

COTTONWOOD HEIGHTS SWMP

APPENDIX

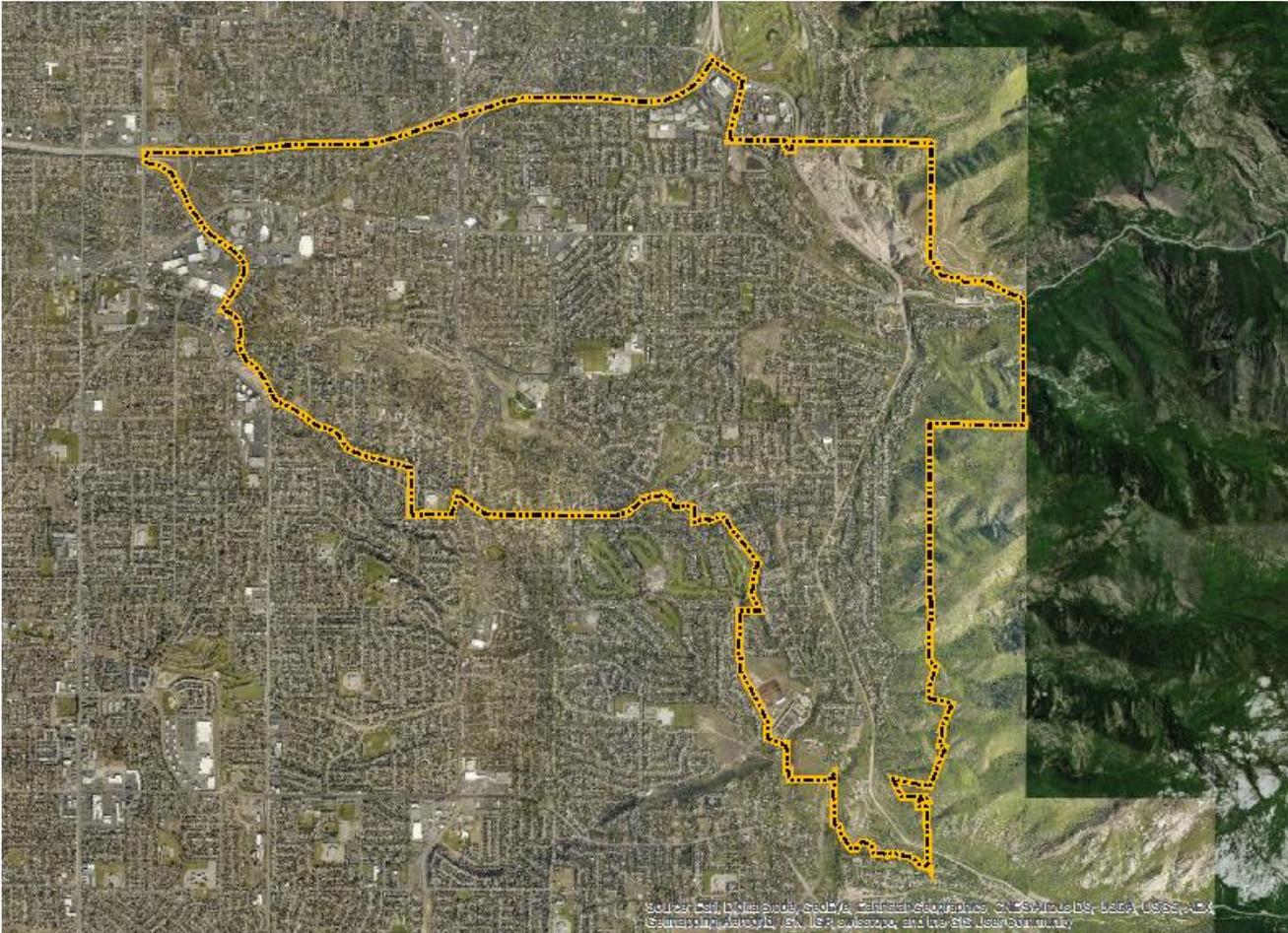
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APPENDIX A – Maps

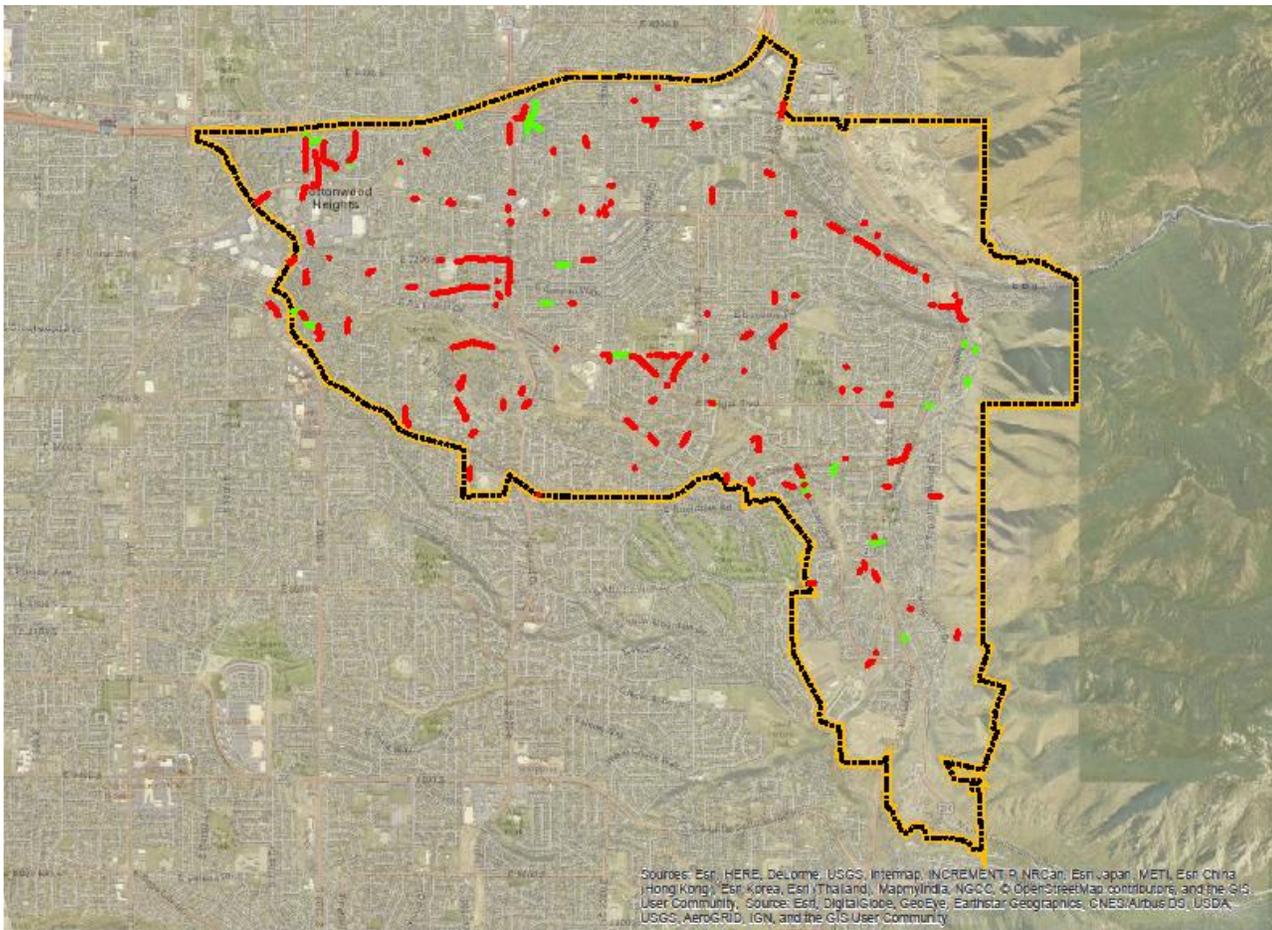
Cottonwood Heights City Map



High Priority Area Map



Storm Drain Priority Cleaning Map



APPENDIX B – Public Education and Outreach on Stormwater Impacts

Tri-folds

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Other Pamphlets Include:

- Fresh Concrete and Mortar Application
- Household and Vehicle Maintenance
- Landscaping, Gardening and Yard Maintenance
- Paint and Household Hazardous Waste
- Pet Waste and Water Quality

For more information about the Cottonwood Heights storm water quality management program and additional pamphlets, contact:



Cottonwood Heights Public Works
2277 E Bengal Blvd.
Cottonwood Heights, UT 84121
(801) 944-7000

Visit the Salt Lake County Storm Water Coalition webpage:
www.stormwatercoalition.org

Spill Response

Dial 911
-or-
State of Utah
Environmental Response
(801) 536-4300

Local Pollution Control Agencies:

- Utah Division of Water Quality
(801) 538-6146
- Salt Lake Valley Health Department
(385) 468-4100
- Cottonwood Heights Public Works
(385) 887-2647



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EROSION CONTROL



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Storm Water Pollution Prevention:

It's Up to Us

In the Salt Lake Valley, storm drains flow directly to local creeks and rivers with **NO treatment**. Degradation of storm water is a serious problem for wildlife dependent on our waterways and for the people who live near streams or use them for recreation. Some common sources of contaminants in storm runoff include:

- Spilled oil, fuel fluids from vehicles and heavy equipment
- Construction debris
- Landscaping runoff containing pesticides or weed killers
- Materials such as used motor oil, antifreeze, paint products that people pour or spill into a street or storm drain.

