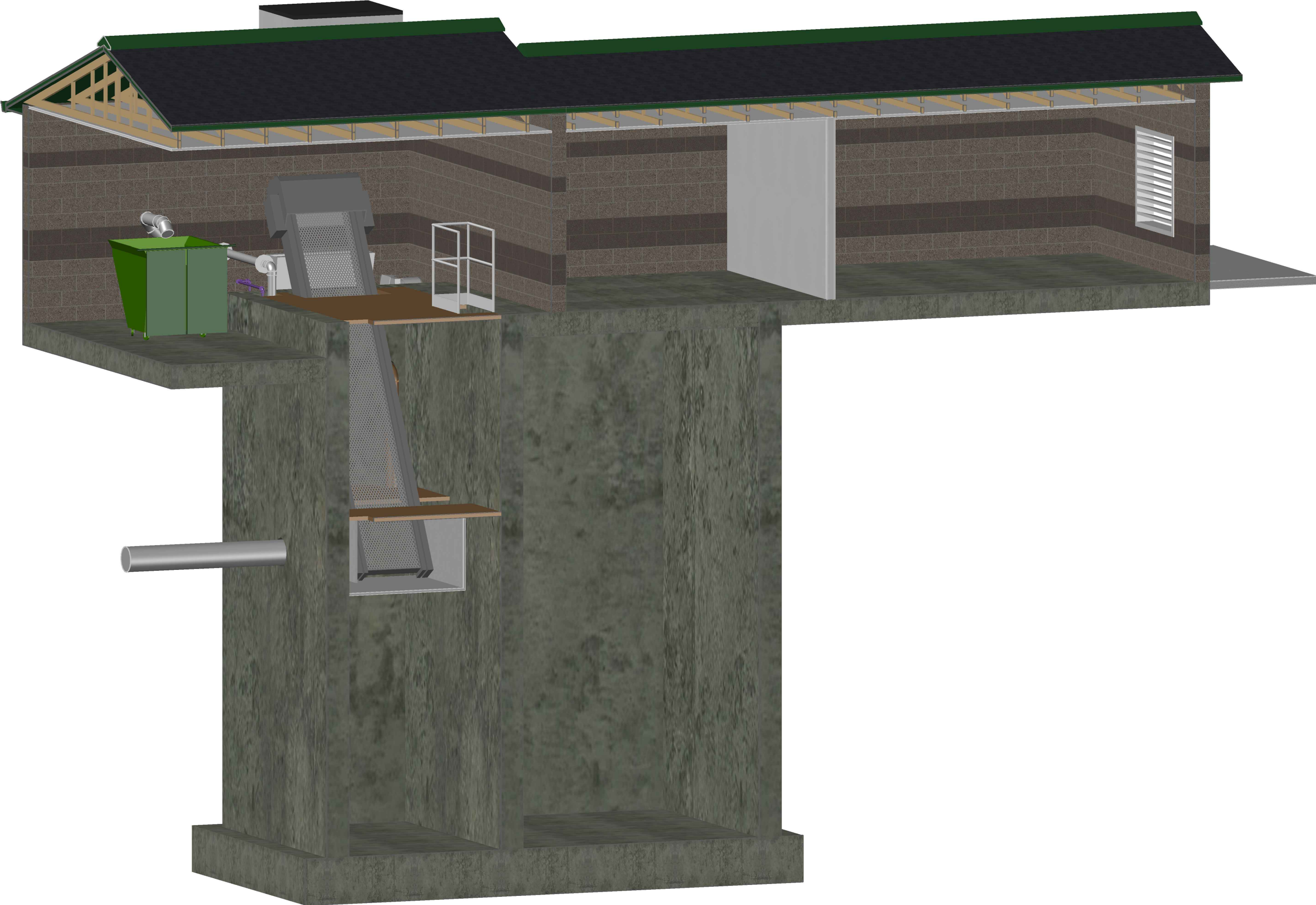
CENTRAL DAVIS SEWER DISTRICT
 FARMINGTON, UTAH

FORSGREN
Associates, Inc.
 370 EAST 500 SOUTH, #200 SALT LAKE CITY, UT 84111
 PH: 801.364.4785 FAX: 801.364.4802

WEST FARMINGTON PUMP STATION

EXISTING MECHANICAL - PLAN

PROJECT NO: 05-14-0039
SHEET NO: M-100
DATE: MAR. 2014
PAGE NO: XX OF XX



PURCHASE ORDER

Central Davis Sewer District

P.O. # 2014-400
DATE: JULY 14, 2014

2200 So. Sunset Drive, Kaysville, Utah 84037
Phone 801-451-2190 Fax 801-451-6836
ljmyers@cdsewer.org

VENDOR Huber Technology
c/o Goble Sampson Associates
3500 So. State Street
Salt Lake City, Utah 84115
801-268-8790

SHIP TO Leland Myers
Central Davis Sewer District
2200 So. Sunset Drive
Kaysville, Utah 84037
801-451-2190

SHIPPING METHOD	SHIPPING TERMS	DELIVERY DATE
Ground	Included in Bid	By January 1, 2015

QTY	ITEM #	DESCRIPTION	UNIT PRICE	LINE TOTAL
1	1	HUBER Step Screen Series Model SSV 5300x476x6		
1	2	Control Panel		
1	3	Spare Parts		
1	4	Manufacturer's Service		
		Total Price		\$110,522.57
subtotal		\$110,522.57		
				SALES TAX
				0
				TOTAL
				\$110,522.57
				TOTAL
				\$110,522.57

Accepted By Huber Technology: _____

1. Please send one copy of your invoice referencing this PO number.
2. This order is subject to the Conditions of Purchase contained in Attachment 1. These supersede Vendor supplied Terms.
3. This Order is in accordance with the vendor proposal contained in Attachment 2 and specification in Attachment 3.
4. Send all correspondence to:
Leland Myers
2200 So. Sunset Drive
Kaysville, Utah 84037
Phone 801-451-2190 Fax 801-451-6836



x

Authorized by

7/14/2014

Date

PURCHASE ORDER

Central Davis Sewer District

P.O. # 2014-403
DATE: AUGUST 17, 2014

2200 So. Sunset Drive, Kaysville, Utah 84037
Phone 801-451-2190 Fax 801-451-6836
ljmyers@cdsewer.org

VENDOR EC Power Systems
c/o Kevin Jorgensen
3738 West 2340 South
Layton, Utah 8484041

SHIP TO Leland Myers
Central Davis Sewer District
2200 So. Sunset Drive
Kaysville, Utah 84037
801-451-2190

SHIPPING METHOD	SHIPPING TERMS	DELIVERY DATE
Ground	Included in Bid	By December 1, 2014

QTY	ITEM #	DESCRIPTION	UNIT PRICE	LINE TOTAL
1	1	Kohler 150 REOZJF Standby Generator, 480 V 3-phase ABOVE PER Offer 0026064286 The Above in accordance with State Cooperative Contract #MA2074		\$30,264.75
		Total Price		\$30,264.75
SUBTOTAL				\$30,264.75
SALES TAX				0
TOTAL				\$30,264.75

- 1. Please send one copy of your invoice referencing this PO number.
- 2. This Order is in accordance with the vendor proposal.
- 3. Send all correspondence to:
Leland Myers
2200 So. Sunset Drive
Kaysville, Utah 84037
Phone 801-451-2190 Fax 801-451-6836



x

8/17/2014

Authorized by

Date

Central Davis Sewer District

2014 Biosolids EMS Goals Report

Goal Number: 4

Outcome Area: Regulatory Compliance

Goal: Complete a Letter of Map Amendment with FEMA to remove composting area from flood plain.

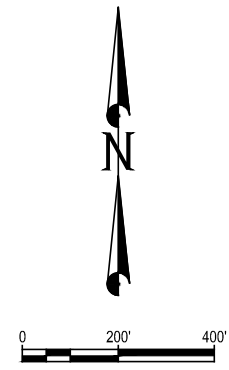
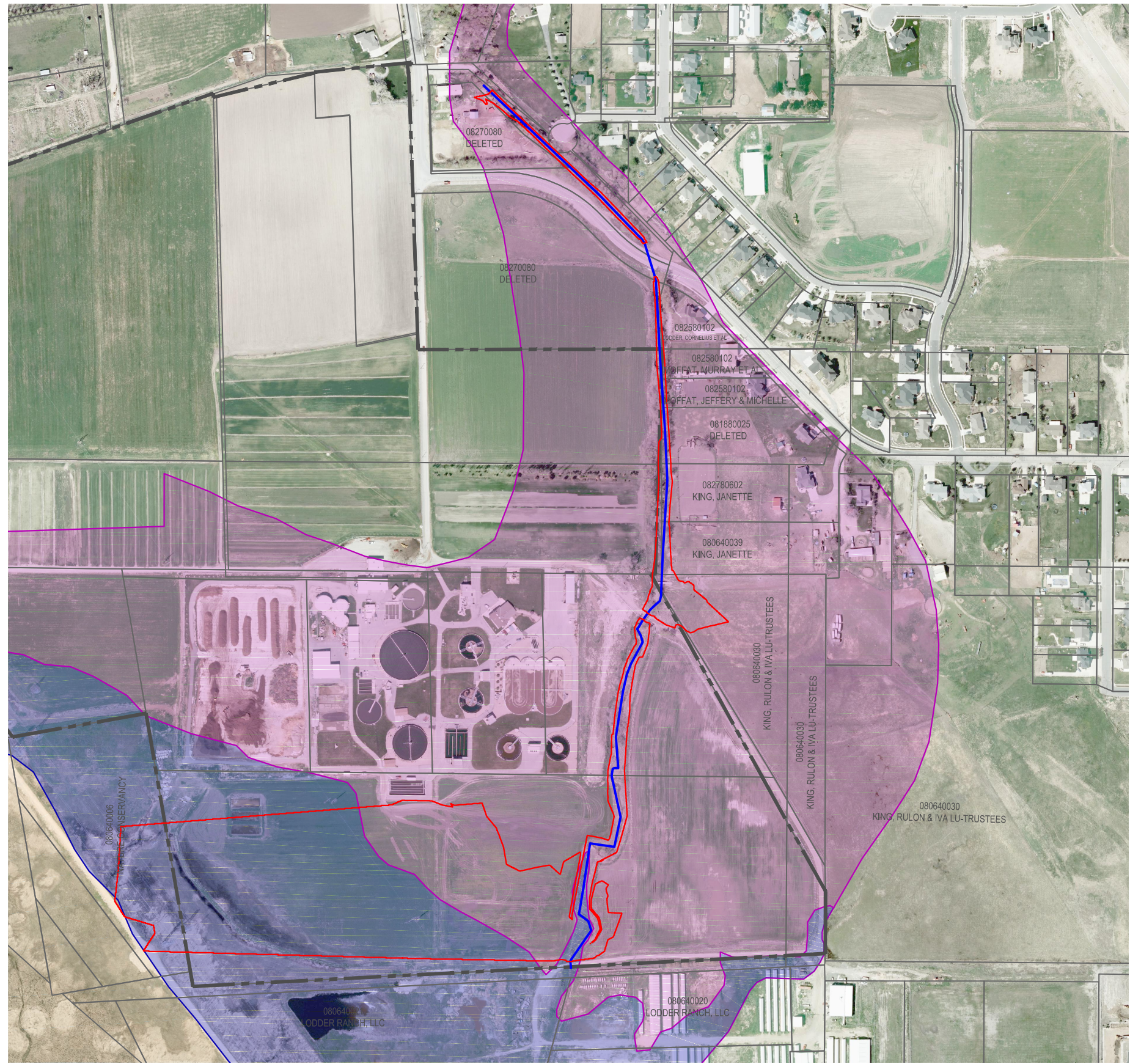
Objective: The composting area has been deemed by FEMA to be in the flood plain. This goal will be to take necessary steps to modify the flood channel and develop a letter of map amendment to remove the composting are from the flood plain designation

Report: The District engaged CRS Engineers to assist in the preparation of a letter of map amendment for areas of the treatment plant site that are considered to be in the flood plain. Initial review determined that some bank modifications were required and replacement of a culvert would be necessary. District staff reviewed the proposed modifications and responded to the engineer with additional stream bank modifications, which eliminated the need for the culvert replacement. District staff completed the stream bank modifications at a cost of about \$13,000 and the consultant prepared the letter of map amendment for submittal. The map amendment was submitted, FEMA responded with additional information needed, and this information was also submitted. Included are the following documents associated with this goal:






1. Map showing the area being removed from the flood plain.
2. Initial Letter of Map Amendment submittal.
3. FEMA request for additional information.
4. Acknowledgement of receipt and consideration.

The final approval of the map adjustment may require an additional six to none months for FEMA final approval. Cost for the consulting work on this goal has been about \$35,000.

EMS Goal – Measuring Cost Savings: The savings associated with this goal are associated with avoided costs for moving existing composting facilities. While FEMA could probably not force the District to move existing facilities they could stop the future expansion of needed facilities in the original identified flood plain. The map amendment removes all future expansion from the flood plain. Costs associated with this land not being removed from the flood plain could be several million dollars for an alternative site.



LEGEND

	FLOODPLAIN ZONE A
	FLOODPLAIN ZONE AE
	FLOODPLAIN ZONE VE
	CSDS PROPERTY BOUNDARY
	CURRENT FLOODPLAIN

NO.	REVISION	DATE


IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

© 2010

PROJECT: P. HIRST
 PROJECT NUMBER: M. COLLIER
 CHECKED BY: M. COLLIER
 DRAWN BY: M. MORTENSEN
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: MARCH 4, 2014

CALDWELL RICHARDS SORENSEN



ANSWERS TO INFRASTRUCTURE

FARMINGTON OFFICE:
 PO Box 280
 160 S MAIN, STE. 200
 FARMINGTON, UTAH 84025
 PHONE: 801.939.5565
 FAX: 801.359.4272
 www.crsengineers.com

CENTRAL DAVIS SEWER DISTRICT
 CSDS FLOODPLAIN

KAYSVILLE

UTAH

PROJECT NUMBER	12051F	
SHEET	1	OF 1
SHEET NUMBER	GI-001	

CDSD Baer Creek LOMR
2200 South Sunset Drive
Kaysville, Utah

May 2014



Table of Contents

Form 1 – Overview & Concurrence Form Section 1

Form 2 – Riverine Hydrology & Hydraulics Form..... Section 2

 Hydrologic Analysis Summary

 Exhibit 1 – Limits of Study

 CHECK-RAS Commentary

Project Narrative Section 3

Topographic and Cross Section Exhibits Section 4

 Floodplain/Topographic Exhibit

 Floodplain with Cross Sections Exhibit

Annotated DHS-FEMA FIRM Section 5

Payment Fee Review Section 6

U.S. DEPARTMENT OF HOMELAND SECURITY
 FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM

*O.M.B No. 1660-0016
 Expires February 28, 2014*

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

- CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301	City of Katy	TX	48473C	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
490046	City of Kaysville	UT	49011C	0239E	06/18/07

2. a. Flooding Source: Baer Creek

- b. Types of Flooding: Riverine Coastal Shallow Flooding (e.g., Zones AO and AH)
- Alluvial fan Lakes Other (Attach Description)

3. Project Name/Identifier: CDS Baer Creek

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> Physical Change | <input checked="" type="checkbox"/> Improved Methodology/Data | <input type="checkbox"/> Regulatory Floodway Revision | <input type="checkbox"/> Base Map Changes |
| <input type="checkbox"/> Coastal Analysis | <input checked="" type="checkbox"/> Hydraulic Analysis | <input type="checkbox"/> Hydrologic Analysis | <input type="checkbox"/> Corrections |
| <input type="checkbox"/> Weir-Dam Changes | <input type="checkbox"/> Levee Certification | <input type="checkbox"/> Alluvial Fan Analysis | <input type="checkbox"/> Natural Changes |
| <input checked="" type="checkbox"/> New Topographic Data | <input type="checkbox"/> Other (Attach Description) | | |

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

- Structures: Channelization Levee/Floodwall Bridge/Culvert
 Dam Fill Other (Attach Description)

6. Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included? Yes Fee amount: \$5300
 No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm for Fee Amounts and Exemptions.

