Gregg Mandsager
City Administrator
City Hall, 215 Sycamore St.
Muscatine, IA 52761-3840
(563) 264-1550 Voice/TT

City Administrator Report to Mayor & City Council

May 16, 2014, Edition No. 128

WEEKLY UPDATE:

1. IDNR: Please see the attached report from IDNR regarding bottom ash. The report confirms our understanding of the use of ash and the lack of effects. (2 letters attached).
2. Heinz: Greg Jenkins and I enjoyed a tour of the Heinz facility with Tom Green this past week. Heinz is making great strides and should have line open by June. This has been a significant investment in the community and company (over $30M) and much appreciated.
3. Projects: Per Randy Hill - FYI on various projects the local utilities are working on this summer and beyond. This is updated at our Utility Group Meetings. Thought you might be interested in seeing the projects.
4. IEDA: As you know, Muscatine presented yesterday at the State Capital on behalf of our local reinvestment district application the IEDA Board will meet in June and invite communities to proceed with the full application to include our economic study being wrapped up by Iowa State. Sometime after June 30th and before March 2015 final awards will be made. I appreciate Tom and Ann Meeker and Dan Stein participation at the meeting as well as their consultant. Each did an excellent job in presenting our case for participation in the Iowa revetment Act.
5. In-Depth Meeting for June: Staff plans to bring forward our timeline for the Mississippi Drive Corridor and Grandview Avenue for review and discussion.
6. Blue Jones: Reminder that June 24 and 25 will be our Blue Zones visit where the state team will be checking in to ensure that we have met the criteria included in our community's blueprint. Within a month we should have a decision on certification. I was also asked to speak with Humana about our experience here in Muscatine by the Healthways Team. Humana is considering a similar project in Texas.

Iowa Department of Public Health
Promoting and Protecting the Health of Iowans

Gerd W. Clabaugh, MPA
Interim Director

Terry E. Brandstad
Governor

Kim Reynolds
Lt. Governor

May 8, 2014

Chad Stobbe
Environmental Specialist Senior
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, IA 52353

RE: Health Consultation
Bottom Ash and Salt Mixture Use for Road Traction Agent

Dear Mr. Stobbe:

This letter has been prepared as a consultation to evaluate whether any adverse health effects may occur to the public from the use of a bottom ash salt mixture for a road traction agent in the Muscatine, Iowa area.

Background and Statement of Issues

It is the understanding of the Iowa Department of Public Health that concerned citizens in Muscatine are concerned with the use of bottom ash from the Muscatine Generating Station. These concerns involve the potential of adverse health impacts from fugitive dust and ambient air quality concerns and exposure to heavy metals present in the bottom ash and salt mixture. This consultation first includes a discussion of potential nuisance issues from dust generated from the use of the bottom ash and salt mixture as a road traction agent. This consultation secondly includes a discussion of the potential health effects of exposure of heavy metals from incidental ingestion of the bottom ash and salt mixture that is used as a road traction agent.

Discussion – Dust Nuisance Issues

The dusting potential of the bottom ash and salt mixture used as a traction agent will be compared to that of sand aggregate that is normally utilized in other areas of the state. The best way to determine the dusting potential is to complete a size fraction analysis, also called a sieve analysis, of the bottom ash and salt mixture. Samples of bottom ash mixed with salt and bottom ash alone were provided to the Iowa Department of Natural Resources and were analyzed by Terracon (1). A copy of the sieve analyses is included with this consultation. In addition, the Iowa Department of Transportation provided information of a standard sieve analysis of cover aggregate that is utilized in the winter as a traction agent on roads. The standard for a cover aggregate is shown as Gradation No. 1 on the attached Aggregate Gradation Table (2). The table on the following page is a comparison of the sieve analysis of the bottom ash and salt mixture with the standard for cover aggregate.

Table 1 – Sieve Analysis for Bottom Ash/Salt and Standard Cover Aggregate

Sieve Opening Size or Sieve No.*	Percent of Material Passing Sieve Size	
	Bottom Ash and Salt	Standard Cover Aggregate
1 inch	100	
¾ inch	100	
½ inch	99	
⅜ inch	98	100
4	92	90-100
8	67	70-100
16	31	
30	12	10-60
50	6	
100	3	
200	1.9	0-1.5

* A larger sieve number has a smaller sieve opening size.

The bottom ash and salt mixture has a very similar size analysis to standard cover aggregate that is used for a traction agent on road surfaces throughout Iowa. The bottom ash and salt mixture has a slightly higher amount of the larger-size fractions and slightly higher amount of the smallest sized particles. Since the bottom ash and salt mixture has a similar size analysis when compared to a standard cover aggregate and has a similar density, it would not have a significantly greater dust nuisance potential when compared to a standard cover aggregate that is applied to roads in the winter.

Discussion – Incidental Ingestion of Bottom Ash and Salt Mixture

As previously stated there are concerns in the Muscatine area with exposure to the heavy metals that are present in the bottom ash when this bottom ash is utilized with salt as a road traction agent. Exposure to this bottom ash and salt mixture comes from exposure to dust generated from this mixture and direct contact to this material through what is classified as incidental ingestion. A conservative method of analysis of this exposure would be to determine the heavy metal content with the bottom ash and salt mixture and then assume that all exposures to dust and direct contact of soil in the environmental would come from exposure to this bottom ash and salt mixture. The Iowa Department of Natural Resources provided results from analytical testing of the total metal content of the bottom ash and salt mixture, and analytical testing of the total metal content of bottom ash only (3). The table on the following page is a summary of the concentration of metals found within the bottom ash and salt mixture and within bottom ash only.