Cottonwood Heights has developed a Storm Water Management Program to educate local residents and businesses and to improve the quality of storm water runoff. We hope you will join us, by using the recommended methods (referred to as Best Management Practices) described in this pamphlet.

Who Should Use this Pamphlet?
 Home builders
 Developers
 General contractors
 Earthwork equipment operators
 Site Supervisors

What Can You do?

General Practices

- Schedule excavation and grading work for dry weather.
- Perform major equipment repairs away from the job site.
- When refueling or when vehicle/equipment maintenance must be done on site, designate a location away from storm drains or drainage ways.
- Do not use diesel oil to lubricate equipment or parts.

Storm Water Pollution from Construction Activities

Soil excavation and grading operations uncover and loosen large amounts of soil that can flow or blow into storm drains if handled improperly. These activities can be a major source of sediment and contaminants in storm water

Recent regulations require construction activities that disturb 1 acre or more to obtain a UPDES storm water discharge permit from the State division of Water Quality. Also required is the development and implementation of a Storm Water Pollution Prevention Plan. See the reverse side of this pamphlet for the division's phone number.

What Can You Do?

During Construction

- Remove existing vegetation only when absolutely necessary.
- Consider planting temporary vegetation for erosion control on slopes or where construction is not immediately planned.
- Protect downslope drainage courses, streams and storm drains with hay bales or temporary drainage swales.
- Use check dams or ditches to divert runoff around excavations.
- Cover stockpiles and excavated soil with secured tarps or plastic sheeting.

After Construction

- Revegetate and stabilize denuded areas as soon as possible.
- Remove dirt and debris from sidewalks, gutters and drainage structures.
- Remove or stabilize stockpiled material.



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Other Pamphlets Include:

- Landscaping, Gardening and Yard Maintenance
- Pet Waste and Water Quality
- Erosion Control
- Household and Vehicle Maintenance
- Paint and Household Hazardous Waste

For more information about the Salt Lake county storm water quality management program and additional pamphlets, contact:



Cottonwood Heights Public Works
 2277 E Bengal Blvd.
 Cottonwood Heights, UT 84121
 (801) 944-7000

Visit the Salt Lake county Storm Water Coalition webpage:
www.stormwatercoalition.org

Spill Response

Dial 911
 -or-
 State of Utah
 Environmental Response
 (801) 536-4300

Local Pollution Control Agencies:

Utah Division of Water Quality
 (801) 538-6146

Salt Lake Valley Health Department
 (385) 468-4100

Cottonwood Heights Public Works
 (385) 887-2647

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1-800-458-0145

Salt Lake County acknowledges the University of Wisconsin Extension (UWEX) and the Wisconsin Department of Natural Resources for information contained in this pamphlet.

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FRESH CONCRETE and MORTAR APPLICATION



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- Spilled oil, fuel fluids from vehicles and heavy equipment
- Construction debris
- Landscaping runoff containing pesticides or weed killers
- Materials such as used motor oil, antifreeze, paint products that people pour or spill into a street or storm drain.

Cottonwood Heights has developed a Storm Water Management Program to educate local residents and businesses and to improve the quality of storm water runoff. We hope you will join us, by using the recommended methods (referred to as Best Management Practices) described in this pamphlet.

Who Should Use this Pamphlet?
 Home builders
 Developers
 General contractors
 Sidewalk and patio construction workers

What Can You Do?

General Business Practices

- Both at your yard and the construction site, always store dry and wet materials under cover, protected from rainfall and runoff. Protect dry materials from wind.
- Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from gutters, storm drains, rainfall and runoff.
- Wash out concrete mixers only in designated wash-out areas in your yard. Where the water will flow into containment ponds. Whenever possible, recycle washout by pumping back into mixers for reuse. **Never dispose of washout into the street, storm drains, drainage ways or streams!**
- For more information regarding the disposal of unused concrete and washout, contact the health Department at the number listed on the other side of this pamphlet.

Storm Water Pollution from Masonry and Paving

Fresh concrete and cement-related mortars that wash into lakes, rivers and streams are toxic to fish and the aquatic environment. Disposing of these materials to storm drains or streams causes serious problems—and is prohibited by law!

What Can You Do?

General Practices

- Don't mix up more fresh concrete or cement than you will use in a day.
- Set up and operate small mixers on tarps or heavy plastic drop cloths.
- When cleaning up after driveway or sidewalk construction, wash fines onto dirt areas, not down the driveway or into the street or storm drain.
- Place hay bales or other erosion controls down-slope to capture runoff carrying mortar or cement before it reaches the storm drain.
- When breaking up paving, be sure to pick up all the pieces and dispose of properly.
- Recycle large chunks of broken concrete at a landfill
- Dispose of small amounts of excess dry concrete, grout and mortar in the trash.
- Never bury waste material.

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Other Pamphlets Include:

- Erosion Control
- Household and Vehicle Maintenance
- Landscaping, Gardening and Yard Maintenance
- Paint and Household Hazardous Waste
- Pet Waste and Water Quality

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Cottonwood Heights Public Works
 2277 E Bengal Blvd.
 Cottonwood Heights, UT 84121
 (801) 944-7000

Visit the Salt Lake county Storm Water Coalition webpage:
www.stormwatercoalition.org

Spill Response

State of Utah
 Environmental Response
 (801) 536-4123

Local Pollution Control Agencies:

Utah Division of Water Quality
 (801) 536-4300

Salt Lake Valley Health Department
 (385) 468-3862
 Emergencies; 801-580-6681

Cottonwood Heights
 Public Works
 (385) 887-2647



1-800-458-0145

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HOUSEHOLD AND VEHICLE MAINTENANCE



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Storm Water Pollution Prevention: It's Up to Us

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- Construction debris
- Landscaping runoff containing pesticides or weed killers
- Materials such as used motor oil, antifreeze, paint products that people pour or spill into a street or storm drain.



Cottonwood Heights has developed a Storm Water Management Program to educate local residents and businesses and to improve the quality of storm water runoff. We hope you will join us, by using the recommended methods (referred to as Best Management Practices) described in this pamphlet.

- Who Should Use this Pamphlet?
- ⇒ Home builders
 - ⇒ Residents and Developers
 - ⇒ General contractors
 - ⇒ Sidewalk and patio construction workers

What Can You Do?

- General Practices**
- ◊ Never use the gutter or storm drain system for disposal of household waste.
 - ◊ Store toxic products and chemicals indoors or in a shed or storage cabinet.
 - ◊ Take unwanted hazardous materials and containers to the household hazardous waste disposal facility.
 - ◊ **DO NOT WASH INTO THE STREET!** Do not wash tools and equipment in driveways, gutters or drainage ways. Wash over grassed or soil areas where wash water won't reach the street.

Household Hazardous Waste Facilities are located at 6030 West 1300 South, open Monday through Saturday, 7:00 am to 5:00 pm and 10473 S Bacchus Highway, open Monday through Saturday, 7:00 am to 6:00 pm. Removal is at no charge to Salt Lake County homeowners. Call 801-313-6697 for more information.



- Automotive**
- ◊ Take used motor oil and antifreeze to a recycling center or household hazardous waste facility.
 - ◊ Inspect and maintain vehicles to reduce leakage of fluids.
 - ◊ Reduce automotive emissions through regular maintenance and by limiting vehicle usage.
 - ◊ Clean up spills with kitty litter or absorbent material. Dispose of cleanup as hazardous waste.
 - ◊ Vehicles should be washed at a commercial car wash. Vehicles can be washed on the lawn with biodegradable soap to reduce wash water flows to the storm drain system.