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Leland Myers		Company: Central Davis Sewer District	
Mailing Address: 2200 South Sunset Drive Kaysville, Utah 84037	Daytime Telephone No.: 801-451-2190		Fax No.:
	E-Mail Address: ljmyers@cdsewer.org		
Signature of Requester (required):		Date:	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title:		Community Name:	
Mailing Address:	Daytime Telephone No.:		Fax No.:
	E-Mail Address:		
Community Official's Signature (required):		Date:	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

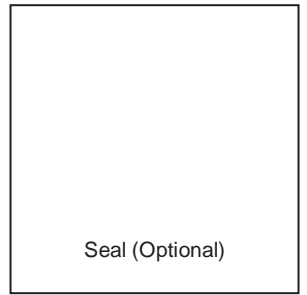
Certifier's Name: Matt Collier		License No.: 4939451-2202	Expiration Date: 03-31-15
Company Name: CRS Engineers		Telephone No.: 801-939-5565	Fax No.: 801-359-4272
Signature:	Date:	E-Mail Address: matt.collier@crsengineers.com	

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)

Required if ...

- | | |
|---|---|
| <input checked="" type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations |
| <input type="checkbox"/> Riverine Structures Form (Form 3) | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input type="checkbox"/> Coastal Analysis Form (Form 4) | New or revised coastal elevations |
| <input type="checkbox"/> Coastal Structures Form (Form 5) | Addition/revision of coastal structure |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6) | Flood control measures on alluvial fans |



U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

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DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Baer Creek

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

- Not revised (skip to section B) No existing analysis Improved data
 Alternative methodology Proposed Conditions (CLOMR) Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)
----------	-------------------------	---------------------	---------------

3. Methodology for New Hydrologic Analysis (check all that apply)

- Statistical Analysis of Gage Records Precipitation/Runoff Model → Specify Model: _____
 Regional Regression Equations Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? Yes No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit*	NA _____	NA _____	NA _____	NA _____
Upstream Limit*	NA _____	NA _____	NA _____	NA _____

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC RAS Version 4.1.0

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

<u>Models Submitted</u>	<u>Natural Run</u>		<u>Floodway Run</u>		<u>Datum</u>
Duplicate Effective Model*	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Corrected Effective Model*	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Existing or Pre-Project Conditions Model	File Name: 2014-02-27BaerCreek	Plan Name: Plan 01	File Name: _____	Plan Name: _____	_____
Revised or Post-Project Conditions Model	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____
Other - (attach description)	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	_____

* For details, refer to the corresponding section of the instructions.

Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information: Horiz. Datum:UT83-NF Vert. Datum: NAVD88

Source: Kaysville City/ CRS Engineers Date: _____

Accuracy: _____

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? Yes No
- a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
 - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.
- b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? Yes No
If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notifications can be found in the MT-2 Form 2 Instructions.
2. Does the request involve the placement or proposed placement of fill? Yes No
- If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.
3. For LOMR requests, is the regulatory floodway being revised? Yes No
- If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)
4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

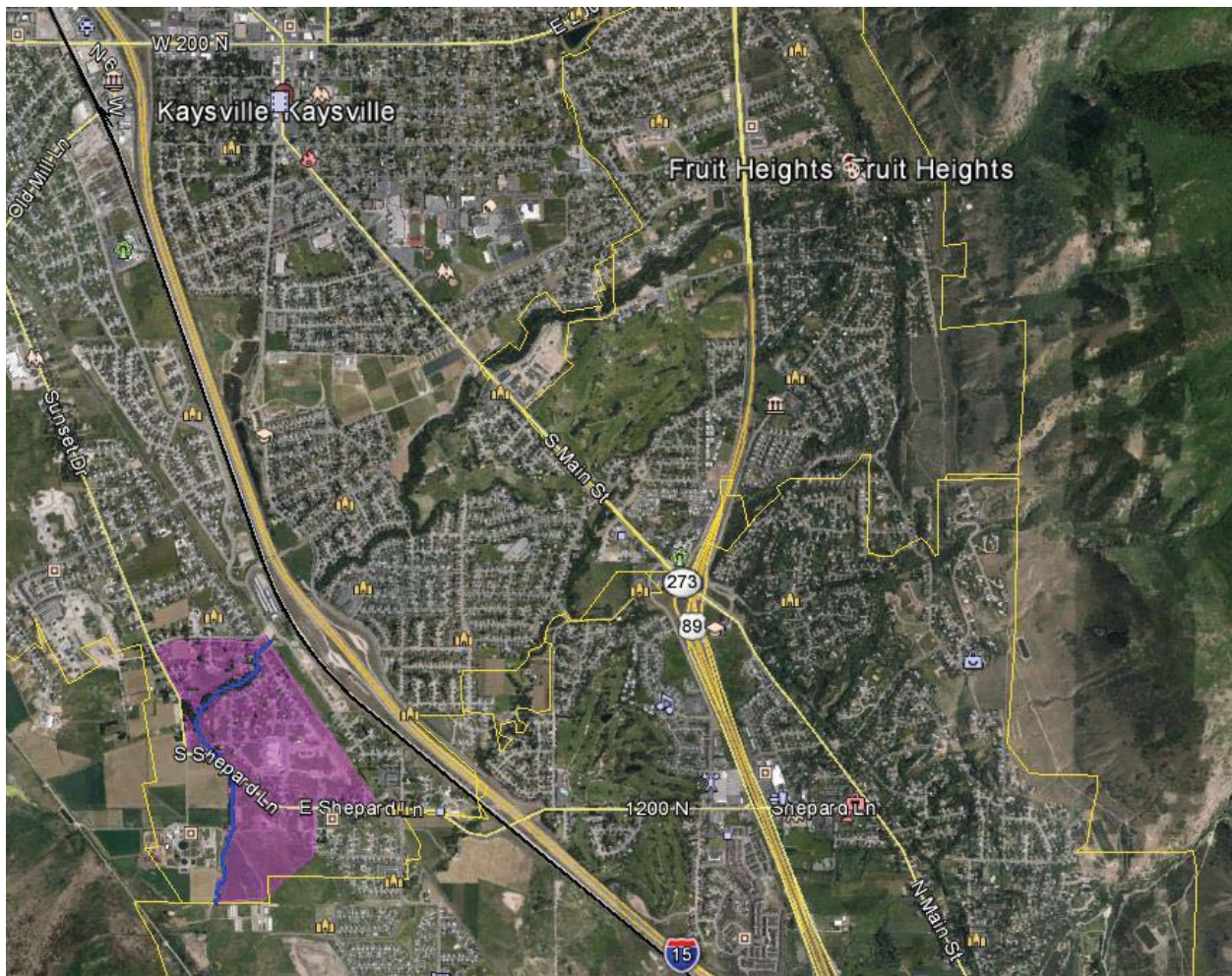
For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

Form 2 – Hydrologic Analysis Summary

Baer Creek is located in Davis County, Utah. It conveys snow melt and rainfall from the mountains (east) to the Great Salt Lake (west). Urban drainage is collected as the creek runs through the communities of Fruit Heights, Kaysville, and unincorporated Davis County. A detailed hydrologic analysis has been performed and recorded by FEMA for the upper portion of this watershed. The downstream limit for the previously studied area is the old D&RG railroad corridor, approximately 0.6 miles upstream from the area to be analyzed. FEMA reports indicate that the flow for the 1% chance flood (100-yr flood) at this location is 160 cfs.

In order to determine the 1% chance flood (100-yr flood) through the area to be studied, hydrologic calculations were performed for the area highlighted in pink below. Calculations and assumptions are shown on the following page. Based on these calculations, the 1% chance flood (100-yr peak flood) through the study area is 220 cfs. This flow will be used in the hydraulic modeling.



CSDS LOMR Hydrologic Calculations

Upper Basin (Above D&RG RR)

Q =	160	cfs	Per FEMA
Tc =	51.49	min	Kirpich Tc Formula
L =	34850	ft	
S =	0.14565	ft/ft	

$$t_c = 0.0078 \left(\frac{L^{0.77}}{S^{0.385}} \right)$$

Lower Basin (Below D&RG RR)

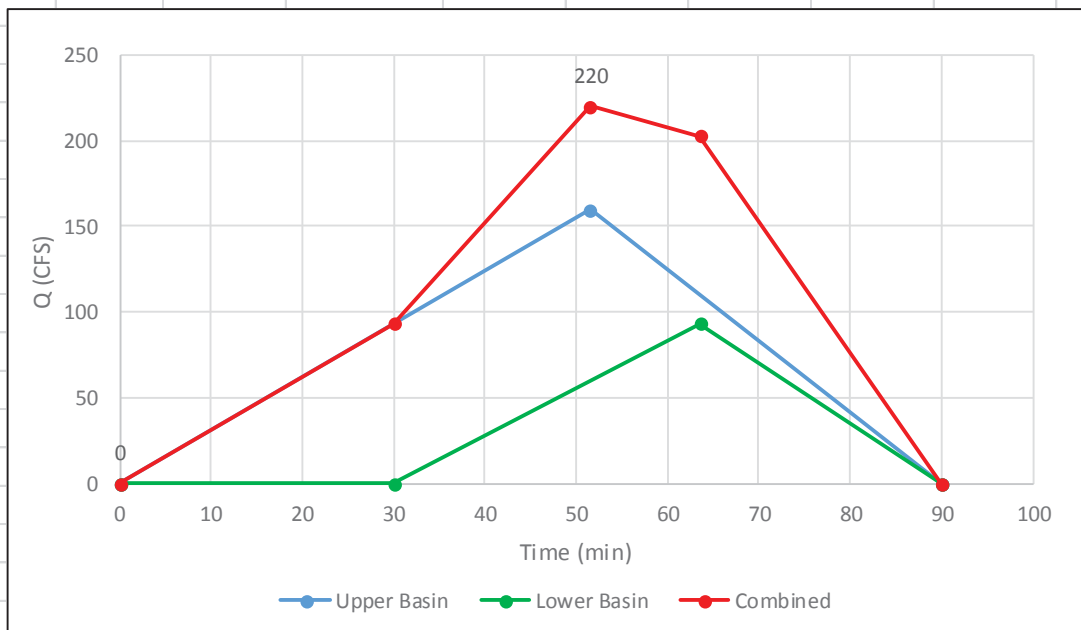
Q =	93	cfs	Rational Method (Q=CIA)
C =	0.25		Residential/Pasture (McCuen, Hydrologic Analysis and Design, Tbl 7-10)
I =	1.86	in/hr	60 minute duration, NOAA Atlas 14
A =	200	acres	Measured in Google Earth Pro
D =	60	minutes	
Tc =	33.55		Kirpich Tc Formula
L =	5566	ft	
S =	0.0113	ft/ft	

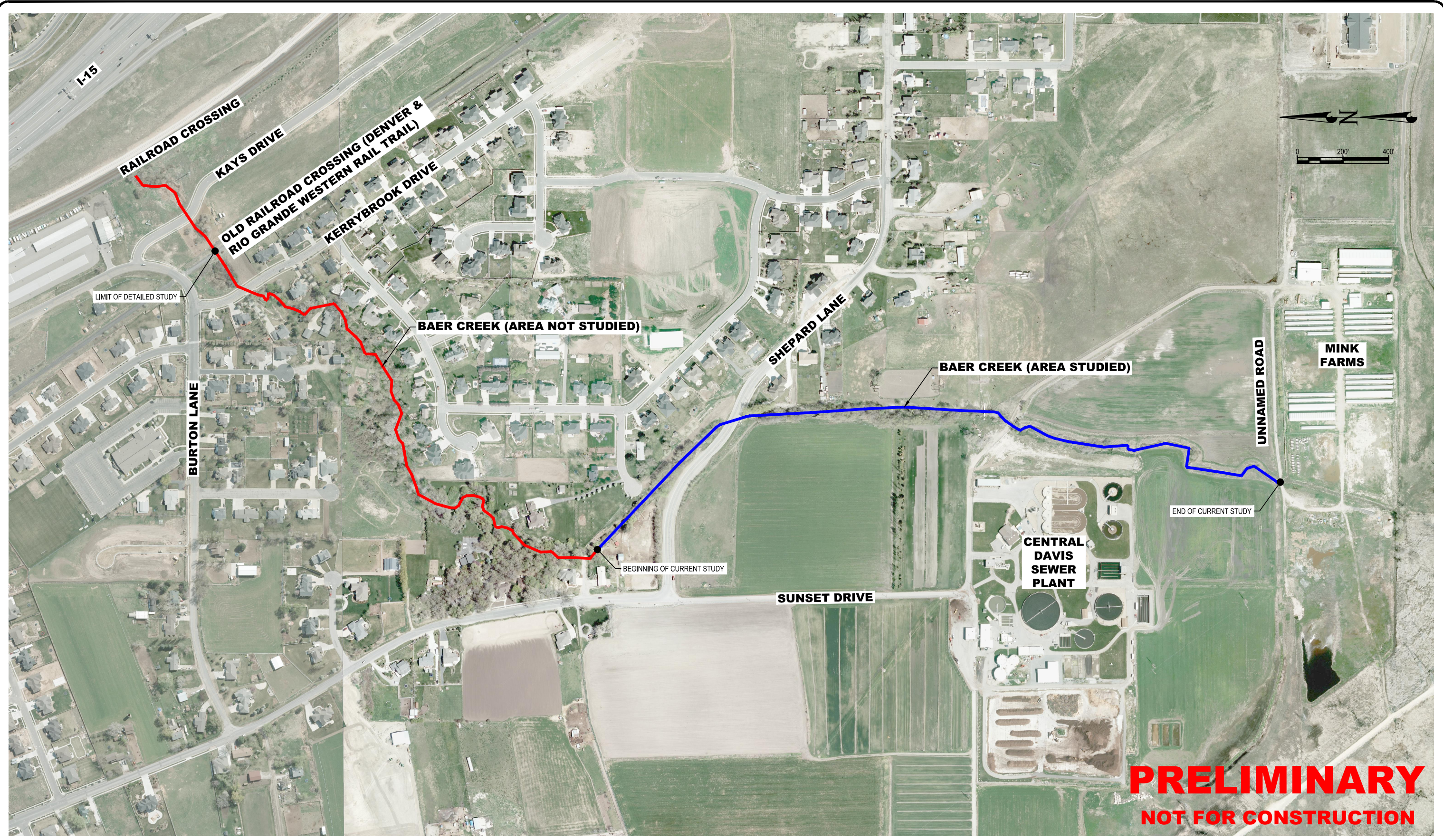
$$t_c = 0.0078 \left(\frac{L^{0.77}}{S^{0.385}} \right)$$