Table 1 – Concentration of Total Metal Concentration within Bottom Ash and Salt Mixture, and Bottom Ash Only (3)

Metal Constituent	Concentration in Bottom Ash and Salt Mixture (mg/kg)	Concentration in Bottom Ash (mg/kg)
Antimony, total	<5.0	<5.0
Arsenic, total	3.0	10
Barium, total	1,000	970
Beryllium	<2.0	3.9
Boron, total	160	230
Cadmium, total	<2.0	2.3
Chromium, total	21	46
Copper, total	19	32
Lead, total	<10	23
Manganese, total	130	290
Mercury, total	<1.0	<1.0
Molybdenum, total	<5.0	5.1
Nickel, total	21	43
Selenium, total	<1.0	<1.0
Silver, total	<1.0	<1.0
Thallium, total	<0.5	0.6
Vanadium, total	44	76
Zinc, total	27	86

Any value shown with "<" means that concentration is less than the method detection level available to the laboratory for that metal

A comparison can be made to the highest levels of metals that were detected within the bottom ash and salt mixture or bottom ash only to levels of metals found within soil that have the potential of causing adverse health impacts to individuals. The Agency of Toxic Substances and Disease Registry (ATSDR) has calculated a set of comparison values for substances that may be found in air, water and soil (4). Comparison values (environmental guidelines) are substance concentrations set well below levels that are known or anticipated to result in adverse health effects. The comparison values for substances within soil assume that all of a person's exposure results from exposure to the soil of concern and can be used as screening values to determine if exposure to the metals within the bottom ash and salt has any potential of causing adverse health impacts.

In addition to the ATSDR comparison values, the statewide standards for soil that exist as part of Chapter 137 of Iowa Department of Natural Resources (IDNR) rules were reviewed (5). These statewide standards for soil are utilized within the IDNR's Land Recycling Program as a level of a

chemical within soil that is unlikely to pose a threat to human health, safety, or the environment. Since an ATSDR comparison value was not available for thallium, the IDNR statewide standard for thallium in soil was used as a comparison value.

The table shown on the following page is a list of available comparison values that can be used for evaluation of the potential of adverse health impacts from exposure to the metals that were detected in bottom ash and salt.

Table 2 – Comparison Values for Metals within Soil (4, 5)

Metal	Comparison Value (mg/kg)	Exposure Frequency	Person
Arsenic	15	Chronic	Child
	250	Chronic	Adult
	10	Acute	Pica Child
Barium	10,000	Chronic	Child
	140,000	Chonic	Adult
	400	Intermediate	Pica Child
Beryllium	100	Chronic	Child
	1,400	Chronic	Adult
Boron	10,000	Intermediate	Child
	140,000	Intermediate	Adult
	400	Acute & Intermediate	Pica Child
Cadmium	5	Chronic	Child
	70	Chronic	Adult
	1	Intermediate	Pica Child
Chromium	45	Chronic	Child
	630	Chronic	Adult
	10	Intermediate	Pica Child
Copper	500	Intermediate	Child
	7,000	Intermediate	Adult
	20	Acute & Intermediate	Pica Child
Lead	400[a,b]	Chronic	Child
Manganese	2,500	Chronic	Child
	35,000	Chronic	Adult
Molybenum	250	Chronic	Child
	3,500	Chronic	Adult
Nickel	1,000	Chronic	Child
	14,000	Chronic	Adult
Thallium	0.78[b]	Chronic	Child
Vanadium	500	Intermediate	Child
	7,000	Intermediate	Adult
	20	Intermediate	Pica Child
Zinc	15,000	Chronic	Child
	210,000	Chronic	Adult
	600	Intermediate	Pica Child

"Chronic" exposure is for longer than 1 year
"Intermediate" exposure is between 14 days and 1 year
"Acute" exposure is up to 14 days
"Pica Child" is a child beyond the age of 18 months that exhibits a behavior of eating non-food items such as soil
[a] EPA's screening level for lead in residential soils
[b] Iowa Department of Natural Resources Statewide Standard - Chapter 137, Land Recycling Program

The concentration of several of the metals in the bottom ash and salt is greater than several of the comparison values shown in the table on the previous page. These metals, their concentrations and corresponding comparison values are as follows:

Barium at 1,000 mg/kg (CV = 400 mg/kg for intermediate exposures to Pica children)
Cadmium at 2.3 mg/kg (CV = 1 mg/kg for intermediate exposures to Pica children)
Chromium at 46 mg/kg (CV = 45 mg/kg for chronic exposure to children and 10 mg/kg for intermediate exposures to Pica children)
Copper at 32 mg/kg (CV = 20 mg/kg for acute or intermediate exposure to Pica children)
Vanadium at 76 mg/kg (CV = 20 mg/kg for intermediate exposures to Pica children)

CV – means comparison value

The concentration of these metals within the bottom ash and salt that are above a comparison value indicates that further evaluation is needed. This can be accomplished by determining potential health effects from ingestion exposure to the bottom ash and salt by looking at the available toxicological information and determining the likely exposure scenarios. The toxicological evaluation can be made by utilizing assumed information on incidental ingestion of the bottom ash and salt and then comparing the estimated ingested amount of each metal of concern to studies observing actual health effects. According to ATSDR's Public Health Assessment Guidance Manual (6) it is estimated that an average adult (70 kg average body weight) may incidentally ingest up to 100 mg/day of soil and dust from various sources. According to the same guidance manual, it is estimated that an average child (15 kg average body weight) may incidentally ingest up to 200 mg/day, and a child exhibiting Pica behavior (eating of soil) may ingest up to 5,000 mg/day of soil.

When considering the exposure of bottom ash and salt to a child exhibiting Pica behavior, it is necessary to assume that a significant amount of bottom ash and salt that is applied to the road would need to be deposited in areas where the child plays, and then this child would have to ingest significant amounts of this bottom ash and salt by direct ingestion. A determination of the potential health effects from this type of exposure scenario will be made even though this type of exposure scenario would be unlikely.

Health Effects from Barium Exposure

The lowest level of exposure to barium that has been found to produce adverse health effects from evaluating animal health studies completed on chronic oral exposure to barium is 0.8 mg/kg/day (7). There were no good studies on human exposure to barium that showed observable adverse health impacts. If we assume that an adult would ingest 100 mg/day of bottom ash and salt containing barium at a concentration of 1,000 mg/kg, the amount of barium ingested on a daily basis would be determined by the following equation:

$$\frac{1{,}000 \text{ mg barium}}{\text{kg ash}} \times \frac{100 \text{ mg ash}}{\text{day}} \times \frac{1}{70 \text{ kg}} \times \frac{1 \text{ kg ash}}{10^6 \text{ mg ash}} = 0.0014 \text{ mg/kg/day}$$

The estimated amount of barium that would be incidentally ingested by an adult exposed to bottom ash is over 570 times lower than the lowest amount of barium shown to produce adverse health effects in chronic animal health studies.