- Recycling Oil**
- ◊ Pour waste oil into an unbreakable container (plastic milk jug), seal and label. Call 801-313-6697 or 1-800-458-0145 or check the list on the reverse side for facilities that accept used oil.
 - ◊ Do not mix other materials with oil

Recycling used oil could reduce national petroleum imports by 25.5 million barrels per year!

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- Erosion Control
- Household and Vehicle Maintenance
- Paint and Household Hazardous Waste
- Pet Waste and Water Quality

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Cottonwood Heights, UT 84121
(801) 944-7000

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Spill Response

Dial 911
-or-
801-580-6681 Environmental Health
Emergency Response
or
State of Utah
Environmental Response
(801) 536-4300

Local Pollution Control Agencies:
Utah Division of Water Quality
(801) 538-6146

Salt Lake Valley Health
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(385) 468-3682

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Who Should Use this Pamphlet?

- Residents
- Landscapers
- Gardeners
- Swimming pool/spa service and repair

What Can You Do?

General Practices

- Use biodegradable pesticides/herbicides.
- Never use the gutter or storm drain system for disposal of household or garden waste.
- Store pesticides, fertilizers and other chemicals indoors or in a shed or storage cabinet.
- Remove all pet waste from yard and curb and dispose of in trash to prevent spread of bacteria.
- Wash household tools over grassed area away from curbs and gutters.
- Clean leaves, grass clippings, sediment and trash out of gutter and dispose of in garden or trash.



Pool/Spa Maintenance

- Never discharge pool or spa water to a street or storm drain.
- When emptying a pool or spa, let chlorine dissipate for a few days, then recycle/reuse it by draining it gradually onto a landscaped area.
- Don't use copper-based algaecides unless absolutely necessary. Control algae with chlorine or other alternatives. Copper is an especially strong herbicide and doesn't degrade to less toxic forms quickly.



Landscaping/Garden Maintenance

- Control erosion on your property by planting groundcover and stabilizing erosion prone areas.
- Use up pesticides. Rinse containers and use rinse water as product. Dispose of rinsed containers in the trash.

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Other Pamphlets Include:

- Landscaping, Gardening and Yard Maintenance
- Fresh Concrete and Mortar Application
- Erosion Control
- Household and Vehicle Maintenance
- Pet Waste and Water Quality

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Cottonwood Heights Public Works
2277 E Bengal Blvd.
Cottonwood Heights, UT 84121
(801) 944-7000

Visit the Salt Lake County Storm Water Coalition webpage:
www.stormwatercoalition.org

Spill Response
801-580-6681
-or-
State of Utah
Environmental Response
(801) 536-4300

Local Pollution Control Agencies:
Utah Division of Water Quality
(801) 536-4300

Salt Lake Valley Health Department
(385) 468-4100

Cottonwood Heights Public Works
(385) 887-2647



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Who Should Use this Pamphlet?

- Residents
- Do-It-Yourselfers
- Home builders
- Paint and remodeling contractors
- General contractors



What Can You do?

General Practices

- Never use the gutter or storm drain system for disposal of household waste. Liquid residue from paints, thinners, solvents, glues and cleaning fluids are hazardous wastes.
- When thoroughly dry, empty water base paint cans: spent brushes, rags and drop cloths may be disposed of in the trash.
- Rinse containers and use rinse water as product. Dispose of rinsed containers in trash.
- Properly use and store all toxic products including cleaners, solvents and paints.

There is a Household Hazardous Waste Facility located on 6030 W 1300 S, open Monday – Saturday from 7am to 5pm. County homeowners can dispose of their household hazardous waste for free!! Call 801-313-6697 for more information.

- Use kitty litter or other absorbent material to clean up spills from paved surfaces.
- DO NOT WASH INTO THE STREET!!** Depending on the substance, dispose of absorbents in trash or at the household hazardous waste facility.

Paint Solvents and Adhesives

- Select water based or latex paints whenever possible.
- Sweep up dust and paint chips from sanding or stripping. Dispose of in trash **UNLESS** the activity involved marine paints or paints containing leads. These should be disposed of as hazardous waste.
- When high-pressure water stripping or cleaning building exteriors, block storm drains. Wash water onto dirt area and spade in soil IF no chemicals were used. Contact the Salt Lake County Health Department for more specific guidelines.
- For water based paint, paint out brushes to the extent possible and rinse in sink.
- For oil based paint, clean out the brushes to the extent possible, filter and reuse thinners and solvents. Dispose of excess liquids and residue as hazardous waste.

Give unused products to a neighbor or community group to use.



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Cottonwood Heights Public Works Stormwater Education for Businesses

What is Stormwater? Stormwater is rainwater and snowmelt. Stormwater washes over streets, sidewalks and parking lots picking up pollutants along the way and flows directly in to storm drains which in turn flow into our local Creeks and ground without treatment.

To help the water quality of our local waterways and preventing localized flooding, you can:

- Ensure that your parking lot and surrounding areas are free of trash/litter.
- Ensure that your dumpster stays covered when not in use and the area is always clean.
- Do not wash trucks or other equipment in parking lots and driveways.
- Do not dispose of chemicals, oil, paint, or other hazardous materials on the ground, in the gutter or in a storm drain. Contact a hazardous materials company for removal of these materials.
- Collect fat and grease for recycling.
- Keep a spill kit available and use dry methods for spill cleanup (sweeping, cat litter/absorbents, etc.) and place solid waste in the trash. NEVER HOSE DOWN A SPILL!
- Pour wash water into a janitorial or mop sink. Don't pour it onto a parking lot, alley, sidewalk, or street.
- When your lawn is mowed or fertilized, brush or blow clippings/fertilizer back on to the lawn. When organic material is broken down, it depletes water of oxygen which is hazardous to native organisms in waterways. Added nitrogen and phosphorous can cause the risk of hazardous algae blooms in waterways.

IT IS ILLEGAL TO DISCHARGE WASTEWATER OR WATER CONTAINING SOAPS, DETERGENTS, CLEANING PRODUCTS, GREASE, ETC. IN TO STREETS OR DOWN CURB INLETS!

Salt Lake County General Public Stormwater Survey December 2017



Project Overview

Major Project Objectives

- Determine if respondents consider themselves to be **environmentally conscious**
- Define “stormwater,” per respondents
- Discover **awareness and knowledge** of local stormwater
- Gather **perceptions** regarding the impact of stormwater
- Gather **awareness and knowledge** of stormwater pollution
- Gather information about respondents’ **behaviors** in relation to stormwater and the following:
 - Lawn care
 - Dog care
 - Vehicle washing
 - Disposal of household chemicals
- Discover **awareness and impact** of stormwater advertising
- Gather demographic information, including gender, age, annual household income, political affiliation, and area of residence