Assume 30 minute lag

Tc = 63.55

Upper Basin		Lower Basin		Combined	
Time	Q	Time	Q	Time	Q
0	0	0	0	0	0
51.49	160	30	0	30	93
90	0	63.55	93	51.49	220
		90	0	63.55	203
				90	0





PRELIMINARY
NOT FOR CONSTRUCTION

P:\2012\12051F CDSD FloodplainDrawings\CDSD STUDY EXTENTS.dwg, 3/24/2014 9:11:34 AM, b.jones

NO.	REVISION	DATE

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PROJECT MANAGER M. COLLIER
CHECKED BY M. COLLIER
DRAWN BY B. JONES
DRAWING SCALE AS SHOWN
ISSUE DATE 3-19-14

CALDWELL RICHARDS SORENSEN
ANSWERS TO INFRASTRUCTURE



FARMINGTON OFFICE:
PO Box 280
160 S MAIN, STE. 200
FARMINGTON, UTAH 84025
PHONE: 801.939.5565
FAX: 801.359.4272
www.crsengineers.com

CENTRAL DAVIS SEWER DISTRICT
CDSD FLOODPLAIN STUDY
EXHIBIT 1 - EXTENTS OF STUDY EXHIBIT

KAYSVILLE

UTAH

PROJECT NUMBER	12051
SHEET	1 OF 1
SHEET NUMBER	1



Form 2 – Section B – Hydraulics – 3. Review of Hydraulic Model – CHECK-RAS Commentary

Review of comment messages:

1. Message: BR LF 01 for cross section 2604.73
 - a. This bridge was overdesign to hold additional future flows. This error is ignored since the EGEL is below the MinTopRd and the MxLoCdU.
2. Message: CV LF 01 for cross section 2604.73
 - a. This culvert was overdesign to hold additional future flows. This error is ignored since the EGEL is below the MinTopRd and the MxLoCdU.
3. Message: BR PW 02 for cross section 1500
 - a. This bridge section is actually a pipe crossing over the ditch. Flow is intended to go over and around the pipe as needed. It is understood that this flow may occur under submerged pressure conditions. See Message: NT RS 02BUC for more details regarding the pipe crossing.
4. Message: ST GD 01US for cross section 1500
 - a. This bridge section is actually a pipe crossing over the ditch. This comment should be ignored because the pipe cross section does not actually cross the ground data but could not be shorted in the model due to this unique situation.
5. Message: ST GD 02BD for cross section 1500
 - a. This bridge section is actually a pipe crossing over the ditch. This comment should be ignored because the pipe cross section does not actually cross the ground data but could not be shorted in the model due to this unique situation.
6. Message: ST GD 02BU for cross section 1500
 - a. This bridge section is actually a pipe crossing over the ditch. This comment should be ignored because the pipe cross section does not actually cross the ground data but could not be shorted in the model due to this unique situation.
7. Message: ST IF 01S2L for cross section 1500
 - a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
8. Message: ST IF 01S2R for cross section 1500
 - a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
9. Message: ST IF 01S3L for cross section 1500
 - a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
10. Message: ST IF 01S3R for cross section 1500



- a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
11. Message: BR PW 02 for cross section 1366.43
 - a. It is understood that flow in this pipe is under submerged pressure and that flow may backup upstream and overtop this culvert.
12. Message: CV PW 01 for cross section 1366.43
 - a. It is understood that flow in this pipe is under submerged pressure and that flow may backup upstream and overtop this culvert.
 - b.
13. Message: CV LW 01 for cross section 1366.43
 - a. This culvert was adjusted as suggested in the Check RAS program. However the error continues to occur.
14. Message: CV PW 03 for cross section 1366.43
 - a. This culvert was adjusted as suggested in the Check RAS program. However the error continues to occur.
15. Message: ST DT 03 for cross section 1366.43
 - a. This geometry was evaluated and the data was deemed correct for the situation.
16. Message: BR PW 02 for cross section 764.62
 - a. This bridge section is actually a pipe crossing over the ditch. Flow is intended to go over and around the pipe as needed. It is understood that this flow may occur under submerged pressure conditions. See Message: NT RS 02BUC for more details regarding the pipe crossing.
17. Message: ST GD 02BD for cross section 764.62
 - a. This bridge section is actually a pipe crossing over the ditch. This comment should be ignored because the pipe width does not actually cross the ground data.
18. Message: ST GD 02BU for cross section 764.62
 - a. This bridge section is actually a pipe crossing over the ditch. This comment should be ignored because the pipe width does not actually cross the ground data.
19. Message: ST IF 07S1L for cross section 700.00
 - a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
20. Message: ST IF 07S1R for cross section 700.00
 - a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
21. Message: ST IF 07S4R for cross section 800.00



- a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.

22. Message: NT RS 02BUC for cross sections 764.62 & 1500

- a. This comment does not apply because these two bridges are not true bridges or culverts but low hanging pipes that cross perpendicular to the flow in the stream. Because of this the n value does not vary from the channels n value. The pictures below show the two “bridges” in question. The picture on the left is located at the station 1500 and the picture on the right is located at station 764.62.



23. Message: NT TL 01S2 for cross sections 754.62 & 1490

- a. The contraction and expansion coefficients do not need to be modified for these sections because the nearby bridges are not true bridges but pipes that cross perpendicular to the channel flow. See Message: NT RS 02BUC for more details regarding the pipe crossing.

24. Message: NT TL 01S3 for cross sections 775.92 & 1510

- a. The contraction and expansion coefficients do not need to be modified for these sections because the nearby bridges are not true bridges but pipes that cross perpendicular to the channel flow. See Message: NT RS 02BUC for more details regarding the pipe crossing.

25. Message: NT TL 01S4 for cross sections 800 & 1540

- a. The contraction and expansion coefficients do not need to be modified for these sections because the nearby bridges are not true bridges but pipes that cross perpendicular to the channel flow. See Message: NT RS 02BUC for more details regarding the pipe crossing.

26. Message: XS DC 02

- a. Due to the relatively small length of Baer Creek studied and lack of additional discharges (from other tributaries) a constant discharge was deemed appropriate for this model. See the hydrology explanation for further discharge information.

27. Message: XS CD 01

- a. The comment was investigated and the ineffective flow option was appropriate because this cross section was next to a culvert.

28. Message: XS DC 04L for cross sections 3200, 3100, 3000, 2900, 2400, 2300, 2200, 2100, 2000, 1900, 1800, 1700, 1265.17, 1200, 1100, & 1000



- a. The CHECK RAS program suggested that cross sections be placed between the designated cross sections. This was done at a few cross sections but it created the same error for the new cross sections as well. The cross sections were manually inspected and observed to be accurate therefore these messages were disregarded.
29. Message: XS DC 04R for cross sections 3200, 3100, 3000, 2900, 2400, 2300, 2200, 2100, 2000, 1900, 1800, 1700, 1265.17, 1200, 1100, 1000, & 600
- a. The CHECK RAS program suggested that cross sections be placed between the designated cross sections. This was done at a few cross sections but it created the same error for the new cross sections as well. The cross sections were manually inspected and observed to be accurate therefore these messages were disregarded.
30. Message: XS EC 01BDL for cross section 1500
- a. Cross section does not need to be expanded because upstream and downstream cross sections indicate that the flood water cannot extend beyond existing banks to the area in question.
31. Message: XS EC 01BUL for cross section 1500
- a. Cross section does not need to be expanded because upstream and downstream cross sections indicate that the flood water cannot extend beyond existing banks to the area in question.
32. Message: XS EC 01L for cross sections 5.01, 35.01, 100, 1800, 1700, 1510, 1490
- a. Cross sections 5.01, 35.01, & 100 are currently expanded to the extents of the topographic information available, each section being approximately 2000' wide. These cross sections do not need to be expanded because terrain to the south and southwest descends to the Great Salt Lake. The current cross sections were expanded to such wide extents to verify that the existing terrain slopes in the direction of the lake with no impeding structures. Cross sections 1800, 1700, 1510, & 1490 do not need to be expanded because upstream and downstream cross sections indicate that the flood water cannot extend beyond existing banks to the area in question.
33. NT RS 02BDC 1500
- a. This bridge section is actually a pipe crossing over the ditch. The channel n value is therefore the same as the ditch itself. See Message: NT RS 02BUC for more details regarding the pipe crossing.
34. Message: ST IF 02S2L for cross section 764.62
- a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
35. Message: ST IF 02S2R for cross section 764.62
- a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.
36. Message: ST IF 02S3L for cross section 764.62



- a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.

37. Message: ST IF 02S3R for cross section 764.62

- a. No ineffective flows need to be identified for this section because the structure is not a true bridge but a pipe crossing over the ditch. See Message: NT RS 02BUC for more details regarding the pipe crossing.



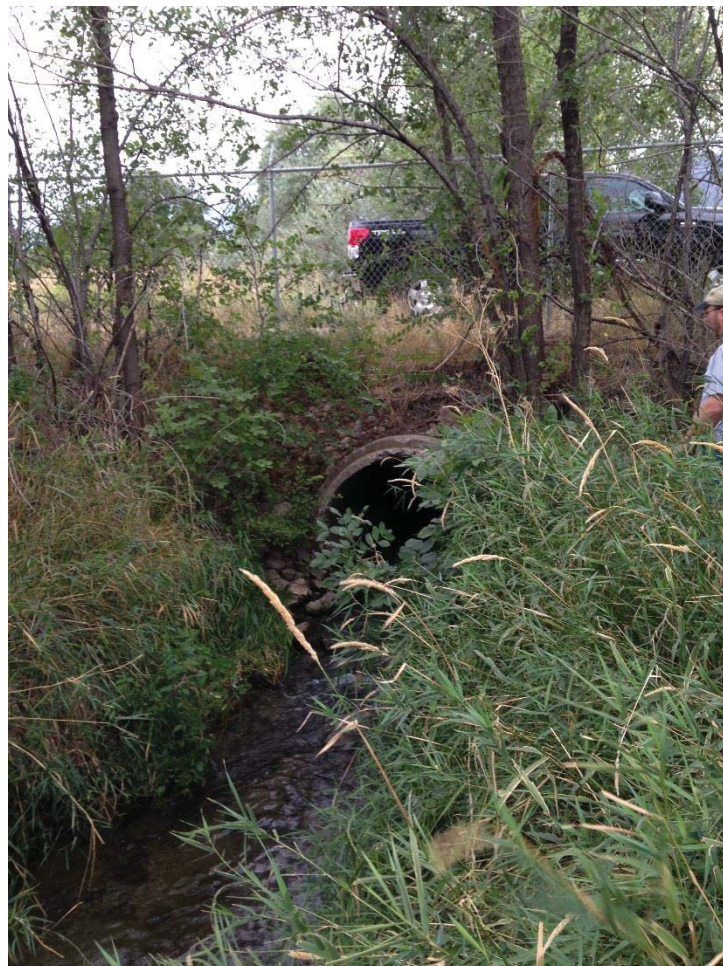
Project Narrative

The Central Davis Sewer District (CDSD) sewer treatment plant is located adjacent to Baer Creek, on the western edge of Davis County, in an area that is currently designated as Zone A (0.1% chance of inundation or 100-year flood, no base flood elevation determined) according to current FIRMs (Panels 239 & 380). A detailed study of this area has never been performed prior to this evaluation.

CDSD has retained CRS Engineers to evaluate and determine the extents of the Baer Creek floodplain near the facility and then to submit the required documentation to the community official and to FEMA to modify the FIRM based on the findings of the evaluation.





CRS performed a topographic survey of Baer Creek from Shepard lane to a point beyond the southern limit of the CDSD facility. The survey data was integrated with LIDAR scan data provided by CDSD to create a large scale topographic map. This topographic data was used to complete a hydrologic analysis. Findings from this analysis indicate that the 100 year peak flow to be modeled through the study area is 220 cfs.

A HEC-RAS model of the study area along Baer Creek was created. Cross sections were cut at 100 foot intervals (min). Digital copies of the model files are included with this submittal. The necessary calculations and model iterations were performed to determine the limits of the 0.1% chance (100 year) floodplain. The floodplain created from the HEC-RAS model shows that the current FIRM of the area near the central Davis sewer plant needs to be updated.