Using a similar equation to the one above, estimation can be made of the amount of barium ingested by a child exhibiting Pica behavior:

$$\frac{1{,}000 \text{ mg barium}}{\text{kg ash}} \times \frac{5{,}000 \text{ mg ash}}{\text{day}} \times \frac{1}{15 \text{ kg}} \times \frac{1 \text{ kg ash}}{10^6 \text{ mg ash}} = 0.33 \text{ mg/kg/day}$$

The estimated amount of barium that would be incidentally ingested by a child exhibiting Pica behavior exposed to bottom ash is roughly 2 times lower than the lowest amount of barium shown to produce adverse health effects in chronic animal health studies.

Health Effects from Cadmium Exposure

The lowest level of oral exposure to cadmium that has been found to produce adverse health effects from evaluating human health studies completed on chronic oral exposure to cadmium is 0.0078 mg/kg/day (8). If we assume that an adult would ingest 100 mg/day of ash containing cadmium at a concentration of 2.3 mg/kg, the amount of cadmium ingested on a daily basis would be determined by the following equation:

$$\frac{2.3 \text{ mg cadmium}}{\text{kg ash}} \times \frac{100 \text{ mg ash}}{\text{day}} \times \frac{1}{70 \text{ kg}} \times \frac{1 \text{ kg ash}}{10^6 \text{ mg ash}} = 0.0000033 \text{ mg/kg/day}$$

The estimated amount of cadmium that would be incidentally ingested by an adult exposed to bottom ash is almost 2,400 times lower than the lowest amount of cadmium shown to produce adverse health effects in chronic human health studies.

Using a similar equation to the one above, estimation can be made of the amount of cadmium ingested by a child exhibiting Pica behavior:

$$\frac{2.3 \text{ mg cadmium}}{\text{kg soil}} \times \frac{5{,}000 \text{ mg soil}}{\text{day}} \times \frac{1}{15 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.00077 \text{ mg/kg/day}$$

The estimated amount of cadmium that would be incidentally ingested by a child exhibiting Pica behavior exposed to bottom ash is roughly 10 times lower than the lowest amount of cadmium shown to produce adverse health effects in chronic human health studies.

Health Effects from Chromium Exposure

The lowest level of oral exposure to chromium that has been found to produce adverse health effects from evaluating human health studies completed on chronic oral exposure to chromium is 0.57 mg/kg/day (9). If we assume that an adult would ingest 100 mg/day of soil containing chromium at

a concentration of 46 mg/kg, the amount of chromium ingested on a daily basis would be determined by the following equation:

$$\frac{46 \text{ mg chromium}}{\text{kg soil}} \times \frac{100 \text{ mg soil}}{\text{day}} \times \frac{1}{70 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.000065 \text{ mg/kg/day}$$

The estimated amount of chromium that would be incidentally ingested by an adult exposed to bottom ash is over 8,700 times lower than the lowest amount of chromium shown to produce adverse health effects in chronic human health studies.

Using a similar equation to the one above, estimation can be made of the amount of chromium ingested by a child.

$$\frac{46 \text{ mg chromium}}{\text{kg soil}} \times \frac{200 \text{ mg soil}}{\text{day}} \times \frac{1}{15 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.00061 \text{ mg/kg/day}$$

The estimated amount of chromium that would be incidentally ingested by a child exposed to bottom ash is over 930 times lower than the lowest amount of chromium shown to produce adverse health effect in chronic human health studies.

Using a similar equation to the one above, estimation can be made of the amount of chromium ingested by a child exhibiting Pica behavior:

$$\frac{46 \text{ mg chromium}}{\text{kg soil}} \times \frac{5{,}000 \text{ mg soil}}{\text{day}} \times \frac{1}{15 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.015 \text{ mg/kg/day}$$

The estimated amount of chromium that would be incidentally ingested by a child exhibiting Pica behavior exposed to bottom ash is roughly 38 times lower than the lowest amount of chromium shown to produce adverse health effects in chronic human health studies.

Health Effects from Copper Exposure

The lowest level of oral exposure to copper that has been found to produce adverse health effects from evaluating human health studies completed on intermediate oral exposure to copper is 0.091 mg/kg/day (10). There are no good chronic studies on human exposure to copper. If we assume that an adult would ingest 100 mg/day of soil containing copper at a concentration of 32 mg/kg, the amount of copper ingested on a daily basis would be determined by the following equation:

$$\frac{32 \text{ mg chromium}}{\text{kg soil}} \times \frac{100 \text{ mg soil}}{\text{day}} \times \frac{1}{70 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.000045 \text{ mg/kg/day}$$

The estimated amount of copper that would be incidentally ingested by an adult exposed to bottom ash is just over 2,000 times lower than the lowest amount of copper shown to produce no adverse health effects in intermediate human health studies.

Using a similar equation to the one above, estimation can be made of the amount of copper ingested by a child exhibiting Pica behavior:

$$\frac{32 \text{ mg copper}}{\text{kg soil}} \times \frac{5{,}000 \text{ mg soil}}{\text{day}} \times \frac{1}{15 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.011 \text{ mg/kg/day}$$

The estimated amount of copper that would be incidentally ingested by a child exhibiting Pica behavior exposed to bottom ash is just over 8 times lower than the highest amount of copper shown to produce adverse health effects in intermediate human health studies.

Health Effects from Vanadium Exposure

The highest level of oral exposure to vanadium that has been found to not produce any adverse health effects from evaluating human health studies completed on intermediate oral exposure to vanadium is 0.12 mg/kg/day (11). If we assume that an adult would ingest 100 mg/day of soil containing vanadium at a concentration of 76 mg/kg, the amount of vanadium ingested on a daily basis would be determined by the following equation:

$$\frac{76 \text{ mg manganese}}{\text{kg soil}} \times \frac{100 \text{ mg soil}}{\text{day}} \times \frac{1}{70 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.00011 \text{ mg/kg/day}$$

The estimated amount of vanadium that would be incidentally ingested by an adult exposed to bottom ash is over 1,000 times lower than the lowest amount of vanadium shown to produce adverse health effects in intermediate human health studies.