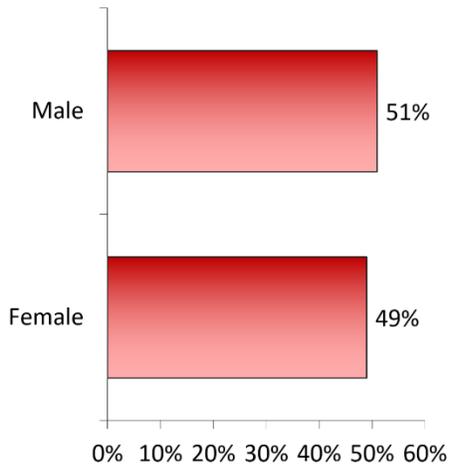
**810 telephone
surveys conducted**

95% confidence level
±3.44% margin of error

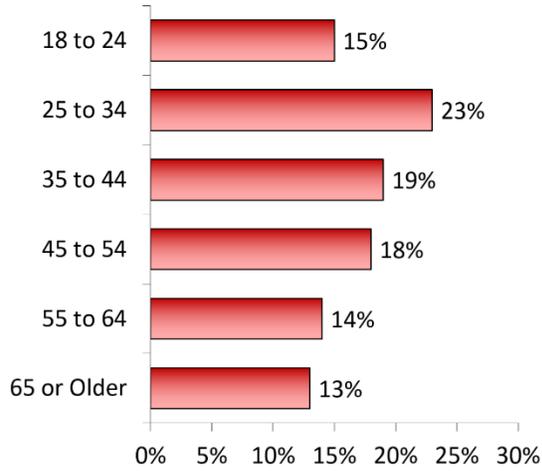


Demographics

Gender

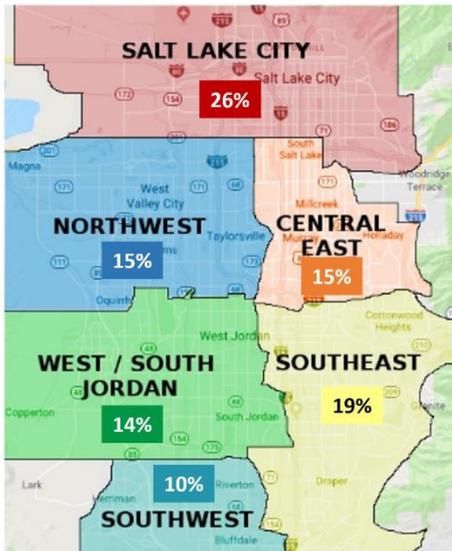


Age

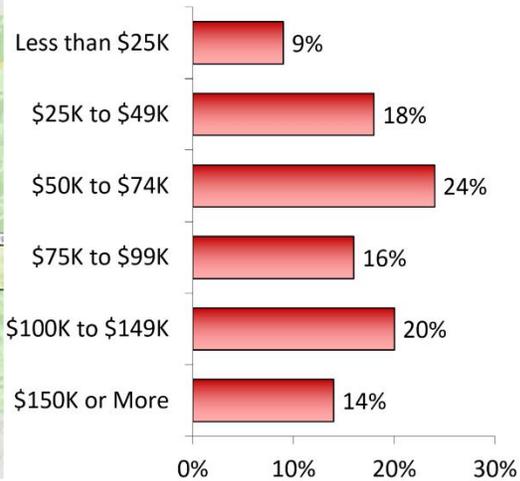


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Demographics



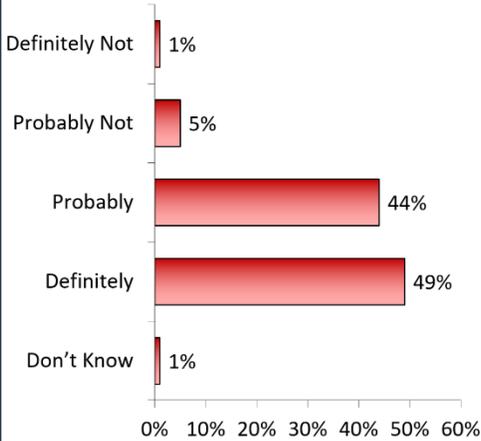
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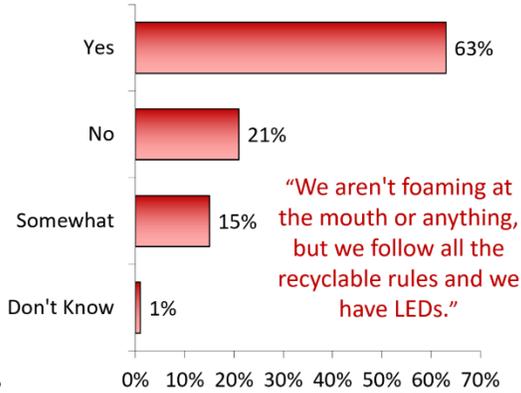
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Environmentally Conscious

Overall, would you consider yourself an environmentally conscious person?



Is going green something you would use to describe you and your family's behavior when it comes to running your household?



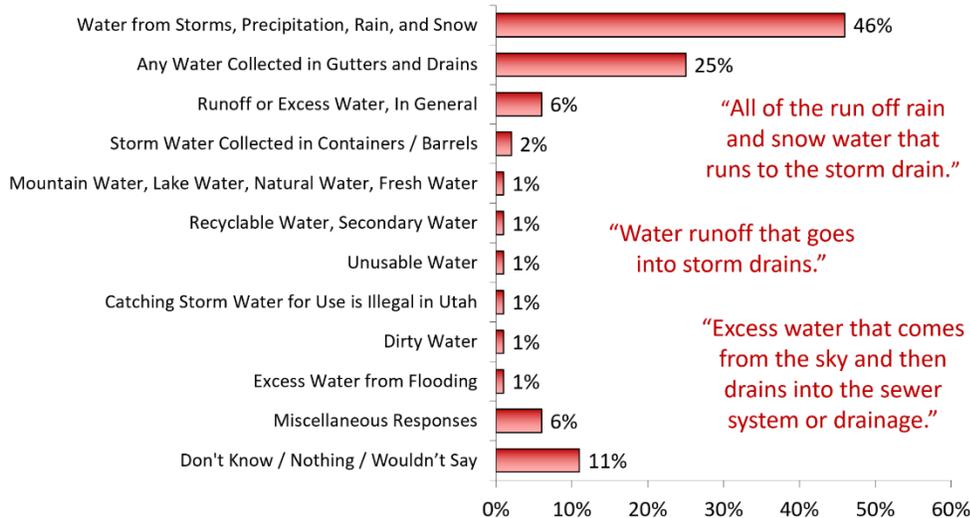
"We aren't foaming at the mouth or anything, but we follow all the recyclable rules and we have LEDs."

5

LIGHTHOUSE RESEARCH

Understanding & Impact

What does the term "stormwater" mean to you?



"All of the run off rain and snow water that runs to the storm drain."

"Water runoff that goes into storm drains."

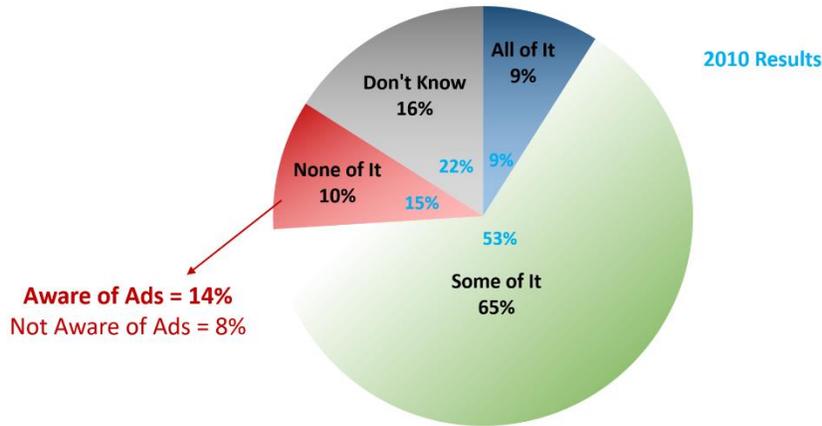
"Excess water that comes from the sky and then drains into the sewer system or drainage."

6

LIGHTHOUSE RESEARCH

Understanding & Impact

How much of Salt Lake County's stormwater goes to a treatment plant?



7

LIGHTHOUSE
RESEARCH

Understanding & Impact

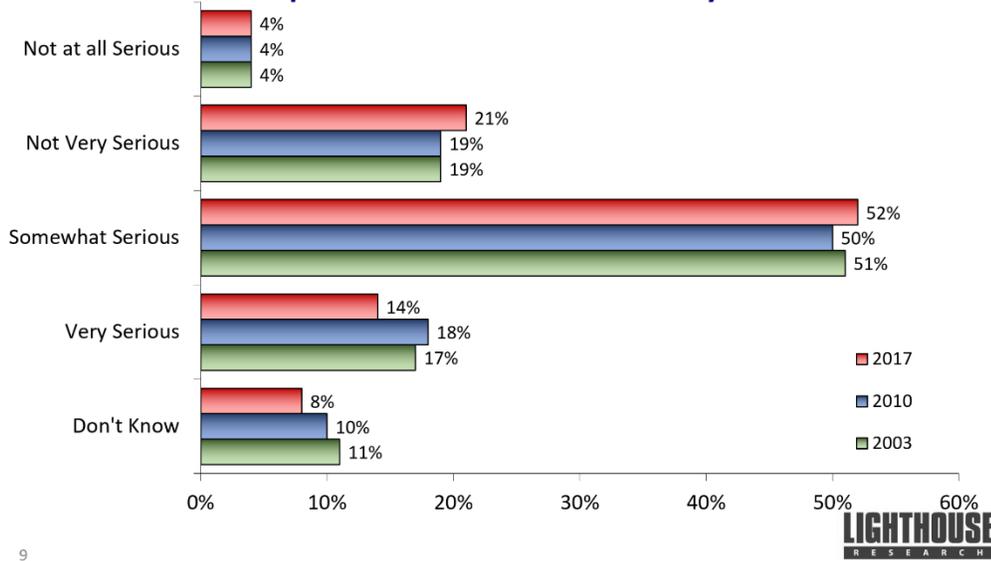
		%
Stormwater impacts my family when we are at local parks or trail ways.	TOTAL DISAGREE	34%
	Neutral / Unsure	10%
	TOTAL AGREE	57%
It is important to me and my family that stormwater is free of dirt and debris.	TOTAL DISAGREE	18%
	Neutral / Unsure	8%
	TOTAL AGREE	74%
Stormwater runoff can be a harmful source of pollution to the environment.	TOTAL DISAGREE	36%
	Neutral / Unsure	11%
	TOTAL AGREE	53%