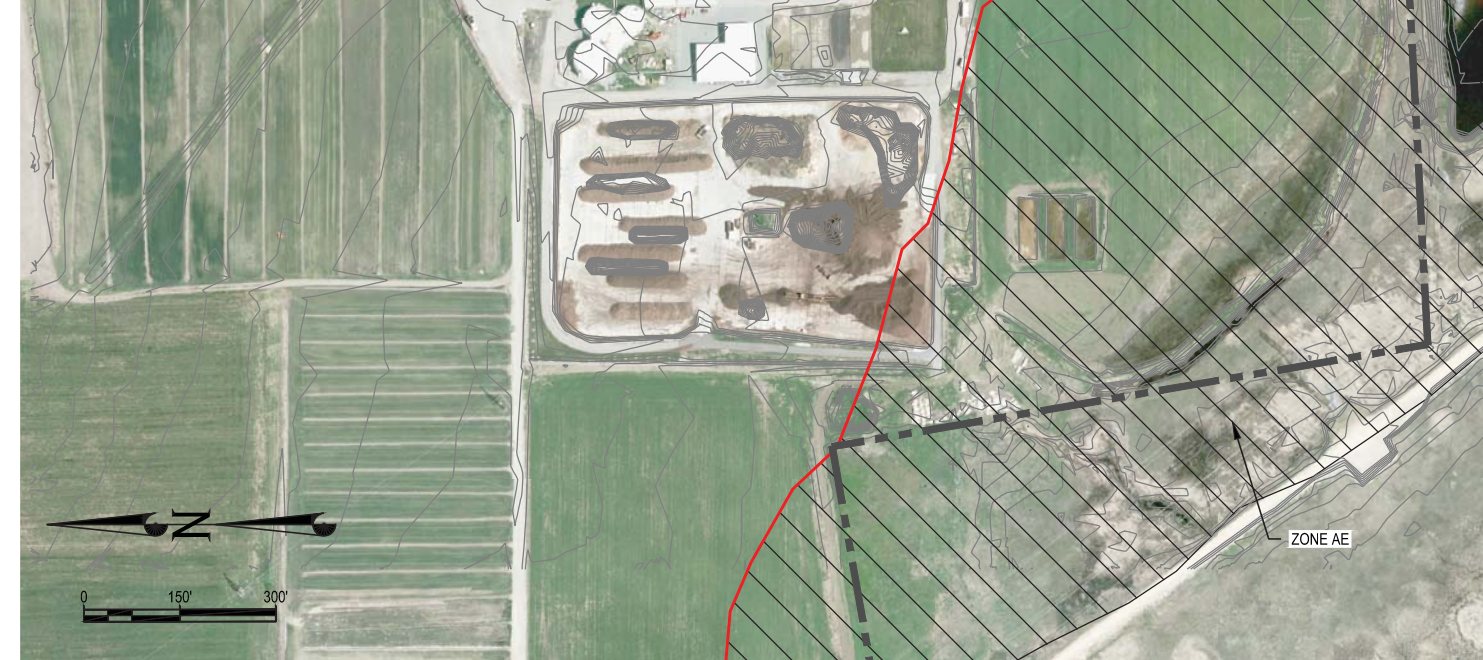
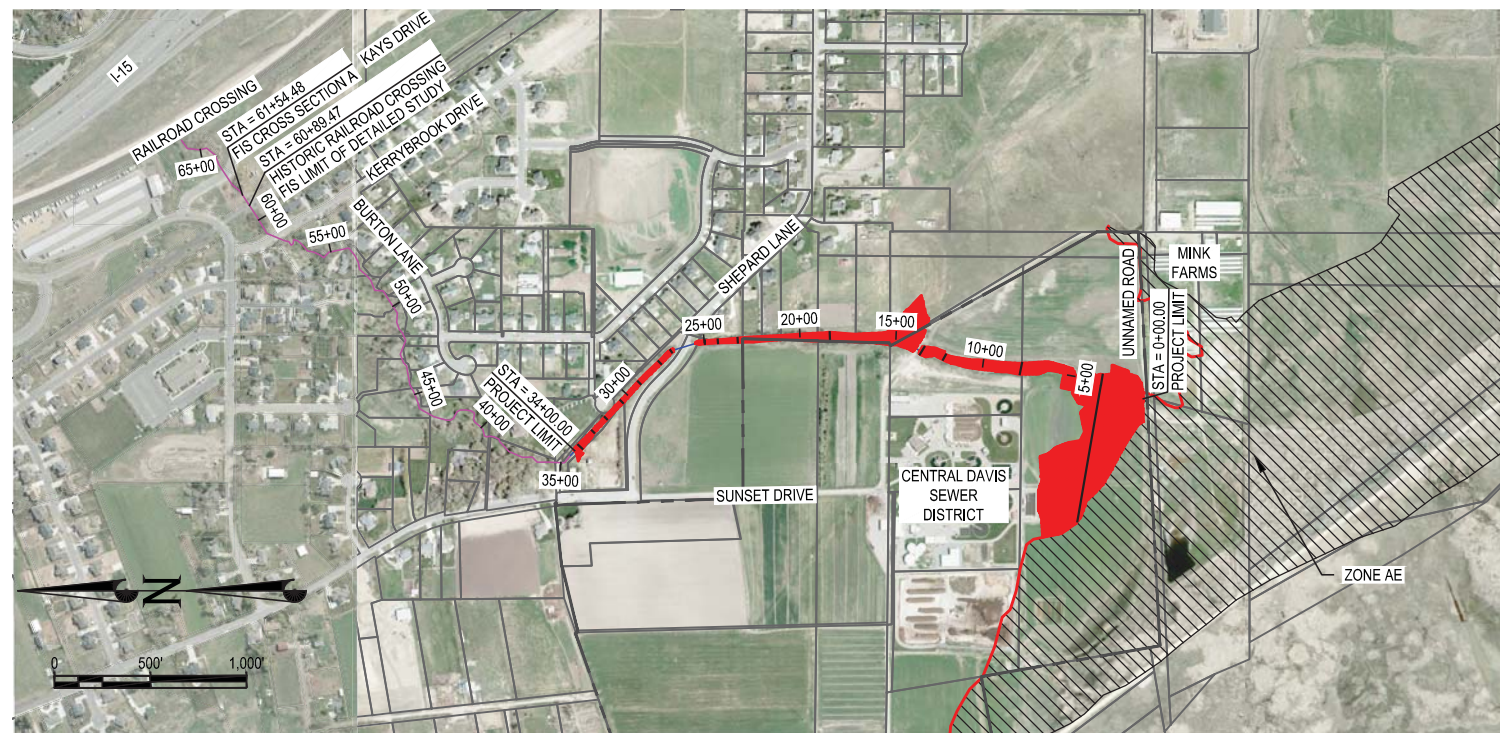
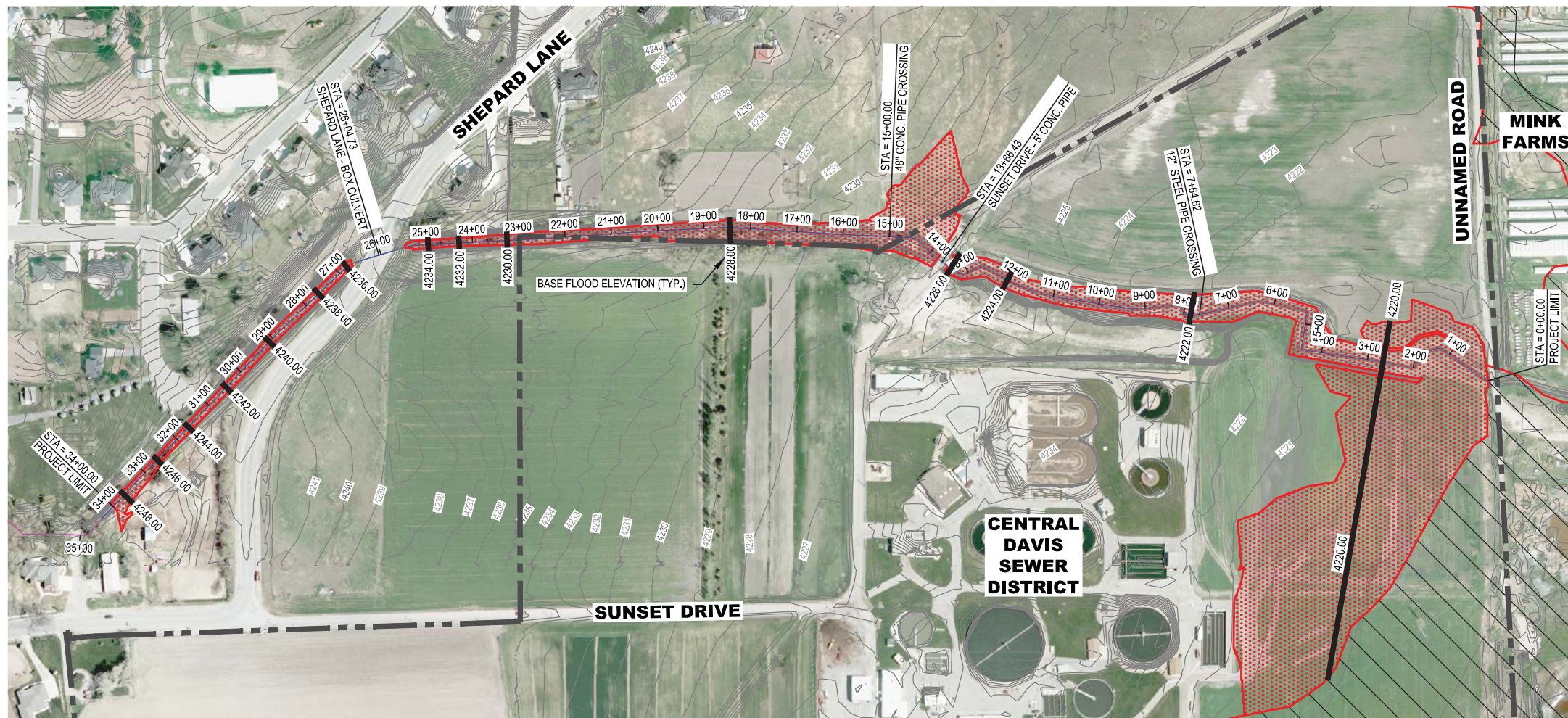


LEGEND

-  1%-ANNUAL-CHANCE FLOODPLAIN (100-YEAR FLOODPLAIN - ZONE A)
-  CENTERLINE OF BAER CREEK (NOT STUDIED)
-  CENTERLINE OF BAER CREEK (STUDIED)
-  BOUNDARY OF CSD PROPERTY*

*ALL PROPERTY LINES SHOWN ON THIS DRAWING WERE BASED ON GIS INFORMATION. THE LOCATION SHOWN & RELATIONSHIP WITH EXISTING AND PROPOSED IMPROVEMENTS ARE ONLY APPROXIMATE. NO ATTEMPT TO ANALYZE DEEDS, LOCATE EVIDENCES, DETERMINE EXACT LOCATION OF THE PROPERTY LINE WAS MADE. THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY AND NO CLAIMS TO THE CORRECT LOCATION OF THE PROPERTY LINES ARE MADE BY SHOWING THE LINEWORK ON THESE DRAWINGS.

FEMA MAP PANEL 0239 AND 0380, IN DAVIS COUNTY, UTAH, SHOWS THAT THERE IS A ZONE A FLOODPLAIN AREA ON THE PROPERTY. IF THE FEMA MAP IS TRANSPPOSED ONTO AN AERIAL IMAGE OF THE AREA IT SHOWS THAT THE FLOODWAY AND ADJACENT FLOODPLAIN ENCR OACH ONTO THE SUBJECT PROPERTY. HOWEVER AFTER REVIEWING A TOPOGRAPHIC SURVEY OF THE AREA, PERFORMED BY CRS ENGINEERS USING THE VERTICAL DATUM NAVD88, IT IS MY OPINION THAT NEITHER THE FLOODWAY NOR THE FLOODPLAIN ENCR OACH UPON THE SITE. THE REVISED FLOODPLAIN IS SHOWN ON THIS SHEET IN RED.



NO.	REVISION	DATE

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 PROJECT MANAGER M. COLLIER
 CHECKED BY M. COLLIER
 DRAWN BY B. JONES
 DRAWING SCALE AS SHOWN
 ISSUE DATE 05-30-14

CALDWELL RICHARDS SORENSEN
 ANSWERS TO INFRASTRUCTURE

CRS

FARMINGTON OFFICE:
 PO Box 280
 160 S MAIN, STE. 200
 FARMINGTON, UTAH 84025
 PHONE: 801.939.5565
 FAX: 801.359.4272
 www.crsengineers.com





CENTRAL DAVIS SEWER DISTRICT
 CSD FLOODPLAIN
 FLOODPLAIN / TOPOGRAPHIC EXHIBIT

UTAH

PROJECT NUMBER	12051
SHEET	1 OF 1
SHEET NUMBER	1



LEGEND

-  1%-ANNUAL-CHANCE FLOODPLAIN (100-YEAR FLOODPLAIN - ZONE A)
-  CENTERLINE OF BAER CREEK (NOT STUDIED)
-  CENTERLINE OF BAER CREEK (STUDIED)
-  BOUNDARY OF CDS PROPERTY*

*ALL PROPERTY LINES SHOWN ON THIS DRAWING WERE BASED ON GIS INFORMATION. THE LOCATION SHOWN & RELATIONSHIP WITH EXISTING AND PROPOSED IMPROVEMENTS ARE ONLY APPROXIMATE. NO ATTEMPT TO ANALYZE DEEDS, LOCATE EVIDENCES, DETERMINE EXACT LOCATION OF THE PROPERTY LINE WAS MADE. THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY AND NO CLAIMS TO THE CORRECT LOCATION OF THE PROPERTY LINES ARE MADE BY SHOWING THE LINEWORK ON THESE DRAWINGS.

NO.	DATE	DESCRIPTION

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 DRAWING SCALE AS SHOWN
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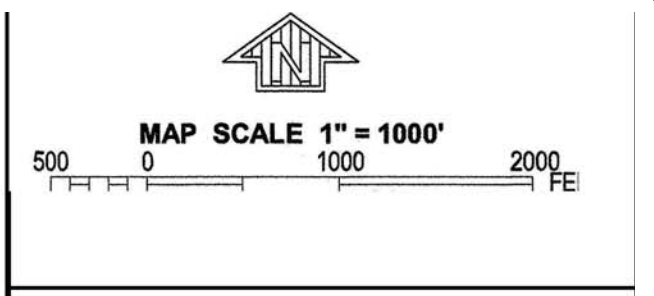
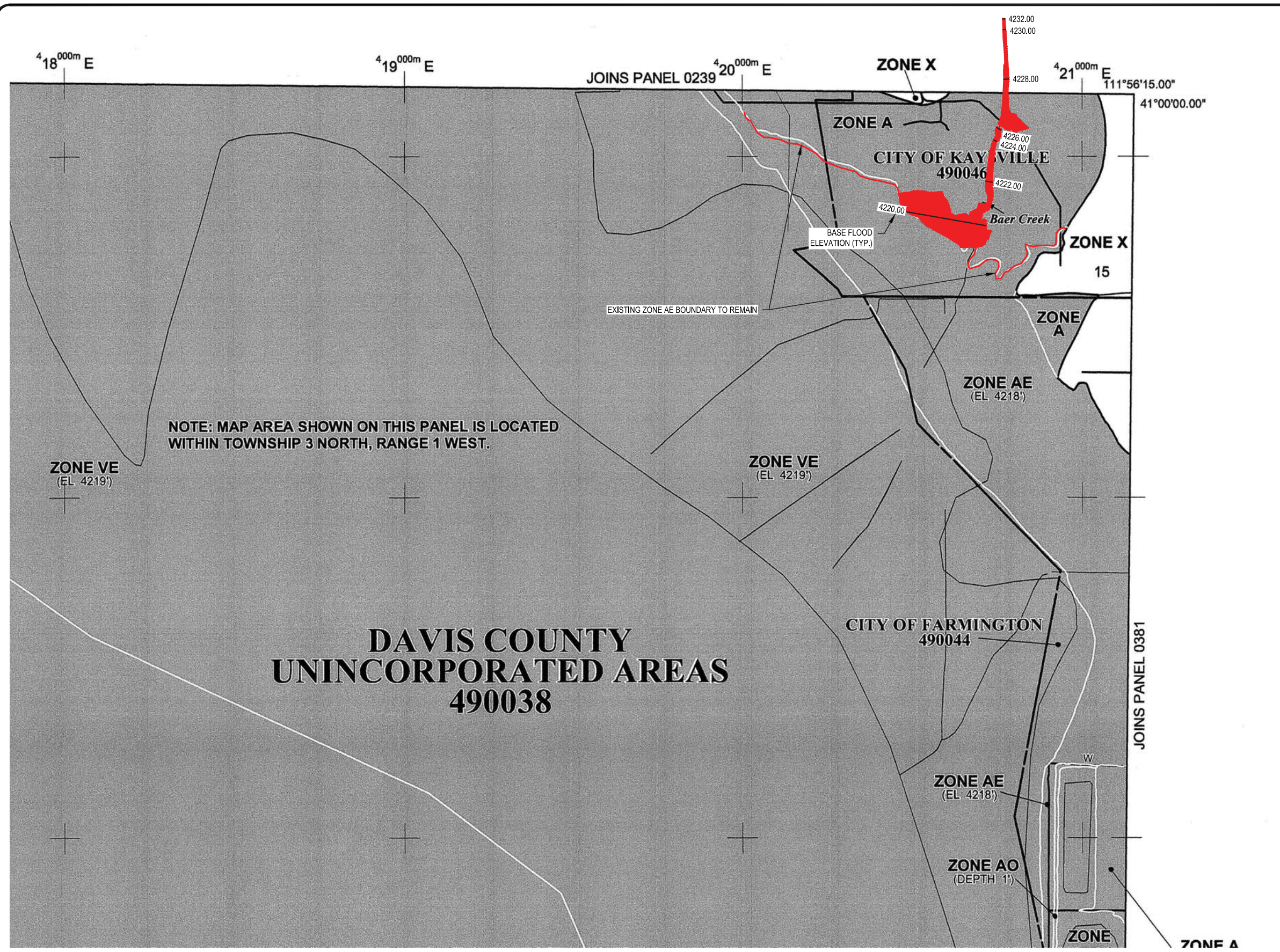
FARMINGTON OFFICE:
 PO Box 280
 160 S MAIN, STE. 200
 FARMINGTON, UTAH 84025
 PHONE: 801.939.5565
 FAX: 801.359.4272
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CENTRAL DAVIS SEWER DISTRICT
 CDS FLOODPLAIN
 FLOODPLAIN MAP W / CROSS SECTIONS EXHIBIT