Using a similar equation to the one above, estimation can be made of the amount of manganese ingested by a child exhibiting Pica behavior:

$$\frac{76 \text{ mg manganese}}{\text{kg soil}} \times \frac{5{,}000 \text{ mg soil}}{\text{day}} \times \frac{1}{15 \text{ kg}} \times \frac{1 \text{ kg soil}}{10^6 \text{ mg soil}} = 0.025 \text{ mg/kg/day}$$

The estimated amount of manganese that would be incidentally ingested by a child exhibiting Pica behavior exposed to bottom ash is roughly 5 times lower than the lowest amount of vanadium shown to produce adverse health effects in intermediate human health studies.

Conclusions

The bottom ash and salt mixture used as a traction agent has a similar percentage of finely-sized particles compared to a standard cover aggregate that is used as a traction agent in Iowa, and has a similar density. Therefore, the bottom and salt mixture has roughly the same potential of causing a dust nuisance when compared to other aggregates that are used as traction agent on Iowa roads. It is also felt that because this material is used when moisture is present on the road (snow and ice) that a dusting nuisance will most likely be kept to a minimum. It is recognized that some pulverizing of the bottom ash may occur with traffic and may contribute to an increase in dusting nuisance as drying of the road surface occurs. But, the risk of adverse health impacts from the metals exposure will remain low.

The level of heavy metals found within the bottom ash is fairly small. The level of metals found within the bottom ash is not expected to produce any adverse health effects in adults or non Pica children that would incidentally ingest bottom ash.

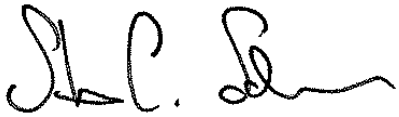
Individuals that may be potentially adversely affected by bottom ash would be children living near roads where the bottom ash is applied that exhibit Pica behavior and who might routinely ingest large amounts of bottom ash from near the road. But as previously stated, in order for a child to be exposed to large amounts of bottom ash a significant amount of bottom ash applied to the road would need to be deposited in areas where the child plays, and then this child would have to ingest significant amounts of this bottom ash by direct ingestion. It is concluded that this exposure scenario would be very unlikely and, as a result, adverse health effects from exposure to bottom ash applied to roads would not pose significant adverse health effect even for children who may exhibit Pica behavior.

References

1. Sieve analysis of bottom ash/salt and bottom ash by Terracon (attached).
2. Iowa Department of Transportation Aggregate Gradation Table (attached).
3. Analytical Report from State Hygienic Laboratory (attached).
4. Agency for Toxic Substances and Disease Registry. Soil Comparison Values. Atlanta: US Department of Health and Human Services; March 2013.
5. Iowa Department of Natural Resources Statewide Standards for Contaminants in Soil and Groundwater https://programs.iowadnr.gov/riskcalc/pages/standards.aspx
6. Agency for Toxic Substances and Disease Registry. Public Health Assessment Guidance Manual – Appendix F, ATSDR web link: http://www.atsdr.cdc.gov/HAC/phamanual/appf.html
7. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Barium. Atlanta: US Department of Health and Human Services; August 2007.
8. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Cadmium. Atlanta: US Department of Health and Human Services; September 2012.
9. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Chromium. Atlanta: US Department of Health and Human Services; September 2012.
10. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Copper. Atlanta: US Department of Health and Human Services; September 2004.
11. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Vanadium. Atlanta: US Department of Health and Human Services; September 2012.

If you have any questions regarding the information in this letter please contact me at (515) 281-8707 or by email at sschmitz@idph.state.ia.us.

Sincerely,



Stuart C. Schmitz, M.S., P.E.
State Toxicologist
Iowa Department of Public Health

Properties of Aggregates

Report Number: 08141018.0001
Service Date: 03/21/14
Report Date: 03/21/14
Task:

Terracon
600 SW Seventh St. Suite M
Des Moines, IA 50309
515-244-3184

Client

Iowa Department of Natural Resources
Chad Stobbe
Attn: Chad Stobbe
Bureau of Land Management
Des Moines, IA 50319

Project

IDNR Sieve Analysis
600 SW 7th Street
005Terracon-12
Des Moines, IA
Project No. 08141018

Sample I.D. or No.: 0.0001

Sample Source: Muscatine City Maintenance Shed

Aggregate Type: Bottom Ash mixed with Salt

Sampled By: Kurt Levetzon Date: 3/4/14
Submitted By: Chad Stobee Date: 3/13/14

Sieve Analysis, ASTM C136

Sieve Size or No.	Percent Passing	Specification Min	Specification Max
5"			
4"			
3.5"			
3"			
2.5"			
2"			
1.5"			
1"	100		
3/4"	100		
1/2"	99		
3/8"	98		
#4	92		
#8	67		
#16	31		
#30	12		
#50	6		
#100	3		
#200	1.9		

Test methods are ASTM unless otherwise indicated

Test	Standard	Result	ASTM C33

Comments:

Services:
Terracon Rep: Fred Stover
Reported To:
Contractor:

Report Distribution
(1) Iowa Department of Natural Resources, (1) Terracon Consultants, Inc., Michael

Reviewed By:
Michael L. Sampson
Construction Services Manager

Properties of Aggregates

Report Number: 08141018.0002
Service Date: 03/21/14
Report Date: 03/25/14
Task: Laboratory Soil/Aggregate Testing

Terracon
600 SW Seventh St. Suite M
Des Moines, IA 50309
515-244-3184

Client

Iowa Department of Natural Resources
Chad Stobbe
Attn: Chad Stobbe
Bureau of Land Management
Des Moines, IA 50319

Project

IDNR Sieve Analysis
600 SW 7th Street
005Terracon-12
Des Moines, IA
Project No. 08141018