8

LIGHTHOUSE
RESEARCH

Understanding & Impact

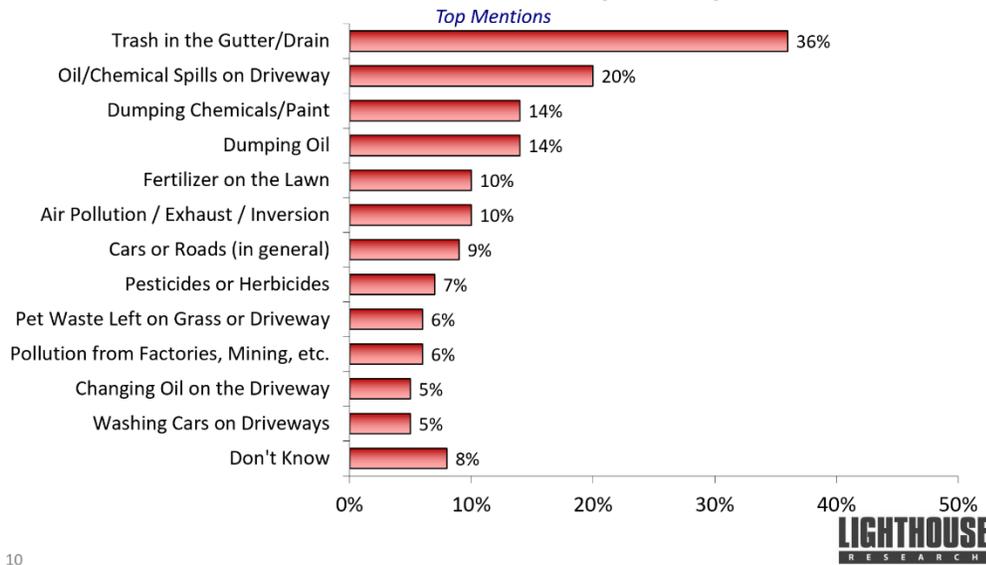
How serious a problem do you feel stormwater pollution is in Salt Lake County?



9

Understanding & Impact

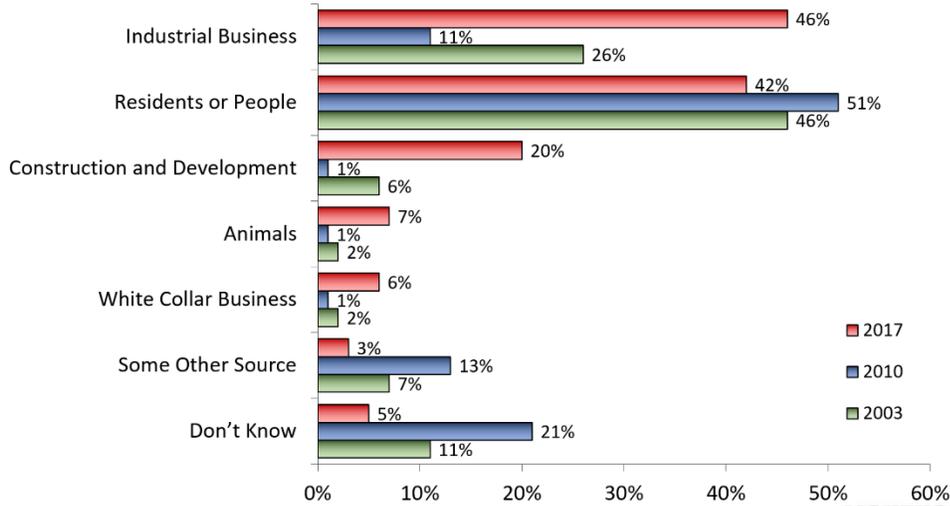
From what you know or have noticed, what are some ways that stormwater in Salt Lake County can be polluted?



10

Understanding & Impact

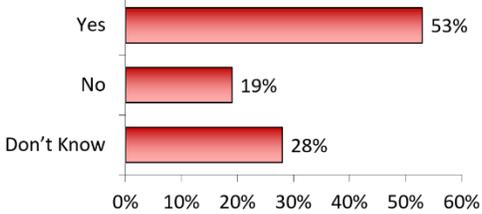
Who do you think is the largest contributor to stormwater pollution?



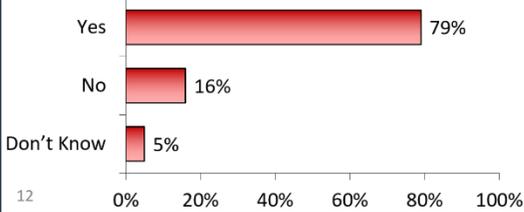
LIGHTHOUSE RESEARCH

Understanding & Impact

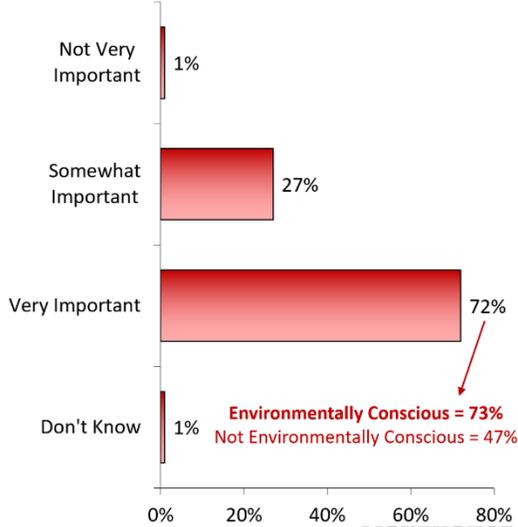
Based on what you know, are local governments required to keep stormwater clean?



Do you feel there is a difference between conserving water and protecting stormwater?



Overall, how important do you feel it is to protect our stormwater?



LIGHTHOUSE RESEARCH

Stormwater Pollution

Lawn Care



Pet Waste



Washing Vehicles



Household Chemicals



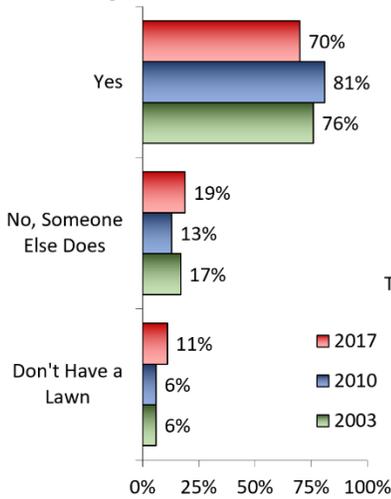
13

LIGHTHOUSE
RESEARCH

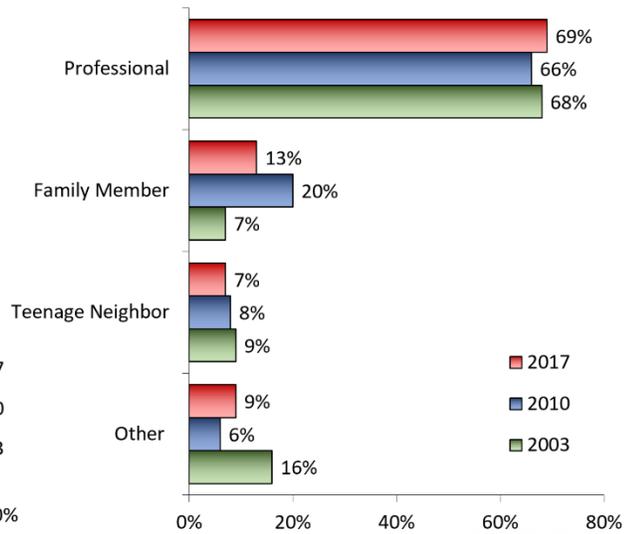
Lawn Care



Do you generally mow your own lawn?