KAYSVILLE

UTAH

PROJECT NUMBER	12051
SHEET	1 OF 1
SHEET NUMBER	1



1%-ANNUAL-CHANCE FLOODPLAIN
(100-YEAR FLOODPLAIN - ZONE A)

FIRM FLOOD INSURANCE RATE MAP

DAVIS COUNTY, UTAH

AND INCORPORATED AREAS

PANEL 380 OF 575
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIS COUNTY	490038	0380	E
FARMINGTON, CITY OF	490044	0380	E
KAYSVILLE, CITY OF	490046	0380	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
49011C0380E

EFFECTIVE DATE
JUNE 18, 2007

Federal Emergency Management Agency

NO.	DATE	BY	DESCRIPTION

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PROJECT NUMBER: M. COLLIER
CHECKED BY: M. COLLIER
DRAWN BY: B. JONES
DRAWING SCALE: AS SHOWN
ISSUE DATE: 05-30-14

CALDWELL RICHARDS SORENSEN **ANSWERS TO INFRASTRUCTURE**

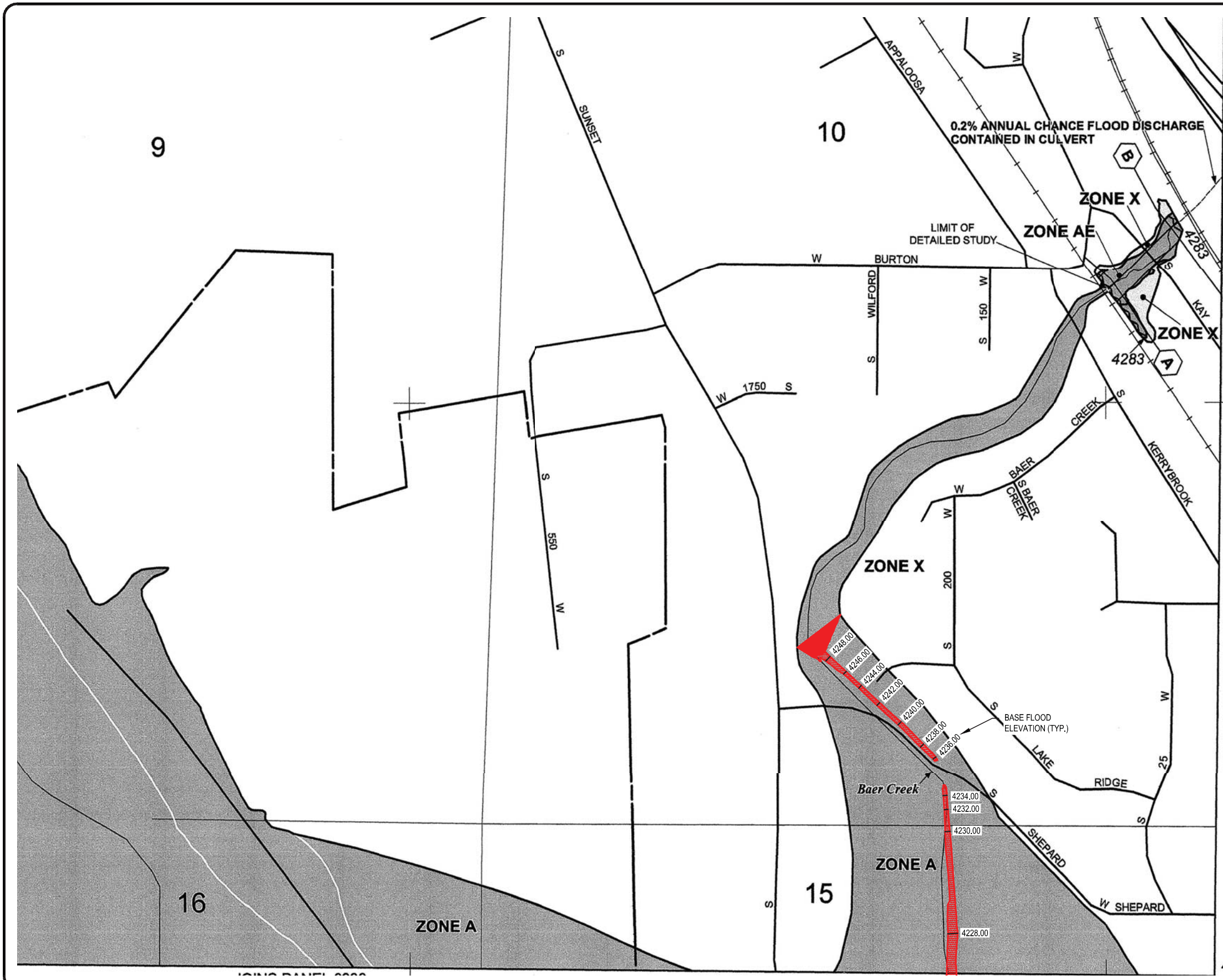
FARMINGTON OFFICE:
PO Box 280
160 S MAIN, STE. 200
FARMINGTON, UTAH 84025
PHONE: 801.939.5565
FAX: 801.359.4272
www.crsengineers.com

CENTRAL DAVIS SEWER DISTRICT
CDS D FLOODPLAIN
ANNOTATED FIRM 0380 EXHIBIT

KAYSVILLE

UTAH

PROJECT NUMBER	12051
SHEET	1 OF 1
SHEET NUMBER	1



1%-ANNUAL-CHANCE FLOODPLAIN
 (100-YEAR FLOODPLAIN - ZONE A)

FIRM

FLOOD INSURANCE RATE MAP

DAVIS COUNTY, UTAH

AND INCORPORATED AREAS

PANEL 239 OF 575
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIS COUNTY	490038	0239	E
KAYSVILLE, CITY OF	490046	0239	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
49011C0239E
EFFECTIVE DATE
JUNE 18, 2007

Federal Emergency Management Agency

NO.	DATE	DESCRIPTION

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PROJECT: P. HIRST
 PROJECT NUMBER: M. COLLIER
 CHECKED BY: M. COLLIER
 DRAWN BY: B. JONES
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: 05-30-14

CALDWELL RICHARDS SORENSEN
 ANSWERS TO INFRASTRUCTURE

FARMINGTON OFFICE:
 PO Box 280
 160 S MAIN, STE. 200
 FARMINGTON, UTAH 84025
 PHONE: 801.939.5565
 FAX: 801.359.4272
 www.crsengineers.com

CENTRAL DAVIS SEWER DISTRICT
 CDS D FLOODPLAIN
 ANNOTATED FIRM 0239 EXHIBIT
 KAYSVILLE

PROJECT NUMBER	12051
SHEET	1 OF 1
SHEET NUMBER	1

UTAH

P:\12051\F_CDS D Floodplain\Drawings\z-Base Existing.dwg, 5/30/2014 12:05:44 PM, b.jones

FEDERAL EMERGENCY MANAGEMENT AGENCY
PAYMENT INFORMATION FORM

Community Name: City of Kaysville
Project Identifier: CDS Baer Creek

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Please make check or money order payable to the National Flood Insurance Program.

Type of Request:

- MT-1 application }
 MT-2 application }

LOMC Clearinghouse
847 South Pickett Street
Alexandria, VA 22304-4605
Attn.: LOMC Manager

- EDR application }

FEMA Project Library
847 South Pickett Street
Alexandria, VA 22304-4605
FAX (703) 212-4090

Request No. (if known): _____ Check No.: _____ Amount: \$5300

- INITIAL FEE* FINAL FEE FEE BALANCE** MASTER CARD VISA CHECK MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

**Note: Check only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

CARD NUMBER

EXP. DATE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Month	Year
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_____ Date _____ Signature

NAME (AS IT APPEARS ON CARD): _____
(please print or type)

ADDRESS: _____
(for your credit card receipt-please print or type)

DAYTIME PHONE: _____



NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

August 8, 2014

Mr. Matt Collier, P.E.
Project Engineer
CRS Engineers
Post Office Box 280
Farmington, UT 84025

IN REPLY REFER TO:
Case No.: 14-08-1178P
Community: City of Kaysville, UT
Community No.: 490046

316-AD

Dear Mr. Collier:

This responds to your request dated May 30, 2014, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Davis County, Utah and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	CDS D Baer Creek
Flooding Source:	Baer Creek
FIRM Panel(s) Affected:	49011C0239E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register*, is available on the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fees for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact your case reviewer, Mr. Paul Anderson, P.E., CFM, by e-mail at PMAnderson@mbakercorp.com or by telephone at 720-514-1121, or the Revisions Coordinator for your request, Mr. Joseph Kuechenmeister, P.E., CFM, at JKuechenmeister@mbakerintl.com or at (720) 479-3181.

Sincerely,

A handwritten signature in black ink that reads "Syed Qayum". The signature is written in a cursive style with a large initial 'S' and 'Q'.

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

Enclosures

cc: Mr. Leland Myers
District Manager
Central Davis Sewer District

Mr. Barry M. Burton
Floodplain Administrator
Davis County



NATIONAL FLOOD INSURANCE PROGRAM
FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

Summary of Additional Data Required to Support a
Letter of Map Revision (LOMR)

Case No.: 14-08-1178P

Requester: Mr. Matt Collier, P.E.

Community: City of Kaysville, UT

Community No.: 490046

The issues listed below must be addressed before we can continue the review of your request.

1. Our preliminary review reveals that the City of Kaysville is affected by this revision. Please provide community acknowledgment in the form of a letter stating that the City of Kaysville has reviewed the revision request and understands the effects of the revision on flooding conditions in the community, or Application/Certification Form 1, entitled "Overview & Concurrence Form," signed by a community official from the City of Kaysville.
2. Please submit a topographic drainage area map that includes the delineations of the sub-basins used in the submitted Rational Method hydrologic analysis.
3. Please provide survey data or as-built information, certified by a registered professional engineer, for all bridges and culverts in the submitted existing conditions and proposed conditions hydraulic analyses. Please be sure to include top-of-road elevations for the area around each culvert and bridge.

Please send the required data and/or fee directly to us at the address shown at the bottom of this page. For identification purposes, please include the case number referenced above on all correspondence.

ADDITIONAL DATA Received – City of Kaysville, Utah (Case Number 14-08-1178P) – Response Required

2 messages

Paul Anderson <PMAAnderson@mbakerintl.com>

Fri, Aug 22, 2014 at 8:47 AM

To: "matt.collier@crsengineers.com" <matt.collier@crsengineers.com>

Cc: "lmyers@cdsewer.org" <lmyers@cdsewer.org>, "barry@daviscountyutah.gov" <barry@daviscountyutah.gov>, "Tim Bass (tim.bass@crsengineers.com)" <tim.bass@crsengineers.com>, Joseph Kuechenmeister <JKuechenmeister@mbakerintl.com>

Dear Mr. Collier:

We have received your recent submittal of data, in response to our letter dated August 8, 2014, requesting information for the above-referenced Case Number (14-08-1178P). This case number is for a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the flood hazard information on the applicable National Flood Insurance Program (NFIP) map for the City of Kaysville, Davis County, Utah. This e-mail is being sent to officially acknowledge the receipt of your additional data for the above-referenced case number and replaces the paper copy acknowledgement letters previously issued by FEMA. We ask that you please respond directly to this e-mail to verify that it has been received.

-

The project identifier assigned to your request is CSDS Baer Creek.

We are reviewing your submitted data and will contact you if additional information is required to process your request.

If additional information is not required, we will issue a final letter of determination within 90 days of receiving your submittal dated August 21, 2014.

If you have general questions about your request, FEMA policy, or the NFIP, please call the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP ([1-877-336-2627](tel:1-877-336-2627)). If you have specific questions concerning your request, the case reviewer's contact information is listed below, or please contact the Revisions Coordinator for your request, Mr. Joseph Kuechenmeister, P.E., CFM, at jkuechenmeister@mbakerintl.com or at (720) 479-3181.

Please be assured we will do our best to respond to all inquiries in a timely manner.

Thank you,

Paul Anderson, P.E., CFM

FEMA Production and Technical Services Contractor

165 South Union Boulevard, Suite 200

Lakewood, CO 80228

[720-514-1121](tel:720-514-1121)

PMAnderson@mbakerintl.com

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If you have received this e-mail transmission in error, please reply to the sender, so that we can arrange for proper delivery, and then please delete the message from your inbox. Thank you.

Leland Myers <ljmyers@cdsewer.org>

Fri, Aug 22, 2014 at 11:11 AM

To: Paul Anderson <PMAnderson@mbakerintl.com>

Cc: "matt.collier@crsengineers.com" <matt.collier@crsengineers.com>, "barry@daviscountyutah.gov" <barry@daviscountyutah.gov>, "Tim Bass (tim.bass@crsengineers.com)" <tim.bass@crsengineers.com>, Joseph Kuechenmeister <JKuechenmeister@mbakerintl.com>

Please be advised that we have received your acknowledgement of our submittal of additional information.

--

Leland Myers, P.E.
Central Davis Sewer District

[\(801\) 451-2190](tel:801-451-2190) - Office

[\(801\) 560-3938](tel:801-560-3938) - Cell

[Quoted text hidden]

Biosolids Internal Audit Report
Central Davis Sewer District

Audit Conducted By:

Jill Houston, Central Davis Sewer District, Lead Auditor

Dan Griffin, Utah Division of Environmental Quality

Trace Workman, Central Davis Sewer District

References:

National Biosolids Partnership (NBP) *Third Party Verification Auditor Guidance*

NBP *National Manual of Good Practice*

Central Davis Sewer District *Biosolids EMS Manual*

September 15, 2014

INTRODUCTION

The purpose of the Central Davis Sewer District's internal audit process is to identify areas of improvement within the Biosolids Environmental Management System (EMS) prior to and /or between third-party audits. The audit was conducted against the standards presented by the National Biosolids Partnership (NBP) through the EMS program. The goal was to collect and review objective evidence that the District's EMS is performing as intended, that the procedures are being performed as documented and that the EMS conforms to the NBP's EMS Elements, the Code of Good Practice, the EMS program objectives and internal program requirements.

AUDIT SCHEDULE AND SCOPE

The audit was scheduled for September 15, 2014. Elements 3, 6, 9, 10, 12, 13, 14, 15, and 17 were reviewed. The audit team conducted document review, transaction testing, and a site visit, in addition to individual and group interviews.