Sample I.D. or No.: 0.0002

Sample Source: City of Muscatine general storage area

Aggregate Type: Bottom Ash

Sampled By: Kurt Levetzon Date: 3/4/14
Submitted By: Chad Stobbe Date: 3/13/14

Sieve Analysis, ASTM C136 & C117

Sieve Size or No.	Percent Passing	Specification Min	Specification Max
5"			
4"			
3.5"			
3"			
2.5"			
2"			
1.5"			
1"	100		
3/4"	100		
1/2"	100		
3/8"	99		
#4	96		
#8	87		
#16	50		
#30	19		
#50	8		
#100	4		
#200	2.7		

Test methods are ASTM unless otherwise indicated

Test	Standard	Result	ASTM C33

Comments:

Services:
Terracon Rep: Fred Stover
Reported To:
Contractor:

Report Distribution
(1) Iowa Department of Natural Resources, (1) Terracon Consultants, Inc., Michael

Reviewed By:
Michael L. Sampson
Construction Services Manager

AGGREGATE GRADATION TABLE – ENGLISH

Grad. No.	Section No.	Std. Sieve Size / Intended Use	1½"	1"	3/4"	1/2"	3/8"	#4	#8	#30	#50	#100	#200	*Notes
		Intended Use	Percent Passing											
1	4110,4125, 4133	PCC FA Cover Agg.					100	90-100	70-100	10-60			0-1.5	1
2	4112	PCC Intermediate				95-100			0-10					
3	4115 (57, 2-8), 4118	PCC CA	100	95-100		25-60		0-10	0-5				0-1.5	2,10
4	4115 (2-8)	PCC CA	100	50-100	30-100	20-75	5-55	0-10	0-5				0-1.5	10
5	4115 (67, 2-8)	PCC CA		100	90-100		20-55	0-10	0-5				0-1.5	10
6	4115.05 (Repair & Overlay)	PCC CA			100	97-100	40-90	0-30					0-1.5	10
7	4117 (Class V)	PCC FA & CA	100					80-92	60-75	20-40				
8	4117.03 (Class V)	Fine Limestone					100	90-100					0-30	
10	4120.02, 4120.03, 4119 (C Gravel)	Granular Surface			100			50-80	25-60					3, 11
11	4120.02, 4120.04, 4120.05, 4120.07, 4119 (A, B, Cr. St.)	Granular Surface & Shoulder		100	95-100	70-90		30-55	15-40				6-16	4, 5, 11
12a	4121 (Cr. St.)	Granular Subbase	100			40-80			5-25				0-6	6, 11
12b	4121 (Cr. Gravel)	Granular Subbase	100			50-80			10-30		5-15		3-7	7, 11
13	4122.02 (Cr. St.)	Macadam St. Base	3" nominal maximum size – screened over 3/4" or 1" screen											
14	4123	Modified Subbase	100		70-90				10-40				3-10	5, 7, 11
19	4125 (1/2" Cr. Gr. or Cr. St.)	Cover Aggregate			100	97-100	40-90	0-30	0-15				0-2	11
20	4125 (1/2" Scr. Gr.)	Cover Aggregate			100	95-100	40-80	0-15	0-7				0-1.5	11
21	4125 (3/8")	Cover Aggregate				100	90-100	10-55	0-20	0-7			0-1.5	11
22	4124.02	Fine Slurry Mixture					100	85-100	40-95	20-60	14-35	10-25	5-25	9, 11
23	4124.02 (Cr. St.)	Coarse Slurry Mixture					100	70-90	40-70	- 19-42	- -	- -	5-15	11
29	4131	Porous Backfill			100	95-100	50-100	0-50	0-8					11
30	4132.02 (Cr. St.)	Special Backfill	100						- 10-40				0-10	5, 11
31	4132.03 (Gravel)	Special Backfill		100	90-100	75-100			30-55				3-7	11
32	4133 (Sand/Gr./Cr. St.)	Granular Backfill	100% passing the 3" screen						- 10-100				0-10	8, 11
35	4134 (Natural Sand/Gr.)	Floodable Backfill	100						20-90				0-4	11
36	4134 (Natural Sand)	Floodable Backfill						100	-				0-2	11

Notes: (Gradations Nos. 9, 15, 16, 17, 18, 24, 25, 26, 27, 28, 33 and 34 have been deleted.)

1. For Section 4110, when the fine aggregate is sieved through the following numbered sieves - 4, 8, 16, 30, 50, and 100 - not more than 40% shall pass one sieve and be retained on the sieve with the next higher number.
2. When used in precast and prestressed concrete bridge beams, 100% shall pass the 1" sieve. When used for pipe bedding the No. 200 restriction does not apply.
3. When compaction of material is a specification requirement, the minimum percent passing the No. 200 sieve is 6%. When used as trench backfill, must be a minimum 75% crushed gravel.
4. See specifications for combination of gravel and limestone.
5. Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for material passing the No. 200 sieve.
6. The gradation requirement for the No. 8 sieve shall be 5% to 20% when recycled material is supplied.
7. For Section 4121 gravel, one fractured face on 30% or more of the particles retained on the 3/8-inch sieve. For Section 4123 gravel, one fractured face on 75% or more of the particles retained on the 3/8-inch sieve.
8. Crushed stone shall have 100% passing the 1.5" sieve.
9. Gradation limitations for the 30, 50 and 100 sieves shall not apply when slurry mixture is applied by hand lutes, such as for slurry leveling.
10. Maximum of 2.5% passing the No. 200 sieve allowed for crushed limestone or dolomite when documented production is 1% or less.
11. When Producer gradation test results are used for acceptance, test results representing at least 90% of the material being produced shall be within the gradation limits and the average of all gradation results shall be within the gradations limits. Stockpiled material not meeting the criteria may, at the District Materials Engineer's discretion, be resampled using Materials I.M. 301 procedures. One hundred percent of the stockpile quality control and verification test results shall be within the gradation limits.

State Hygienic Laboratory

The University of Iowa

Accession Number	150998
Date Sample Finalized	2014-03-14 09:56
Date Received	2014-03-04 12:53
Sample Source	Other
Project	04WQFS
Date Collected	2014-03-04 11:03
Collection Site	bottom ash- mixed w/ salt
Collection Town	MUSCATINE
Sample Description	
Client Reference	
Collector	levetzow kurt
Phone	319/461-7128

KURT LEVETZOW
IDNR-FO 6
1023 W MADISON ST
WASHINGTON, IA 52353-1623

Note: Upon arrival, sample met container and preservation requirements for the analysis requested. Please review carefully your sample results for additional analyte comments or method exceptions.