Who generally mows your lawn?



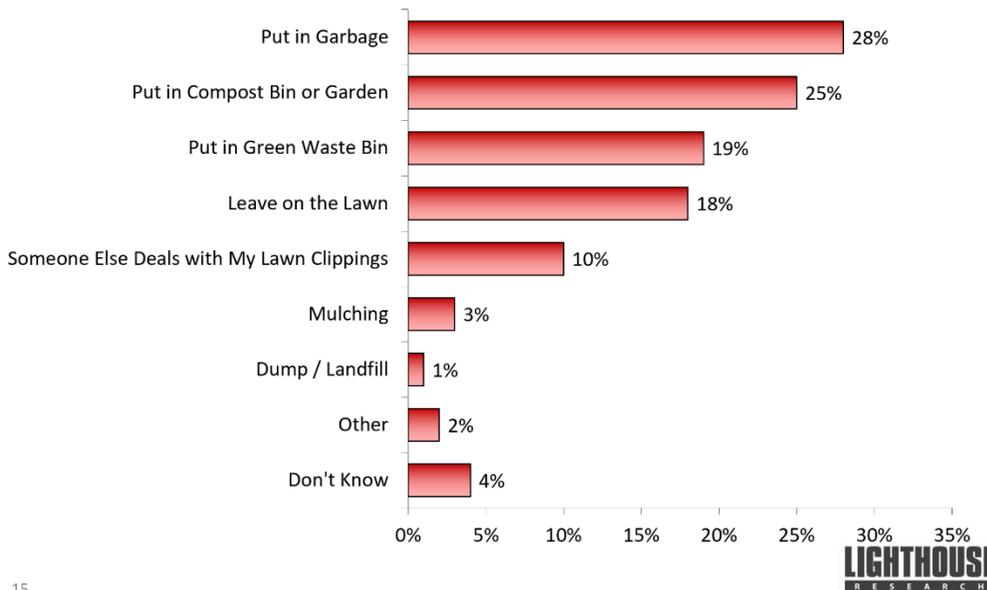
14

LIGHTHOUSE
RESEARCH

Lawn Care



What happens with your lawn clippings?



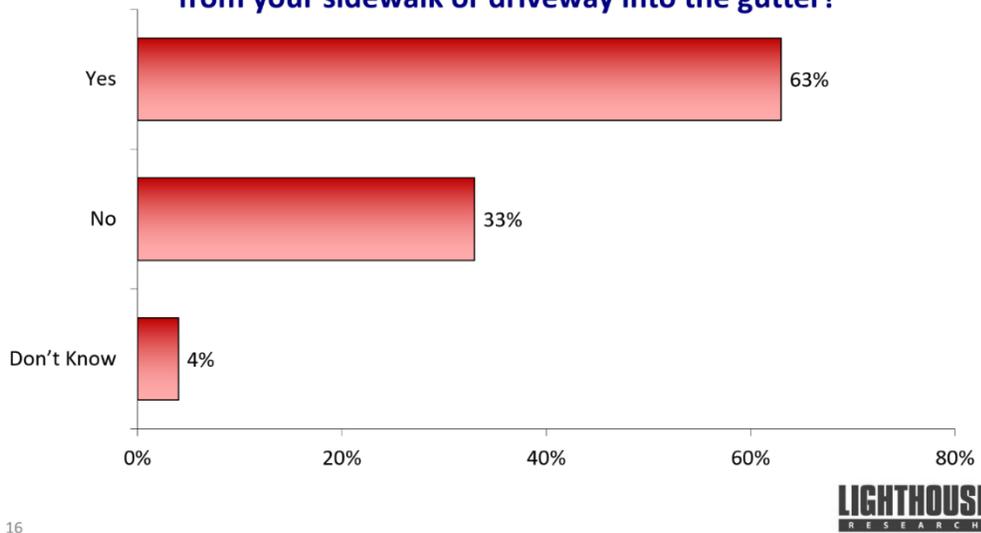
15



Lawn Care



Do you believe it is harmful to the environment to sweep or hose natural things like grass clippings, dirt, and leaves from your sidewalk or driveway into the gutter?



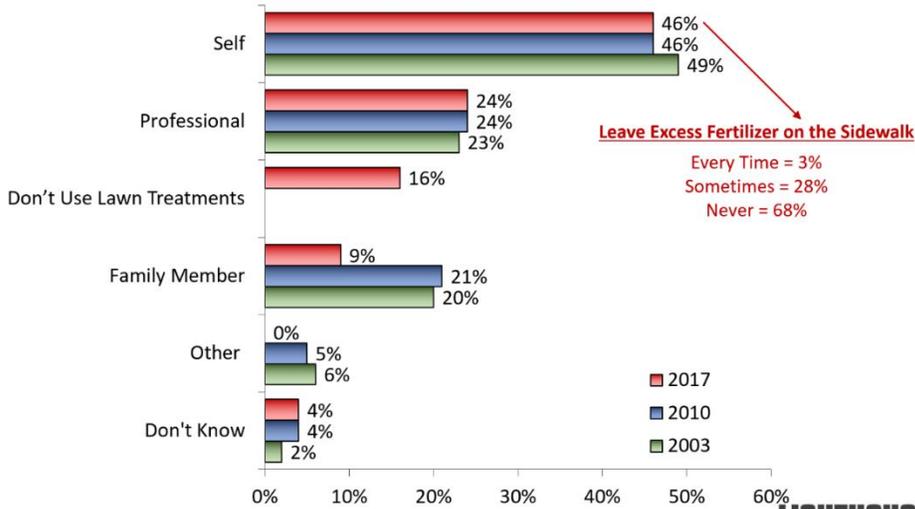
16



Lawn Care



Who applies lawn treatments to your lawn, such as fertilizer, weed killer, or other similar products?



17



Lawn Care



		%
Applying fertilizer before a rainstorm makes it work better.	TOTAL DISAGREE	35%
	Neutral / Unsure	18%
	TOTAL AGREE	47%
Over fertilizing can cause a problem for the environment.	TOTAL DISAGREE	6%
	Neutral / Unsure	5%
	TOTAL AGREE	90%

18

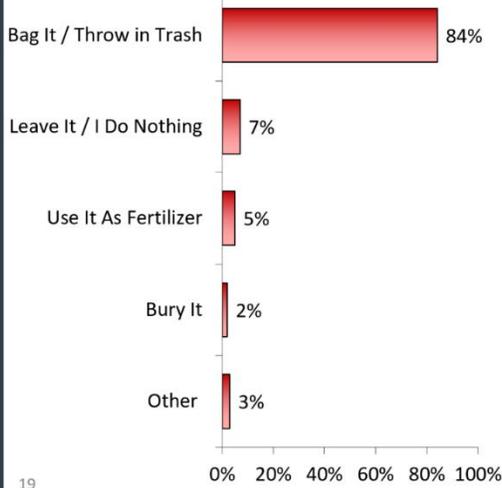


Disposing of Pet Waste



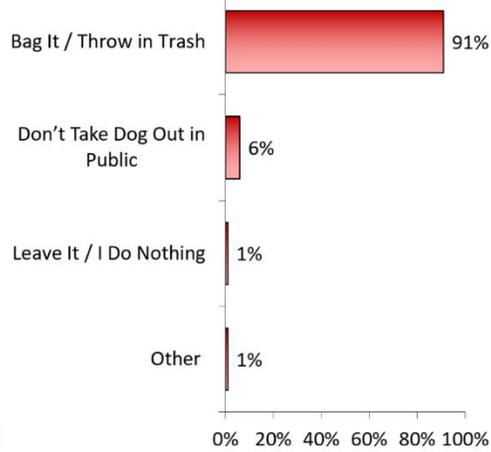
45% of Respondents Currently Own a Dog

How do you generally dispose of your dog's waste at home?



19

When you have your dog in public places, what do you generally do with its waste?