The internal audit team consisted of Dan Griffin; Engineer, and Biosolids Coordinator for the State of Utah, Division of Environmental Quality, Jill Houston; Assistant Manager, Central Davis Sewer District, and Trace Workman; Lead Operator, Central Davis Sewer District. Mr. Griffin, as the State's Biosolids Coordinator, provided meaningful regulatory knowledge and clarity on many issues. Mr. Workman, as a Lead Operator, provided in-depth knowledge about the treatment and biosolids process.

The document review was conducted with a general review of all elements with a more detailed review of the targeted elements, as well as associated documents.

The team reviewed documentation, conducted a field site visit and interviewed plant personnel. The selected documents were reviewed for compliance with requirements in the NBP's as well as conformance to the District's Biosolids EMS Manual.

Listed below are documents reviewed

- Central Davis Sewer District EMS Manual, Elements 1-17 and associated appendices.
- NBP EMS Report on Goals and Objectives- reporting year 2012
- NBP Sixth Interim Audit Report, William Hancuff
- Biosolids EMS training records
- Safety training records
- Biosolids EMS Corrective Action Reports
- Intranet site with O & M manuals and videos
- Central Davis Sewer District website with all pertinent reports available
- YouTube video "The Carbon Cycle and You"
- Complaint Log

Various staff was interviewed informally throughout the day and during lunch.

FINDINGS

The following is a review of the Elements of the EMS.

Element 3 - EMS and Safety training was held on December 4-6, 2013. Staff and employees attended training and participated in discussions of the Table 3.1 critical control points among other items.

Element 6 - Through interaction with neighbors, and their odor concerns, CDS D is in the process of installing an aerated static pile system for the winter months. A hot line and email account was set up for complaints and comments. CDS D continues to provide tours to a variety of organizations, encourages public input through the internet site, public meetings and informal communication. Videos continue to be produced for public awareness.

Element 9 - CDS D is active in Social Media such as Facebook, twitter and LinkedIn. CDS D is working on setting up a link to their social media sites from the District's website. School tours include showing the microbiology of the process through the use of a microscope and an LCD, talks and CDS D produced videos and website access are some of the proactive things being done. There have been odor complaints in the winter of 2013-2014, because of public comment at the board meeting, a dedicated phone line and email account was set up for complaints.

Element 10 - A new SCADA system is being installed, this will be a multi-year process. The Aerated Static Pile system is proposed to be operational later this year, SOP's will need to be developed when this comes on-line. Training videos are available on YouTube and on the intranet.

Element 12 - All employees were given an updated EMS document via email so they can load it on their computer. Master control document is electronic, in the Manager's office and can be accessed from the website www.cdsewer.org.

Element 13 - SOP's appear to meet EPA 40 CFR Part 503 and the Districts UPDES and Biosolids permit. Biosolids annual report is due before February 19 and is presented to the Board of Trustees before that date. Records for all test results are in the District manager's office.

Element 14 - The Board of Trustees receives a summary of corrective actions at the board meeting when the Biosolids report is presented. All corrective action reports are stored in the District Manager's office.

Element 15 - Biosolids Management Program Report is submitted to the Board of Trustees before it is submitted to the State of Utah.

Element 17 - Annual management review completed and reported to the Board of Trustees.

CONCLUSIONS AND RECOMMENDATIONS

Central Davis Sewer District has committed a tremendous amount of time and energy towards EMS certification. The use of social media as a way to encourage more interest from the public is commendable. The proactive approach to mitigate odors while keeping the neighbors involved is commendable. The Biosolids EMS have many exceptional features and CDSO has many outstanding achievements and should be recognized for their dedication.

**NATIONAL BIOSOLIDS PARTNERSHIP
SEVENTH INTERIM AUDIT REPORT**

**Central Davis Sewer District
Wastewater Treatment Facility
Kaysville, Utah**

Audit conducted by

NSF-International Strategic Registrations

William R. Hancuff, Lead Auditor

References:

National Biosolids Partnership (NBP) BMP *Elements*
NBP *Third Party Verification Auditor Guidance – November 2001*
(Latest Revision August 2011)
NBP *Code of Good Practice*
Central Davis Sewer District EMS Manual – July 2006
(Updated – April 8, 2014)

Draft Report – October 31, 2014

INTRODUCTION

The purpose of the Biosolids Management Program (BMP) interim audits is to verify through regular reviews the program's health and effectiveness between verification audits. The third party on-site interim audits provide independent reviews and supports credibility between re-verification audits. The goal of the third party interim audit is to collect and evaluate objective evidence related to a portion of the BMP such that over the course of the four interim audits conducted between verification audits all 17 elements are covered. The audits determine whether the Central Davis Sewer District (CDS) Wastewater Treatment Facility BMP is functioning as intended, that practices and procedures are conducted as documented, and that the BMP as implemented conforms to the NBP's Code of Good Practice and BMP program objectives.

RECOMMENDATION

The results of the Central Davis Sewer District interim audit and review of their biosolids management program are positive, and it is the recommendation of the audit team that the Wastewater Treatment Facility BMP maintain its platinum level certification status.

AUDIT SCOPE

The NSF-International Strategic Registrations, Ltd. (NSF-ISR) conducted a third party interim audit of the Central Davis Sewer District's BMP from October 27, 2014 through October 28, 2014. The on-site interim audit team consisted of Dr. William R. Hancuff, Lead Auditor.

The scope of the seventh interim audit included a review of areas generally covered in Elements 5, 14, 16, and 17; namely the organization's progress toward goals and objectives; BMP outcomes (environmental performance, regulatory compliance, interested party relations, and quality practices); actions taken to correct minor nonconformances; the corrective and preventive action requests and responses and the management review process.

Other elements that were audited in their entirety were 1, 8, 15, and 17, i.e. BMP Manual, Training, Biosolids Management Program Report, and Management Review. Additional elements that were partially audited as they related to outcomes, changes in equipment and processes, composting and land application sites and biosolids program management reporting included Elements 1, 2, 4, 6, 9 and 15.

The physical biosolids facilities included in the audit and visited during the on-site audit were the head works, screens, backup pump station, trickling filters, anaerobic digesters, belt presses/thickener operations, biosolids truck loading facilities, wood pallet storage area, bulking agent storage area, polymer addition facilities, windrow compost piles, “Quick Soil” addition facilities, static pile aerated compost piles, compost final storage area, land application sites, surrounding salt marshes and discharge points. Additionally a tour was conducted of the residential wastewater collection areas where odor complaints had been registered and the Farmington Bay Wildlife Management Area.

The following individuals were interviewed as part of the audit process:

Sherman Cloward, Central Davis Sewer District Board of Trustees
Leland Myers, District Manager, Central Davis Sewer District
Jill Houston, Assistant Manager, Plant Engineer, Grade IV Wastewater treatment plant operator and Grade IV collection system operator
Jon Hess, Plant Superintendent, Grade III Wastewater treatment plant operator and Grade III collection system operator
Brent Justensen, Operations Manager
Uriel Orona, Instrumentation Electrician
Jennifer Robinson, Environmental Scientist, Permit Writer, Pretreatment Coordinator, Department of Environmental Quality, Division of Water Quality, State of Utah

INTERIM AUDIT FINDINGS

The interim audit found one positive finding, no major non-conformances, three minor non-conformances, and four opportunities for improvement.

The following presents the positive observation made during the interim audit. Minor nonconformances are then described, followed by opportunities for improvement. Each finding is listed by item number, which corresponds to the element minimum conformance requirement, in the sequence of the NBP standard elements.

Positive Observations

The CDSW Wastewater treatment management and plant operations personnel involved in the biosolids management program development and maintenance should be recognized for their outstanding achievements, and the exceptional features of their Biosolids Management Program. The following positive item was observed during this audit.

Commendations:

- Biosolids Annual Report provides an excellent example of summarizing the performance of the biosolids management program containing appropriate summaries of monitoring, measurements and other results that demonstrate the

performance of the biosolids program relative to its goals, objectives and legal requirements.

The continued hard work and dedication of the BMP Team is also acknowledged. While maintaining the BMP platinum level certification status is obviously a team effort the guidance provided by the CDS Manager to ensure continual improvement of the program is once again recognized.

Minor Nonconformances

- Requirements 3.1 and 3.5 – The new compost aerated static piles and odor reduction agent (Quick Soil) addition system have not been identified as critical control points and written notification to the NBP and third party verification auditor has not been made.
- Requirement 5.5 – Not all of the goals and objectives for 2014 were measurable.
- Requirement 16.1 – The 2014 internal audit did not include a determination of whether the EMS is effectively meeting its biosolids management policy (NBP Code of Good Practice) and did not evaluate the organization’s performance relative to established biosolids program goals, objectives and performance measures.

Opportunities for Improvement

- Requirement 14.1– Information to be included in the internal audit worksheet appears in three separate places: (1) Element 14, Procedure 2(b), “Audit and Corrective Action Worksheet”, (2) at the end of Element 14 procedure and (3) “Audit and/or Corrective Action Worksheet” at the end of Element 16. Consider simplifying the system by only including this information in one place and referencing it in other appropriate locations.
- Requirement 14.4 – Consider encouraging a more frequent use of the Corrective Action Form entitled “Corrective Action - BMP Deficiency; Routine Operation and Maintenance Activities.”
- Requirement 14.6 – Consider including in Element 14 procedure 2(e) the fact that tracking progress in completing corrective actions is accomplished electronically through the use of Google Chrome or Microsoft Outlook.
- Requirement 16.3(b) – Consider preparing a training video to be used to qualify auditors to participate in internal biosolids EMS audits.

CENTRAL DAVIS SEWER DISTRICT COMMENTS

Central Davis Sewer District accepts the minor non-conformances and the opportunities for improvement provided by the auditor. The minor nonconformance items have been corrected and documentation provided to the auditor. The District appreciates the continuous improvement the process presents and the efforts of the auditor on the District's behalf.

OUTCOMES MATTER

The CDSB Biosolids Management Program established four biosolids BMP goals for 2013. In addition four biosolids BMP goals were established for 2014. The goals and objectives were developed with input from the operators and consideration of potential public concerns. The final goals and objectives were formulated by the CDSB Manager and selected by the Board of Trustees. The CDSB Biosolids goals for its BMP were established to align with each of the four outcome focal points of the NBP program as identified below:

1. Environmental Performance,
2. Regulatory Compliance,
3. Relations with Interested Parties, and
4. Quality Biosolids Management Practices.

While it is not a requirement to attain all goals and objectives, it is a critical component of the program to demonstrate overall biosolids and BMP improvements. As was mentioned the CDSB established several goals for 2013 and 2014. For the most part the goals were developed using Specific, Measurable, Achievable, Relevant, and Time Bound (SMART) criteria, although some lacked specifically measureable performance measures. All of the goals and objectives for 2013 were attained and most of the goals and objectives for 2014 were accomplished with some mid-term shifts. The facility's performance relative to each of the above outcome groups is addressed below.

In the Environmental Performance outcome area, the CDSB established one goal in each of 2013 and 2014. The goal for 2013 was to create two operation videos to be used to provide refresher training to the treatment plant operators on the correct operation of biosolids composting process steps, and to provide consistent instruction for new operational personnel on the same processes. The videos were prepared for the in-line grinder for the production of the compost chips as a bulking agent, and the pile turner for meeting the regulatory requirements for compost pile mixing. Both videos were prepared by April 2013 and used for staff training. These training videos were made publicly available through youtube.com. The cost savings attributable to this goal is difficult to quantify but primarily associated with cost avoidance related to improved safety (reduced accidents) and minimizing operational malfunctions.

The goal for 2014 was to replace the screen and associated equipment at the West Farmington Pump Station to remove foreign objects from the wastewater flow that cause operational difficulties. The existing screen at the station is failing causing increase in maintenance due to pump plugging. The target is to reduce the manual cleaning of the bypass from once every three to four weeks to zero. The design of the pump station upgrades was completed in March 2014 and bids were received shortly thereafter. The delivery time for the screen was six months and for the generator was five months, thus delaying the accomplishment of this goal until 2015. The cost savings associated with this project has not yet been quantified.

In the Regulatory Compliance outcome area, the District established one goal for 2013 and one goal for 2014. The goal and objective for 2013 was established to investigate alternative biosolids treatment options that may be required due to the impact of a proposed roadway through the Districts land application site. A preliminary evaluation of biosolids utilization alternatives was developed considering the following beneficial uses: land application for carbon regeneration, energy recovery from biosolids (including biosolids degradation energy options and thermal conversion options) and land disposal. No definitive conclusions were made regarding a selection of an option or combination of options because of the uncertainty of the location of the exact route or the timing of the construction of the roadway. Recent developments indicate that further delays in the final decisions will be inevitable due to political and environmental concerns.

The 2014 goal and objective is to construct modifications to the embankment and drainage from the CDS land to protect the property from flooding and remove as much land as possible from the FEMA designated flood plain. Currently a portion of the flood plain is occupied by the composting area, and the legal prohibition of plant activities could greatly constrain the district's beneficial use of its property. CDS engaged an engineering company to assist in preparing the necessary controls and a letter of map amendment for the areas of the treatment plan that are considered to be in the flood plain. The map amendment was submitted, FEMA responded with additional information needed and this information was submitted. Final approval by FEMA is expected to require an additional six to nine months of review.

In the Relations with Interested Parties outcome area, the District established one goal and objective for 2013 and one goal and objective for 2014. The goal and objective for 2013 was to improve the material flow associated with delivery of raw materials (green waste) for creation of the required bulking agent (wood chips), and safe loading of final compost products into citizens vehicles. Design and construction of a new pad for receiving raw materials allows the delivery of green waste in the spring to be accomplished without interfering with the daily operation of the composting activities. This increases the safety for employees working in the compost area and allows the creation longer compost piles. It also keeps the delivery process safely away from other plant operations. Relocating the product sale pickup point for the final compost accomplishes the same objective by providing customers easy access at a new safe location, eliminating interference with plant activities.

The 2014 goal and objective was established in response to several complaints related to odors at the end of 2013 and beginning of 2014, due to atmospheric inversion conditions. The goal is to reduce the odors through the addition of an odor reducing agent. Since the inversion conditions and odors predominate during the winter the objective is to reduce the number of complaints during that period. The District staff constructed and implemented an odorant addition system; procured odorant product called Quick Soil 2900 and began addition of the odorant to mixer truck in the fall of 2014.

In the Quality Biosolids Management Practices outcomes area, the District established one goal and objective for 2013 and one goal and objective for 2014. The goal and objective for 2013 was to evaluate farming operations specifically with respect to biosolids application process and cropping practices to insure the farm fields are producing maximum crop yields thus increasing the potential for solids application and nutrient uptake. Crop rotation between oats and alfalfa was selected as optimum after it was identified that alfalfa produce toxins that can reduce germination and growth of new alfalfa seeding. The phenomenon is known as auto toxicity and the extent of the impact increases with the density and age of the previous stand and the amount of residue incorporated prior to seeding. The rotation will significantly improve the crop production and increase the nutrient uptake capacity. After one growing season of oats it was determined that due to a number of external conditions alternating the crops in this manner was not advantageous and alfalfa farming has resumed.