Results of Analyses

Boron, EPA 6010C

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-13 09:15	Date Verified	2014-03-13 14:39
Analyst	MRC	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Boron	160	5.0

Mercury, EPA 7471A

Units	mg/kg [recd wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-10 09:38	Date Verified	2014-03-10 15:02
Analyst	SGB	Verifier	DLS
Analysis Prep	Mercury Digestion, EPA 7471A		

Analyte	Result	Quant Limit
Mercury	<1.0	1.0

Metals, EPA 6020

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-12 11:41	Date Verified	2014-03-14 09:53
Analyst	SGB	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Antimony	<5.0	5
Arsenic	3.0	1
Barium	1000	5
Beryllium	<2.0	2
Cadmium	<2.0	2
Chromium	21	2

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Associate Director
http://www.shl.uiowa.edu

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Iowa Laboratories Complex
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Ankeny, IA 50023
515/725-1600 Fax: 515/725-1642

State Hygienic Laboratory

The University of Iowa

Accession Number | 150998

Analyte	Result	Quant Limit
Copper	19	5
Lead	<10	10
Manganese	130	2
Molybdenum	<5.0	5
Nickel	21	5
Selenium	<1.0	1
Silver	<1.0	1
Thallium	<1.0	1
Vanadium	44	5
Zinc	27	2

Description of Units used within this report

mg/kg [dry wt] = Milligrams per Kilogram by Dry Weight
mg/kg [recd wt] = Milligrams per Kilogram as Received

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The University of Iowa

Accession Number	150999
Date Sample Finalized	2014-03-14 09:56
Date Received	2014-03-04 12:53
Sample Source	Other
Project	04WQFS
Date Collected	2014-03-04 11:07
Collection Site	bottom ash- city of muscatine
Collection Town	MUSCATINE
Sample Description	
Client Reference	
Collector	levetzow kurt
Phone	319/461-7128

KURT LEVETZOW
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Results of Analyses

Boron, EPA 6010C

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-13 09:15	Date Verified	2014-03-13 14:40
Analyst	MRC	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Boron	230	5.0

Mercury, EPA 7471A

Units	mg/kg [recd wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-10 09:38	Date Verified	2014-03-10 15:02
Analyst	SGB	Verifier	DLS
Analysis Prep	Mercury Digestion, EPA 7471A		

Analyte	Result	Quant Limit
Mercury	<1.0	1.0

Metals, EPA 6020

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-12 11:41	Date Verified	2014-03-14 09:55
Analyst	SGB	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Antimony	<5.0	5
Arsenic	10	1
Barium	970	5
Beryllium	3.9	2
Cadmium	2.3	2
Chromium	46	2

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State Hygienic Laboratory

The University of Iowa

Accession Number | 150999

Analyte	Result	Quant Limit
Copper	32	5
Lead	23	10
Manganese	290	2
Molybdenum	5.1	5
Nickel	43	5
Selenium	<1.0	1
Silver	<1.0	1
Thallium	<1.0	1
Vanadium	76	5
Zinc	86	2

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THE UNIVERSITY OF IOWA

HYGIENIC LABORATORY
Iowa's Environmental and Public Health Laboratory
2220 South Ankeny Boulevard
Ankeny, Iowa 50023
515-725-1600 *Fax* 515-725-1642
www.uhl.uiowa.edu

FACSIMILE MESSAGE

DATE: 5/6/14

TO: Chad Stobbe **FAX#** 281-8895

FROM: Steve Shea **FAX # 515/725-1646**

4 **PAGE(S) FOLLOW(S) THIS SHEET**

IF YOU HAVE PROBLEMS WITH TRANSMISSION, CALL 515/725-1652

State Hygienic Laboratory

The University of Iowa

Accession Number	150998 ***Revision 1***
Date Sample Finalized	2014-03-27 15:08
Date Received	2014-03-04 12:53
Sample Source	Other
Project	04WQFS
Date Collected	2014-03-04 11:03
Collection Site	bottom ash- mixed w/ salt
Collection Town	MUSCATINE
Sample Description	
Client Reference	
Collector	levetzow kurt
Phone	319/461-7128

KURT LEVETZOW
IDNR-FO 6
1023 W MADISON ST
WASHINGTON, IA 52353-1623

Note: Upon arrival, sample met container and preservation requirements for the analysis requested. Please review carefully your sample results for additional analyte comments or method exceptions.

Results of Analyses

Boron, EPA 6010C

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-13 09:15	Date Verified	2014-03-13 14:39
Analyst	MRC	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Boron	160	5.0

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Units	mg/kg [recd wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-10 09:38	Date Verified	2014-03-10 15:02
Analyst	SGB	Verifier	DLS
Analysis Prep	Mercury Digestion, EPA 7471A		

Analyte	Result	Quant Limit
Mercury	<1.0	1.0

Metals, EPA 6020

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-12 11:41	Date Verified	2014-03-27 15:08 ***Revision 1***
Analyst	SGB	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Antimony	<5.0	5
Arsenic	3.0	1
Barium	1000	5
Beryllium	<2.0	2
Cadmium	<2.0	2
Chromium	21	2

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Accession Number | 150998 ***Revision 1***

Analyte	Result	Quant Limit
Copper	19	5
Lead	<10	10
Manganese	130	2
Molybdenum	<5.0	5
Nickel	21	5
Selenium	<1.0	1
Silver	<1.0	1
Vanadium	44	5
Zinc	27	2

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Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Thallium	<0.5	0.5

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Accession Number	150999 ***Revision 1***
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Date Received	2014-03-04 12:53
Sample Source	Other
Project	04WQFS
Date Collected	2014-03-04 11:07
Collection Site	bottom ash- city of muscatine
Collection Town	MUSCATINE
Sample Description	
Client Reference	
Collector	levetzow kurt
Phone	319/461-7128

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Metals, EPA 6020

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Date Analyzed	2014-03-27 09:40	Date Verified	2014-03-27 15:09
Analyst	SGB	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Thallium	0.6	0.5