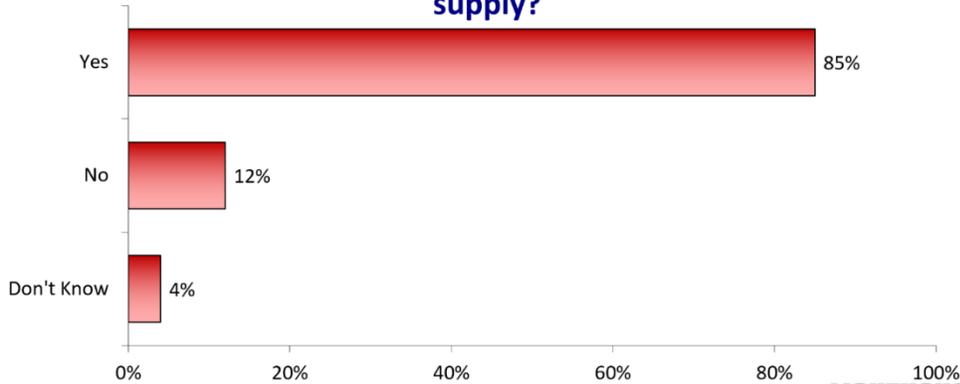


Disposing of Pet Waste



99% of respondents with a dog feel it is their responsibility to pick up after their dog in a public place.

Do you believe pet waste is dangerous to our water supply?

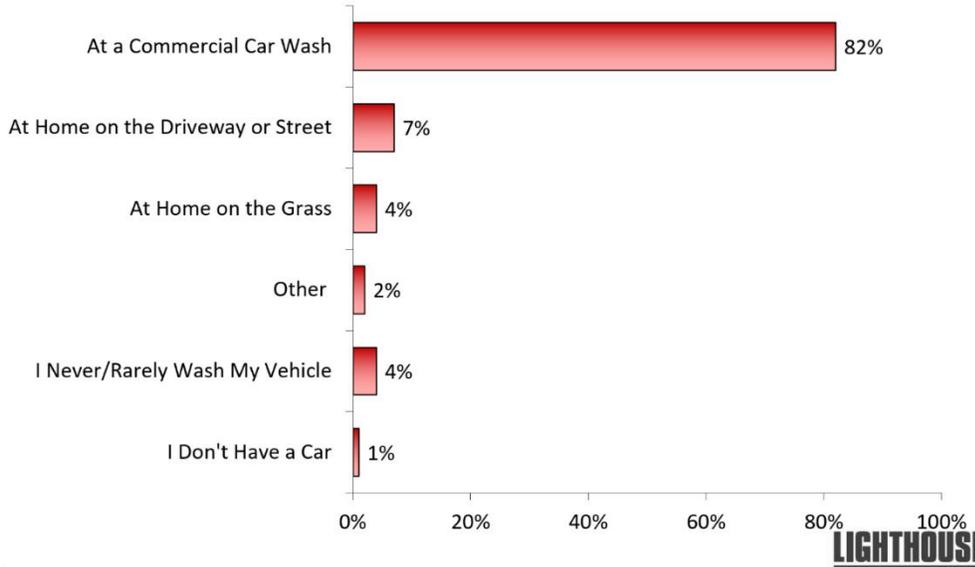


20

Washing a Vehicle



How do you generally wash your vehicle?



21

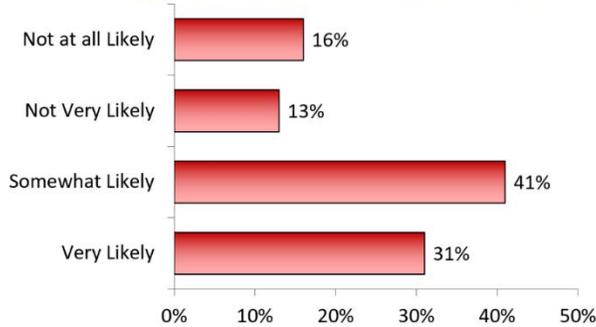


Washing a Vehicle



Among Non-Users

How likely would you be to purchase a biodegradable soap to use on your vehicle?



Among Non-Users

31% Know Biodegradable Soap is Available

Is it okay for biodegradable soap to go into the gutter?

Yes = 68%
No = 24%
Don't Know = 8%

22



Washing a Vehicle



Do you feel washing a vehicle at a COMMERCIAL CAR WASH is harmful to the environment?	Yes	33%
	No	53%
	Don't Know	13%
Do you feel washing a vehicle at HOME ON THE DRIVEWAY OR STREET is harmful to the environment?	Yes	71%
	No	25%
	Don't Know	5%
Do you feel washing a vehicle at HOME ON THE GRASS is harmful to the environment?	Yes	58%
	No	37%
	Don't Know	6%

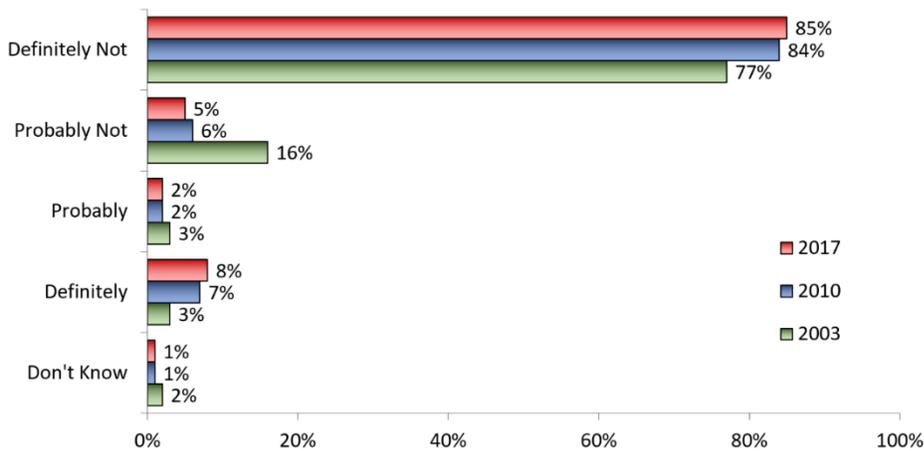
23

LIGHTHOUSE
RESEARCH

Disposing of Chemicals



From what you know or have heard, is it legal or okay to dispose of any material like oil, paint, fertilizer, and detergent in storm drains and gutters?



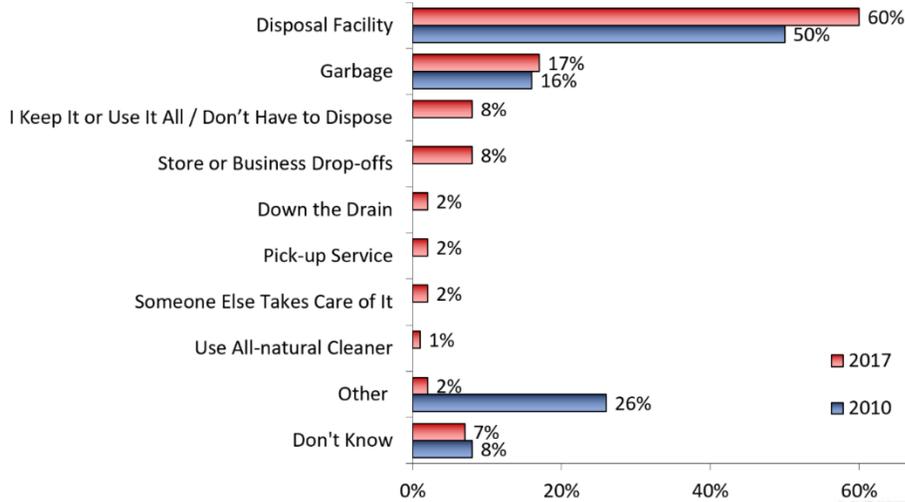
24

LIGHTHOUSE
RESEARCH

Disposing of Chemicals



Where do you dispose of your leftover household chemicals like paint, antifreeze, pesticides, and household cleaners?