In 2014 the focus of the quality management practice outcome was to reduce the number of odor complaints associated with inversion conditions and winter operations. The objective is to install aerated static piles to reduce odor releases by eliminating mixing events during this critical time frame. District staff constructed and implemented an aerated static pile system for operation during the fall, winter and spring time frame. This system will allow production of exceptional quality class A biosolids in compliance with federal regulations and reduce odors. Commencement of this process only recently began and while odor reduction is expected, it has yet to be determined if it will meet the target of reducing the number of individuals complaining.

CONCLUSIONS AND RECOMMENDATIONS

The results of the third party interim audit show the Central Davis Sanitary District has a very strong mature Biosolids Management Program. The NSF lead auditor found no major nonconformities three minor nonconformities and four opportunities for improvement. Therefore, it is the recommendation of the audit team that the CDSW Wastewater Treatment Facility Biosolids Management Program, Kaysville, Utah maintain its platinum level certification status.

As was mentioned previously, a BMP is a continuous improvement process, and retention of certification status is not the end. The results of this and future audits are intended to provide value added to the program and should be viewed as an overall opportunity to improve. Every audit is a snapshot in time, and does not, or cannot, identify each and every area for improvement. And yet, while no single audit identifies

all of the areas for improvement the results of each audit provide an additional incremental step in the overall program's improvement.

Based on discussions the following is the proposed interim audit approach and schedule. Each interim audit will include a review of: the organization's progress toward goals and objectives; EMS outcomes (environmental performance; regulatory compliance; interested party relations; quality practices); actions taken to correct minor non-conformances; the management review process; corrective action requests and responses; and preventive actions. The above areas are mostly addressed in the standard Elements 5, 14, 16, and 17 and to a lesser degree in Elements 1, 2, 4, 6, 9 and 15.

In addition to the above, the following elements will be audited in detail according to the proposed schedule:

Year 6 (third party) – Elements 3, 10, 12, 13 (Completed)

Year 7 (third party) – Elements 1, 8, 15, 17 (Completed)

Year 8 (third party) – Elements 5, 6, 9, 14, 16

Year 9 (third party) – Elements 2, 4, 7, 11

Year 10 (third party) Re-verification

Attachment 1

Documents and Other Objective Evidence Reviewed During the Seventh Third Party Interim Audit

Element 1. BMP Manual

- Central Davis Sewer District – EMS Manual – Developed July 2006, Last Updated April 8, 2014.
- EMS Manual Element 1: Central Davis Sewer District – EMS Manual, dated July 13, 2006, revised September 22, 2012.
- EMS Manual Element 2: Biosolids Management Policy, containing CDSO Biosolids Management Statement, dated July 13, 2006, revised September 22, 2012.
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees
- Interview with Leland Myers, District Manager, Central Davis Sewer District.

Element 2. Biosolids Management Policy

- EMS Manual Element 2: Biosolids Management Policy, containing CDSO Biosolids Management Statement, dated July 13, 2006, revised September 22, 2012.

- Interview with Susan Holmes, Chair of the Central Davis Sewer District Board of Trustees.
- Interview with Leland Myers, District Manager, Central Davis Sewer District.
- Interviews with Jill Houston, Jon Hess, Brent Justensen, and Uriel Orona
- Policy communicated to interested parties through availability on web-site (cdsewer.org).

Element 3. Critical Control Points

- EMS Manual Element 3: Critical Control Points dated July 13, 2006; last revised September 22, 2012.
- Table 3.1: Critical Control Points, Operational Controls, SOPs, Monitoring/Measurements and Environmental Outcomes, undated.
- Interview with Leland J. Meyers, Director, Central Davis Sewer District.
- Interviews with Jill Houston, Jon Hess, Brent Justensen, and Uriel Orona on Critical Control Points (CCP).
- Scanned all CCP Standard Operating Procedures (SOPs).
- Reviewed new SOP # 11 – Odor Reduction Agent Addition, created October 12, 2014.
- Reviewed new SOP # 12 – Class A EQ Composting – Aerated Static Piles, created October 12, 2014.
- Field review of all CCPs at the wastewater treatment plant site.
- Toured wastewater treatment facilities and onsite land application areas.

Element 4. Legal and Other Requirements

- EMS Manual Element 4: Legal and Other Requirements, dated July 13, 2006, last revised September 22, 2012.
- Utah Pollutant Discharge Elimination System Permit: Major Municipal Permit UT0020974, effective 1 March 2010, expires 28 February 2015.
- Utah Pollutant Discharge Elimination System Permit: Biosolids Permit UTL-020974, effective 1 March 2010, expires 28 February 2015.
- Reviewed goals and objectives outcomes associated with legal requirements.
- Interview with Leland Myers, District Manager, Central Davis Sewer District.
- Interview with Jennifer Robinson, Environmental Scientist, Permit Writer, Pretreatment Coordinator, Department of Environmental Quality, Division of Water Quality, State of Utah

Element 5. Goals and Objectives for Continual Improvement

- EMS Manual Element 5: Goals and Objectives, dated July 13, 2006, last revised September 22, 2012.
- 2014 Biosolids EMS Goals Report.
- Reviewed Action Plan and Tracking – 2014 – Critical Outcome Areas
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees

- Interview with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.
- Interviews with Jon Hess, Brent Justensen, and Uriel Orona.
- CDSO Biosolids Annual Report for 2013 dated January 2014.
- CDSO Biosolids EMS Goals Report for 2012, presented to Board December 17, 2013.
- Annual Activities – Management Review – December 17, 2013.
- Reviewed and discussed change from windrow report on change to aerated static pile for wintertime operation.
- Reviewed and discussed addition of odor reducing agent “Quick Soil” to the mixer trucks before aerated static pile composting operations.
- Reviewed and discussed replacement of screens at West Farmington Pump Station to reduce operational problems.
- Reviewed and discussed the project to reduce the amount of area impacted as part of the flood plain and ensure its beneficial use by CDSO.
- Reviewed and discussed future CDSO capital improvement projects.
- Viewed new video on carbon cycle.
- Reviewed and discussed alternatives for future bio solids handling, treatment, use and disposal.

Element 6. Public Participation in Planning

- EMS Manual Element 6: Public Participation in Planning, dated July 13, 2006, last revised September 22, 2012.
- Reviewed Relations with Interested Parties Outcome.
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees
- Interview with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.
- Review Utah Public Notice of NBP Third Party Audit posted October 21, 2014.
- Reviewed <http://www.cdsewer.org/index.html>

Element 7. Roles and Responsibilities

- EMS Manual Element 7: Roles and Responsibilities, dated July 13, 2006, last revised September 22, 2012.
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees
- Interview with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.
- Interviews with Jon Hess, Brent Justensen, and Uriel Orona.

Element 8. Training

- EMS Manual Element 8: Training, dated July 13, 2006, last revised April 8, 2014.
- Interview with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.

- Interviews with operational personnel - Jon Hess, Brent Justensen, and Uriel Orona.
- Viewed Training Videos on EMS – Critical Control Points, Microbiology, The Carbon Cycle and You (2013), Lockout – Tag out, and Clarifier Basics - State Point Analysis.
- Reviewed training records for 2013 and 2014 in EMS Training Log and Safety Training log dated October 1, 2014.
- Reviewed Safety Days sign-in sheets (training) – December 4 – 6, 2013.

Element 9. Communications

- EMS Manual Element 9: Communication, dated July 13, 2006, last revised September 22, 2012.
- Reviewed odor complaint log: emails for March through May 2014.
- Interviews with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees
- Interview with Jennifer Robinson, Environmental Scientist, Permit Writer, Pretreatment Coordinator, Department of Environmental Quality, Division of Water Quality, State of Utah
- Reviewed <http://www.cdsewer.org/index.html>

Element 10. Operational Control of Critical Control Points

- EMS Manual Element 10: Operational Controls, dated July 13, 2006, last revised September 22, 2012.
- Reviewed new SOP # 11 – Odor Reduction Agent Addition, created October 12, 2014.
- Reviewed new SOP # 12 – Class A EQ Composting – Aerated Static Piles, created October 12, 2014.
- Interviews with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District
- Interviews with operational personnel - Jon Hess, Brent Justensen, and Uriel Orona.

Element 11. Emergency Preparedness and Response

- EMS Manual Element 11: Emergency Preparedness & Response, dated July 13, 2006, last revised September 22, 2012.
- Interview with Leland Myers, District Manager, Central Davis Sewer District.

Element 12. BMP Documentation and Document Control

- EMS Manual Element 12: Documentation, Document Control & Recordkeeping, dated July 13, 2006, last revised September 22, 2012.

- Central Davis Sewer District – EMS Manual – Developed July 2006, Last Updated April 8, 2014.
- Central Davis Sewer District Biosolids EMS – Standard Operating Procedures 011 and 012, Created: October 12, 2014.
- Interview with Leland Myers, District Manager, Central Davis Sewer District.

Element 13. Monitoring and Measurement

- EMS Manual Element 13: Monitoring and Measurement, dated July 13, 2006, last revised September 22, 2012.
- Reviewed new SOP # 11 – Odor Reduction Agent Addition, created October 12, 2014.
- Reviewed new SOP # 12 – Class A EQ Composting – Aerated Static Piles, created October 12, 2014.
- Interview with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.
- Interviews with operational personnel - Jon Hess, Brent Justensen, and Uriel Orona.
- Reviewed 2013 and 2014 Biosolids EMS Goals Reports.

Element 14. Nonconformances: Preventive and Corrective Action

- EMS Manual Element 14: Nonconformances – Preventive and Corrective Action, dated July 13, 2006, last revised September 22, 2012.
- Reviewed Internal Audit Report for internal audits conducted in August 2013 and on September 15, 2014.
- Interview with Leland Myers, District Manager, Central Davis Sewer District.
- Interview with Jill Houston, Internal Audit Lead Auditor, Assistant District Manager, Central Davis Sewer District.
- Reviewed corrective actions for 2013 third party interim audit.
- Reviewed corrective action forms for audits.
- Reviewed Corrective Action – BMP Deficiency (Routine Operations and Maintenance Activities.)

Element 15. Biosolids Management Program Report

- EMS Manual Element 15: Biosolids Management Program Report, dated July 13, 2006, last revised September 22, 2012.
- CDSB Biosolids Annual Report for 2013 dated January 2014.
- CDSB Biosolids EMS Goals Report for 2012, presented to Board December 17, 2013.
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees
- Interviews with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.

Element 16. Internal BMP Audit

- EMS Manual Element 16: Internal EMS Audit, dated July 13, 2006, last revised September 22, 2012.
- Reviewed Internal Audit Report for internal audits conducted in August 2013 and on September 15, 2014.
- Reviewed Internal Auditor's Worksheets of Jill Houston, lead auditor; Dan Griffin, auditor; and Trace Workman, auditor.
- Interview with Leland Myers, District Manager, Central Davis Sewer District.
- Interview with Jill Houston, Internal Audit Lead Auditor, Assistant District Manager, Central Davis Sewer District.

Element 17. Management Review

- EMS Manual Element 17: Management Review, dated July 13, 2006, September 22, 2012
- CDSB Biosolids EMS Goals Report for 2013, presented to Board December 17, 2013.
- Annual Activities – Management Review – December 17, 2013.
- CDSB Board Meeting Agenda – January 2, 2014 – 7 PM.
- Reviewed CDSB EMS Report on Goals and Objectives Reporting Year 2013.
- Interview with Sherman Cloward, Central Davis Sewer District Board of Trustees
- Interviews with Leland Myers and Jill Houston, District Manager and Assistant Manager, respectively, Central Davis Sewer District.

Central Davis Sewer District Audit and/or Corrective Action Worksheet

- i. **Elements #** 3
- ii. **Audit/Activity type:** Seventh Interim Audit
- iii. **Auditor's/Authors name:** Bill Hancuff
- iv. **Period being audited:** Thru October, 2014
- v. **Audit/Activity date(s):** October 27-28, 2014

Summary of findings: The new compost aerated static piles and odor reduction agent (Quick Soil) addition system have not been identified as critical control points and written notification to the NBP and third party verification auditor has not been made.

- vi. **Nonconformance (if any) and cause:** Notification Not Provided Before Implementation.
- vii. **Corrective actions already taken (if any):** Auditor Recommendations accepted. Requirement 3 has been amended, notification letter prepared for auditor and NBP removed from the notification requirement.
- viii. **Recommended additional corrective actions (if any):** None
- ix. **Person(s) responsible for implementing corrective action(s):** Leland Myers
- x. **Changes in policies, programs, plans, operational controls and monitoring/measurements needed to prevent reoccurrence (if any):** Changes as noted in vii above.
- xi. **Estimated completion date:** Completed October 31, 2014.
- xii. **Required resources:** 2 Hours of combined staff time
- xiii. **Tracking:**

Tracking Worksheet

Date	Status of corrective action	Supporting documentation
10/31/2014	Complete	EMS Manual Amended

CENTRAL DAVIS SEWER DISTRICT

October 31, 2014

William Hancuff, Lead Auditor
NSF-International Strategic Registrations

Delivered by E-Mail

Dear Bill,

In accordance with our EMS manual this memo will notify you that that Central Davis Sewer District has implemented two additional Standard Operating Procedures (SOP) intended to assist in odor reduction from the composting operation. These are:

SOP #11 - Odor Reduction Agent Addition
SOP #12 - Class A EQ Composting – Aerated Static Piles

The SOP documents are included in the recent manual provided to you. If you have any questions, please contact me.

Sincerely,



Leland Myers, P.E.
District Manager

Element 3: Critical Control Points

Created/Approved: *July 13, 2006* **By:** *Board of Trustees*

Date issued: *July 13, 2006*

Date last reviewed: *October 31, 2014* **By:** *Leland Myers*

Introduction

Critical Control Points (or *key processes*) are those biosolids management activities that are under the direct control or influence of Central Davis Sewer District that have the potential, if not managed effectively, to create significant changes to the quality of its biosolids and could create negative environmental impacts. Critical control points include activities that can affect the quality of biosolids, how biosolids are managed, or how Central Davis Sewer District biosolids program is viewed by the general public and regulators.

Table 3.1 identifies Central Davis Sewer District critical control points that need to be managed to avoid problems with the biosolids quality and potential environmental impacts. The critical control points were selected by Central Davis Sewer District staff and the District Manager after reviewing information contained in the [National Manual of Good Practice](#).

Central Davis Sewer District manages its biosolids to:

- meet the regulatory requirements for metal concentrations for exceptional quality biosolids
- meet the regulatory requirements for pathogen reduction for Class B land application and Class A distribution and management
- maintain minimal content for plastics and debris in the biosolids
- produce products that do not create objectionable odors.

Table 3.1 also contains information on operational controls and monitoring/measurement activities.

Procedure

The following procedure will be used to review and update the selection of critical control points:

1. Central Davis Sewer District Manager will review information in Table 3.1 on an annual basis, when there are regulatory changes or whenever major operational changes occur. The annual review will be conducted by February 28th each year.
2. Revisions to Table 3.1 (if any) will be documented in writing by the Manager of Central Davis Sewer District, who will then be responsible for ensuring that any necessary changes are made to Table 3.1 in the EMS manual. At a minimum, documentation will occur through notation in the annual biosolids program report.
3. If revisions to the critical control points are made by the District Manager, information related to roles/responsibilities, operational controls,

monitoring/measurement and any other relevant areas of the EMS (including potential environmental impacts listed in Table 3.1) will also be reviewed and modified as appropriate. Documentation will be consistent with the approach in Procedure 2 above.