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Accession Number | 150999 **Revision 1**

Metals, EPA 6020

Units	mg/kg [dry wt]	Analyzed In	Ankeny
Date Analyzed	2014-03-12 11:41	Date Verified	2014-03-27 15:08 **Revision 1**
Analyst	SGB	Verifier	DLS
Analysis Prep	Metals Digestion of Solid Samples, EPA 3050B		

Analyte	Result	Quant Limit
Antimony	<5.0	5
Arsenic	10	1
Barium	970	5
Beryllium	3.9	2
Cadmium	2.3	2
Chromium	46	2
Copper	32	5
Lead	23	10
Manganese	290	2
Molybdenum	5.1	5
Nickel	43	5
Selenium	<1.0	1
Silver	<1.0	1
Vanadium	76	5
Zinc	86	2

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Fields of Opportunities

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

May 12, 2014

JEAN BREWSTER
MANAGER ENVIRONMENTAL AFFAIRS
MUSCATINE POWER & WATER
3205 CEDAR STREET
MUSCATINE IA 52761

Re: Bottom Ash As Winter Road Traction Agent
Iowa Department of Public Health – Health Consultation

Dear Ms. Brewster:

Based upon public concerns expressed to the DNR regarding the application of Muscatine Power & Water's bottom ash as a winter road traction agent within the City of Muscatine, the DNR consulted with the State Toxicologist at the Iowa Department of Public Health to evaluate the health risks associated with the use of bottom ash in this manner. A copy of the referenced report and all associated analytical results have been enclosed for your review and record.

If you have questions regarding the enclosed Health Consultation, please contact Stuart C. Schmitz, M.S., P.E. at (515) 281-8707 or Stuart.Schmitz@idph.iowa.gov. Should you have any comments or questions for the DNR regarding this matter, please contact me at (515) 242-5851 or Chad.Stobbe@dnr.iowa.gov.

Sincerely,

Chad A. Stobbe
Environmental Specialist Senior
Land Quality Bureau

Enclosure

cc: Kurt Levetzow, DNR Field Office #6, Washington, IA

Randy Howell, Roadway Maintenance Supervisor
City of Muscatine
1459 Washington Street
Muscatine, IA 52761

IPL-Alliant Energy Gas Projects

2014 - Muscatine Operations Crew

Seven Springs RD - Lower gas main on east side of Seven Springs as necessary for Muscatine County Road grading.

Mulberry & Hwy 61 - Find ends of steel main under highway. Determine if main needs to be replaced or cathodic protection added.

Downtown rebuild - Replace inside service pipe, main pipe, and meters, with new outside services and meter manifolds.

Unused service retirements - Retire unused gas services that have not generated revenue for 18 months or more.

Service replacements and maintenance as needed

2014 Projects - Contractor and/or Operations Crew

5th & Oak DRS relocation - Remove DRS and valve at 5th & Oak. Install new station in location yet to be finalized. Replace/upgrade main from new station location to existing 4" plastic mains in the area.

Pine & 11th DRS replacement - Replace existing DRS in same location with installation of new outlet valves and some main tie work.

Cedar & Houser DRS - replacement Replace existing distribution DRS in fenced area by Post Office. Includes new inlet and outlet valves, and some main tie work, possibly just outside the fence.

Sunset & Houser DRS - Retire this station after installing new main tie on Houser ST from Sunset Park to main ending north of Musser.

Newcomb DRS - Replace existing DRS. Install main tie from main behind Phelps to Houser ST. Replace remaining 2" PL main on Newcomb Blvd with 4" PL.

Ogilvie DRS - Upgrade, repair or replace this station.

Colorado ST - Phase 3: Install 2" plastic gas main across Colorado ST on the east side of Plaza PL, connecting the main stubs, after final grade has been established at this intersection.

Hwy 61 & Hwy 38 - Install main tie under Hwy 61, from existing main south of Krieger's private road on Park Ave W, to main in NW corner of Cleveland ST and Park Ave intersection.

Future Projects

old Hershey DRS retirement - Install temporary by-pass on 8" steel Iowa Permitted main on east side of Houser ST, north of Hershey Ave. Replace section of gas main containing elbow feeding former Hershey & Houser DRS inlet leg. Remove remaining DRS leg and barricade.

Sampson - Install main tie under RR tracks to connect mains on both sides of tracks.

EASTERN IOWA LIGHT AND POWER COOPERATIVE
P.O. Box 3003 - 600 East Fifth St.
Wilton, Iowa 52778 (563) 732-2211
www.easterniowa.com

May 6, 2014

Projects in progress by Eastern Iowa Light and Power Cooperative:

1. Installing of road from Northland substation to University, south edge of Menards property.

2. Southwest of Menards, out of sectionalizer, boring to the north side of Highway 61, along University, in front of Menards.

Al Kroeger
Area Supervisor

City of Muscatine Projects

5-May-14

Paving Projects	Start Date	Notes
Cedar Street Paving 1	Ongoing	Parham to Stonebrook
Cedar Street Paving 2	June 1 - Aug 15	Houser to Imperial Oaks
Cedar Street Paving 3	Aug 15 - Oct 31	Imperial Oaks to Stonebrook
Cedar Century Link	Ongoing	Houser to Parham - Minor remaining conflicts
Cedar MPW Electric	Ongoing	Underground to finish at Logan
Cedar MPW Communication	Ongoing	Need out of Parham Intersection
Cedar Water main at Logan	Summer 2014	Under Contract with Sulzberger
Logan Culvert Extensions	Almost done	Seeding to finish
Cedar Street Lights	Summer 2014	Follow paving phases
Cedar High School Traffic Signals	Summer 2014	At High School
Colorado	Fall 2013-2014	Park Ave to University
Mulberry	2016+	Houser to Bypass
Mississippi Drive Corridor	2016+	TJ - Local construction
Houser Hill	2016+	Hershey to Lucas
Sidewalks - Warren & Grandview	Spring 2014	Includes RR crossing trail to Musser Park
Sewer Projects		
West Hill Phase 2	Ongoing	6th at Spruce to Locust and ravine to 8th
West Hill Phase 3	2015 or later	Under Design - Bid Jan 2015 or later
Air Release Valves Phase 2	Complete May 30	Air valves just arrived from overseas.
Harbor Dredge Pipe	Done end of May	Surface restoration & punch list to complete
Trail Projects		
Musser Park to Wiggens Road	Spring 2014	Planning phase - route & easements
Mad Creek Trail	2015+	Riverfront to Washington
Site Plans		
Central State Bank		Harrison & Park Ave
West Side Store		Cedar & Houser
Levees		
Geneva Creek Chan Shaping - Isett	Bid in June	Required by USACE - Summer construction