4. Following an operational change that requires revisions to the critical control points or their associated environmental impacts, the District Manager will inform the third-party verification auditor in writing of the changes. This may also be done by e-mail.
5. General operating practices, daily operating duties, and preventative maintenance activities are not specifically identified as Critical Control Practices. None the less, these activities are important to the overall operation of a wastewater treatment facility. Documentation of completion of these activities, where needed for accurate records is contained in the preventative maintenance system. No additional documentation is needed. SOP #006 discusses these activities.

NOTE: THAT ANY CRITICAL CONTROL POINTS OR OPERATIONAL CONTROLS IDENTIFIED IN APPENDIX F OF THE NBP'S NATIONAL MANUAL OF GOOD PRACTICE BUT NOT SHOWN HERE WERE CONSIDERED BUT DETERMINED, THROUGH EXAMINATION OF FACILITY OPERATIONS, TO NOT BE RELEVANT TO THE PROCESSES USED AT THIS FACILITY

Rev #	Brief Description	Date
1-6	Various historic actions prior to 10/9/2011	5/11
7	No change to this Element	3/17/2012
8	Footer added	9/29/2012
9	NBP Eliminated from Notification of Changes	10/31/2014

Table 3.1: Critical Control Points, Operational Controls, SOPs, Monitoring/Measurements and Environmental Outcomes

Biosolids Value Chain (Operational Area)	Critical Control Points (Key Processes)	Operational Controls (Control Points)	Standard Operating Procedures (SOPs)	Monitoring & Measurements	Potential Environmental Impacts
Wastewater Collection and Pretreatment	Industrial Users	Industrial discharge permit	Should any IU's which may impact biosolids quality move into the District, appropriate SOP's will be developed	These items will be included as part of the Industrial Pretreatment Program of the District. The District receives monthly reports on business licenses issued and these are reviewed for potential impacts to the system and biosolids quality.	There are no significant Industrial Users in the CDSD Service area. Currently only compatible pollutants are received from any commercial users. The District treatment facility is capable of meeting current permits limits. Should discharge limits change, even compatible pollutants may be re-evaluated.
	Commercial Users	Commercial discharge permit	Permits issued in accordance with the Industrial Pretreatment Program		
	Septage Receiving Tank	Service contracts	Not Required		
Feed rate		Not Required			
Wastewater Treatment and Solids Generation	Solids screening / grit collection	Screen cleaning and maintenance	General Operating practices – SOP #006	Headwork operations are a part of normal operations and are visually monitored daily. System employs screening and grinding to reduce visible pollutants.	<ul style="list-style-type: none"> Plastics in biosolids Odors From an environmental health aspect, the headwork area has a high potential for disease transmission. Proper PPE are needed in this area. VOC that may be illegally dumped in the sewer would volatile in this area of the treatment facility.
	Scum blanket	Blanket thickness	General Operating practices – SOP #006		
	Primary treatment	WAS line maintenance	General Operating practices – SOP #006		
	Secondary treatment	WAS line maintenance	General Operating practices – SOP #006		
Solids Stabilization, Conditioning and Handling	Aerobic Digestion	Loading rates	Not Required – Process not used.	Documentation maintained in order to comply with requirements found in 40 CFR Part 503.	<ul style="list-style-type: none"> Odors Attraction of vectors Incomplete destruction of pathogens Failure to comply with regulations Air impacts from the biosolids treatment process are not currently significant. Screening operations for compost may cause bacteria or fungus to become air borne during this activity. Proper PPE should be worn and biosolids loading should be minimized during screening activities. Phosphorus enriched runoff from the land application site is considered a possible offsite pollutant impact. Since runoff has this potential, dikes were established at the low end of each land application zone to prevent runoff from occurring. The diking system will contain the 500 year storm. Polymer dosing may unduly waste product unless the thickening process is monitored closely. Electronic dose control has not yet been shown to be economical. All land application has the potential to overload nutrients to the soil. Because of this potential, soils should be closely monitored to insure over-application does not occur.
		Digester Mixing	Not Required – Process not used.		
		Aeration requirements	Not Required – Process not used.		
		"End product" permits	Not Required – Process not used.		
	Anaerobic Digestion	Temperature	Temperature recorded daily on operating report. – SOP #001	Anaerobic digestion, including mixing, are monitored daily in accordance with the District UPDES permit and 40 CFR part 503.	
		Detention time	Calcs revised and recorded when pump rates changed - SOP #001		
		Digester mixing procedure	SOP # 7 – Digester Mixing		
		"End product" permits	Permitting included in Permit UT0020974		
	Chemical Stabilization – Class B product	Quality of add mix of chemicals/lime	Not Required – Process not used.	Composting operations are monitored on a batch basis throughout the year. Final product quality control is needed to insure public acceptance.	
		Mixture consistency	Not Required – Process not used.		
		Mixture pH and temperature	Not Required – Process not used.		
		Mixture detention time	Not Required – Process not used.		
	Chemical Stabilization – Class A product	"End product" permits	Not Required – Process not used.		
		Quality of add mix of chemicals/lime	Not Required – Process not used.		
Mixture consistency		Not Required – Process not used.			
Mixture pH and temperature		Not Required – Process not used.			
	Mixture detention time	Not Required – Process not used.			

		"End product" permits	Not Required – Process not used.			
		Location of facility – air emissions management	Not Required – Process not used.			
	Composting		Quality of add mix of bulking agent			SOP #2, #11 & #12 For Class A and SOP #3 for Class B
			Mixture consistency			SOP #2, #11 & #12 For Class A and SOP #3 for Class B
			Mixture temperature			SOP #2, #11 & #12 For Class A and SOP #3 for Class B
			Mixture turning			SOP #2, #11 & #12 For Class A and SOP #3 for Class B
			Mixture detention time			SOP #2, #11 & #12 For Class A and SOP #3 for Class B
			"End product" permits			SOP #2, #11 & #12 For Class A and SOP #3 for Class B
		Air drying system				Location of facility
			Mixture turning			Not Required – Process not used.
			Mixture temperature			Not Required – Process not used.
			Mixture detention time			Not Required – Process not used.
			"End product" permits			Not Required – Process not used.
	Thermal drying system		Location of facility – air emission management			Not Required – Process not used.
			Temperature			Not Required – Process not used.
			Detention time			Not Required – Process not used.
			Stack emissions			Not Required – Process not used.
			Storage bin / silo			Not Required – Process not used.
			"End product" permits			Not Required – Process not used.
	Dewatering		Location of facility			SOP #8 – Belt Press/Thickener Operations
		"End product" permits	Included in UPDES Permit			
Drying bed location		Regulatory requirements	Not Required – Process not used.			
Thickening		Location of facility	SOP #8 – Belt Press/Thickener Operations			
		"End product" permits	Included in UPDES Permit			
Biosolids Storage, Loading and Transportation	Solids storage	Site location	Not Required – Process not used.	Biosolids are not stored for later application and transport of product is within the treatment plant. Any potential spill within the treatment facility will either be returned to the headwork for treatment or will wash into the land application site.	<ul style="list-style-type: none"> • Spills • Roadway accidents • Truck noise and dust • Odors • If offsite treatment were needed, plans would have to be prepared to insure no additional environmental impact. • Noise issues with any proposed offsite 	
		Distance to neighbors	Not Required – Process not used.			
		Loading procedures	Not Critical to end quality of biosolids			
		Emergency response procedures	Not Critical to end quality of biosolids – all at treatment plant site			
	Transportation	Truck cover	Not Required – Process not used.			

		Routing requirements	Not Required – Process not used.		transportation would have to be evaluated closely to prevent to the nearby residential developments.
		Truck cleaning	Not Required – Process not used.		
Biosolids End Use, Disposal or Beneficial Reuse	Land Application Site Selection	State Regulations	State does not permit sites – Site owned by District	<ol style="list-style-type: none"> Any beneficial use should be monitored for public acceptance. This includes odors from land applied anaerobic biosolids or poor stabilization of finished compost. The SOP's contain appropriate documentation procedures to meet permit limits and guidelines. Compost sales are governed by district policy. Public feedback is important to insure the compost is positively accepted. 	<p>Negative impacts on groundwater or surface water resources may occur is biosolids are not appropriately applied.</p> <p>When used appropriately, biosolids provide a positive impact on soils where application occurs.</p> <p>Site restrictions for land application of Class B biosolids need to be followed to prevent unauthorized access and potential for disease transmission.</p> <p>The District Board policy is to sell compost for an economical fee in order to encourage reuse. This also minimizes resources needed to market the product.</p> <p>Odors have the potential to destroy public acceptance. All effort should be taken to reduce and eliminate offensive smells.</p>
		Management of interim storage/staging area	Not Required – Process not used.		
	Location of truck unloading (land application)	Truck loading/unloading procedures	Not Required – Process not used.		
	Depth to Groundwater (land application)	Land application site selection procedures	SOP #4 for Land Application documentation process		
	Agronomic Rate (land application)	State Regulations	SOP #4 for Land Application documentation process		
	Perimeter of application site (land application)	State Regulations	SOP #4 for Land Application documentation process		
	Set back distance from surface water/neighbors (land application)	State Regulations	SOP #4 for Land Application documentation process		
	Class A/EQ product sale and distribution	Product and packaging specifications	SOP #5 Sale of Compost		
		Product application rates	SOP #5 Sale of Compost		
		Product transportation requirements	SOP #5 Sale of Compost		
		"End product" permits	Not Required		
	Landfill	Landfill regulations	Not Required – Process not used.		
"End product" permits		Not Required – Process not used.			

Central Davis Sewer District Audit and/or Corrective Action Worksheet

- i. **Elements #** 5
- ii. **Audit/Activity type:** Seventh Interim Audit
- iii. **Auditor's/Authors name:** Bill Hancuff
- iv. **Period being audited:** Thru October, 2014
- v. **Audit/Activity date(s):** October 27-28, 2014

Summary of findings: Not all of the goals and objectives for 2014 were measurable.

- vi. **Nonconformances (if any) and cause:** Goal Measurement not specific.
- vii. **Corrective actions already taken (if any):** Auditor Recommendations accepted. Measurement of goal success has been better defined.
- viii. **Recommended additional corrective actions (if any):** None
- ix. **Person(s) responsible for implementing corrective action(s):** Leland Myers
- x. **Changes in policies, programs, plans, operational controls and monitoring/measurements needed to prevent reoccurrence (if any):** No policy change is needed.
- xi. **Estimated completion date:** November 2, 2014.
- xii. **Required resources:** 2 Hours of staff time
- xiii. **Tracking:**

Tracking Worksheet

Date	Status of corrective action	Supporting documentation
11/2/2014	Complete	Report on Goal Measurement

Performance Measurement

One of the SMART criteria in the setting of goals is the measurement of success of the goal. There is two distinct ways completion and success of a goal can be measured. Each of these is discussed below.

Task Completion: Most goals include the need to complete certain tasks. For instance, if the goal were to make a widget, sub tasks may be defined as the steps to make a complete widget. Hence, when all sub tasks have been completed and the widget is complete the goal has been met. As such, the widget is the end point of the goal.

Performance Measurement: In this case, the measurement of success is the results or performance the completion of the goal produces. Goals should be measurable so that you have tangible evidence that you have accomplished the goal. For example, if the goal was to make a widget and widgets were used by your organization to satisfy customers, the measurement of success would be how many satisfied customers were garnered through the widget you made. The measurement of the goal's success would not be merely the making or completion of the widget, but would be the qualitative, successful use of the widget in advancing your organization's purpose.

As part of an environmental management system, the preferred measurement is a performance measurement not merely a task completed. There may be some instances where task completion is an acceptable form of measurement, but generally the use of performance measurement is the better method. In the table on the following page are better definitions of the performance measures for the 2014 NBP EMS goals for Central Davis Sewer District.

Goal #	Brief Description	Performance Measure
1	Begin Using ASP to reduce odors in Composting Operation	In winter 2013/2014 the District received multiple odor complaints from multiple homes. The goal would be to reduce odor complaints to no more than 3 households in the 2014/2015 winter.
2	Addition to compost of an odor reduction agent.	This goal is complementary to goal #1. As such, the measurement of success is the same as per goal #1 above.
3	Replace the screen at the West Farmington Pump Station.	The West Farmington pump station has a screen that no longer meets its intended function. The screen allows trash to fall behind the screen on the grating and requires operators to manually remove the trash weekly. Some of the trash is allowed to spill into the wetwell. The success of the project would be to eliminate manual trash removal for the wetwell.
4	Remove composting and land applications areas from FEMA defined flood plains.	Part of the District's property is shown to be in a flood plain. The measured success of this goal would be the removal of at least 50 acres from the current delineated wetlands.

CDS - Audit and Corrective Action Worksheet

- i. Element #16.4**
- ii. Audit type:** 7th interm Audit
- iii. Auditor's name:** Bill Hancuff, NSF-International
- iv. Period being audited:** Calendar Year 2013
- v. Audit date(s):** October 27-28, 2014
- vi. Nonconformances (if any) and cause:** The internal audit did not perform a review of the Code of Good Practice and the Goals and Objectives.
- vii. Corrective actions already taken (if any):** Prepare checklist for the Code of Good Practice and the Goals and Objectives for the year, to be included in the annual internal audit checklist.
- viii. Recommended additional corrective actions (if any):** Implement Checklist
- ix. Person(s) responsible for implementing corrective action(s):** Jill Houston
- x. Changes in policies, programs, plans, operational controls and monitoring/measurements needed to prevent reoccurrence (if any):** Check is included in annual audit checklist.
- xi. Estimated completion date:** 10/28/2014
- xii. Required resources:** 1 Hour
- xiii. Tracking:**

Corrective action worksheet

Date	Status of corrective action	Supporting documentation
10/28/14	Complete Checklist	Checklist

CDSO Internal Audit EMS Checklist

Code of Good Practice **	
Is compliance with all applicable federal, state and local requirements being met?	
Are applicable standards being met for the intended use of biosolids?	
Is there independent third-party verification?	
Are production and management practices being monitored?	
Are good housekeeping practices being observed in biosolids production through final disposal?	
Are there response plans in place for unanticipated events such as inclement weather, spills, and equipment malfunctions?	
Is there a commitment to sustainable, environmentally acceptable biosolids management practices?	
Is there a plan for preventive maintenance for equipment used to manage biosolids and wastewater solids	
Is there continual improvement in all aspects of biosolids management?	
Are there methods of effective communication with interested parties regarding key elements of each environmental management system?	

**To be reviewed at every internal audit

CDSO Internal Audit EMS Checklist

Goals and Objectives**	
Are goals established using SMART criteria?	
Do goals and objectives consider --Environmental Performance, Regulatory Compliance, Quality Management Practices and Relations with Interested Parties?	
Are goals and objectives reviewed and approved by General Manager?	
Are new or revised goals and objectives included in the annual biosolids management program report?	
Are goals and objectives posted on District bulletin board?	
Is there an action plan to support each goal?	

**To be reviewed at every internal audit