MPW – Water's Upcoming Projects

May 6, 2014

2014 Projects

- 10 Hydrants and 4 Small Valve Replacements - work to be done throughout the City, one identified on East 2nd Street by the bridge

- Valve Replacement Project, installation of new 16" valves, locations on Newell Avenue and around 4th Street Park

- Cedar Street construction and water main relocation across Cedar Street from Logan.

- Fair acres and Crestline water main replacement. This will begin on Bidwell and Fair Acres, 2014 project.

- Colorado water main replacement

- West 3rd Street from Ash down the hill to Green Street
- Grand Avenue Water Main replacement from Harrison to McArthur, 2014
- Harmony Lane Water main replacement
- Palm Street, loop from Canon down Glen to Palm and back along River Road
- Park Avenue, Colorado to Monroe main replacement
- Geneva Drive, West of Middle Road
- Lucas Street, East of Dolliver
- New well field projects

Holes for Repair, list for Heuer and Illowa, 1st round, 13'-14'

1. 40' off Mulberry on Myrtle, WJ005485, asphalt edge and landscaping, occurred 12/2/13 Exclusively asphalt repair full depth, core out and saw cut by Heuer

2. 1001 Lincoln Blvd, 6" break, gutter pan, WJ005519, occurred 12/11/13 Concrete curb and gutter to be done first then full depth asphalt repair

3. W 5th / Locust – 4 holes from valve work, WJ004986, need saw cut and cored out, 6" of concrete and 3" of asphalt

4. Harrison and Park Avenue - concrete, be careful of the traffic loops, WJ005538, occurred 12/20/13 ,this is an all concrete repair, to be done on a Saturday, all work by Heuer, school traffic is the problem

5. 211 E 8th Street – concrete under asphalt, landscaping to do for Beth Nietzel at 205 East 8th, WJ005555, occurred 1/2/14, this is another all concrete repair to be done on a Saturday

6. Sycamore and E 3rd St. – concrete big patch on NW corner, WJ005575, occurred 1/8/14. Can be done anytime, Randy will help with traffic control, all concrete

7. Spuce and West 2nd intersection, 2" circumferential break, asphalt repair by man hole, WJ005598, occurred 1/16/14, no parking signs needed on both sides of the street, 6" concrete, 3" of asphalt

8. 415 Lee Street, 2" circumferential break, 2 holes, asphalt and maybe some gutter, WJ005620, occurred 1/28/14, asphalt full depth

9. 805 Marquette Street, 2" break, circumferential, asphalt, WJ005629, occurred 2-4-14 Asphalt full depth

10. 1809 Foster Street, 6" break, circumferential, asphalt, WJ005631, occurred 2-6-14. Asphalt full depth

11. New Hampshire and Grover, 2" break, circumferential, asphalt, WJ005652, occurred 2/11/14 Asphalt full depth

12. 904 Scott Street, 4" circumferential, asphalt, WJ005670, occurred 2/18/14, asphalt full depth

13. 414 Lee Street in Alley, 2" circumferential, asphalt, WJ005682, occurred 2/23/14, asphalt full depth

14. Mulberry and Bonnie Drive, 6" circumferential, concrete, WJ005700, occurred 2/27/14, Concrete only, must be done completely on a Saturday due to school

MPW—Electric's Current & Upcoming Projects

May 6, 2014

2013 Carry-over Projects

- Intersection of Cedar Street and Parham Avenue—Install UG lines and equipment via open trenching & HDD in place of OH facilities around the intersection including approx. 300' in each direction. The Electric portion of the project is complete.
- Cedar Street from Parham Avenue to Logan Street—Install UG lines and equipment via a combination of open trenching & HDD and open trenching in place of OH facilities. Excavation is approximately 75% complete.
- Gilbert, Pond and Grover Street area to Charles Street—Install UG lines and equipment in place of OH facilities (conduits already installed). Construction is approximately 25% complete. Hope to start again in the Fall.
- Webster and Blaine Streets from 5th Avenue to Isett Avenue—Install UG lines and equipment in place of OH facilities (conduits already installed). Construction expected to begin late this year.

2014 Projects

- Well #44—Install UG electric for new well located in our Main Well Field inside the Power Plant property. UG lines to be installed via open trenching. Trenching is complete.
- Well #45—Install UG electric for new well located in Progress Park. UG lines to be installed via open trenching. Construction will begin soon.
- Colorado Street Road Widening—Two or three poles to lower/replace and some trenching along east side of Heatherlynn Drive condos. Trenching to begin 5/5.
- McIntire Road UG Electric Replacement—Several segments of electric from 67th Avenue West along McIntire to Reynolds Ave. will be replaced. Approximately 1300' of underground. UG lines to be installed via a combination of HDD and open trenching.

- Tech 4 Area on Highway 38 UG Electric Replacement—Underground feeds to Tech 4 and White Distributing will be replaced. Approximately 800' of underground. UG lines to be installed via a combination of HDD and open trenching.

- Muscatine Art Center UG Electric Replacement—Underground feed to the Art Center will be replaced. Approximately 600' of underground will be installed from Cedar Street. UG lines to be installed via a combination of HDD and open trenching.

- Bloomington Lane Cablecure—UG lines in the area will be pressure treated to extend the life of the existing cables.

- Cedar Street at entrance to high school—Install traffic signals.

- 2014/2015 Cedar Street lighting improvements—Install new street lights on Cedar Street from Parham Avenue to Houser Street. UG lines to be installed via a combination of HDD and open trenching. Construction will begin after the new street is in place.

- #1 Alley Underground—A couple of secondary connection boxes to be installed.