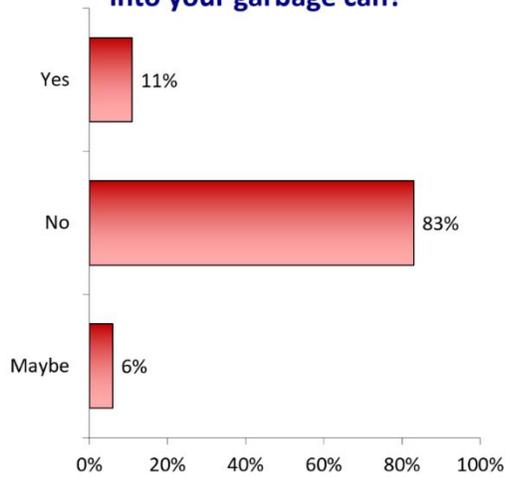


25

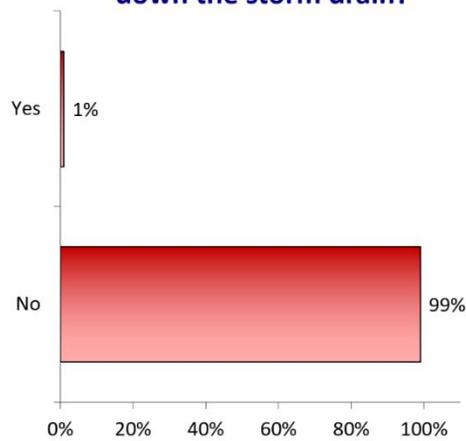
Disposing of Chemicals



Would you say it is ever okay to throw those leftover chemicals into your garbage can?



Would you say it is ever okay to pour those leftover chemicals into the gutter and down the storm drain?



26

Stormwater Pollution

Tier 1

- 90% feel it is NOT okay to dispose of material like oil, paint, fertilizer, and detergent in storm drains or gutter
- 90% agree that over fertilizing can cause a problem for the environment
- 85% believe pet waste is dangerous to the water supply
- 83% feel it is NOT okay to throw those leftover chemicals into the garbage

Tier 2

- 71% feel washing vehicle at home on the driveway/street is harmful
- 63% feel it is harmful to sweep natural things into the gutter
- 58% feel washing vehicle at home on the grass is harmful to environment

Tier 3

- 33% feel washing vehicle at a commercial car wash is harmful
- 24% feel it is NOT okay for biodegradable soap to go into the gutter

27

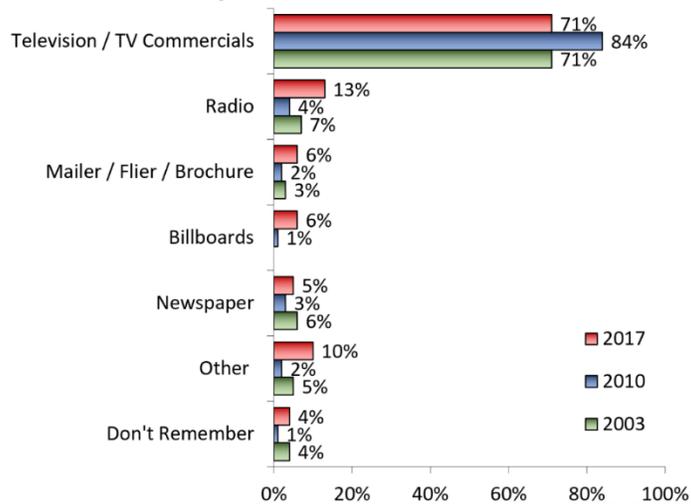
LIGHTHOUSE
RESEARCH

Stormwater Pollution Prevention Ads

Where did you hear or see those promotions or ads?

2017 Awareness

37%
were aware of ads for stormwater or the prevention of stormwater pollution

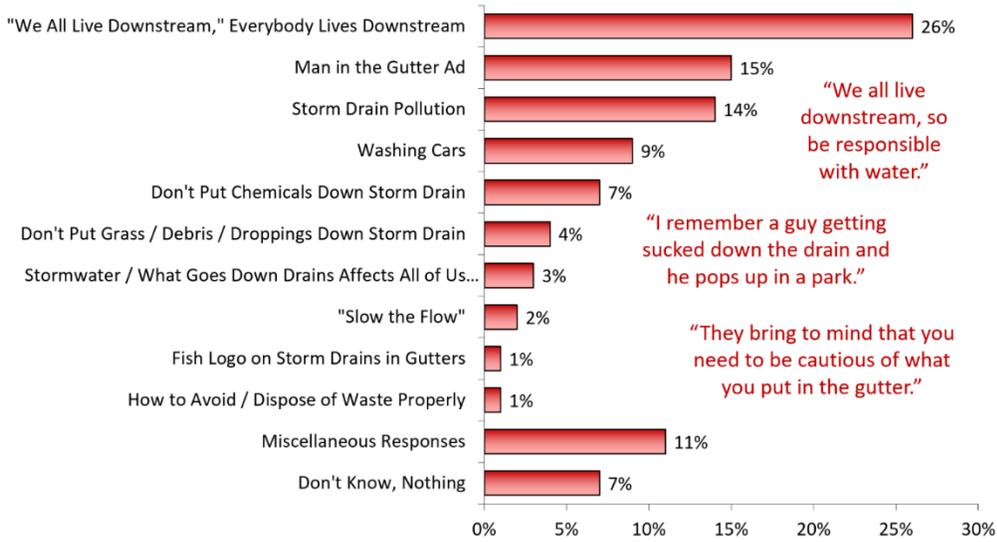


28

LIGHTHOUSE
RESEARCH

Stormwater Pollution Prevention Ads

What can you remember about those promotions or ads?



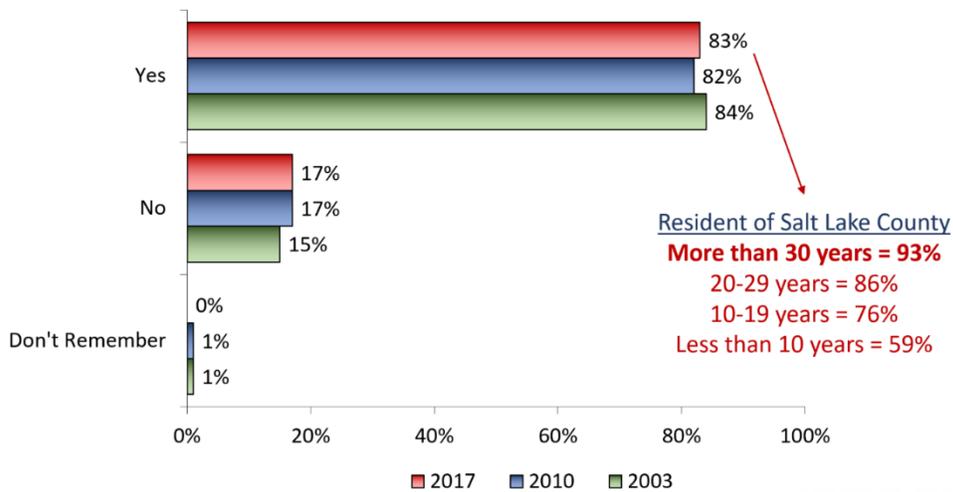
29



"We All Live Downstream"

Awareness of the Slogan "We All Live Downstream"

(Unaided + Aided)

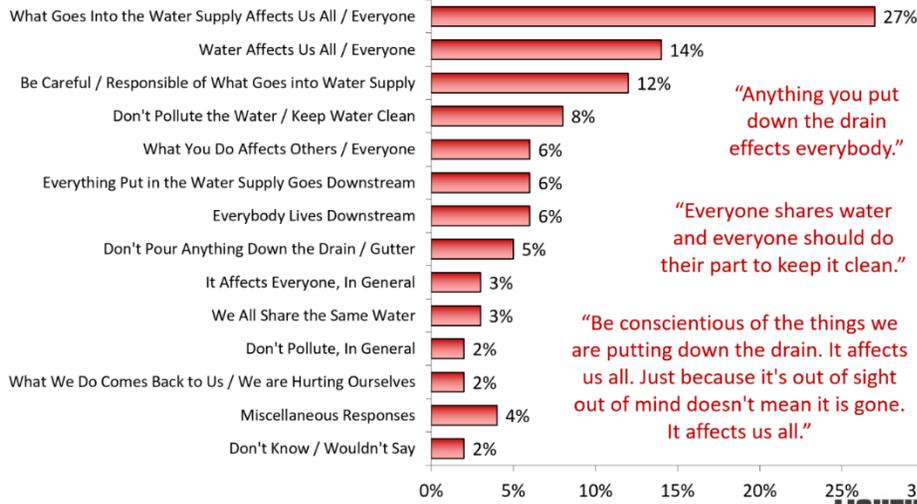


30



"We All Live Downstream"

What do you feel is the meaning of the slogan "We All Live Downstream?"

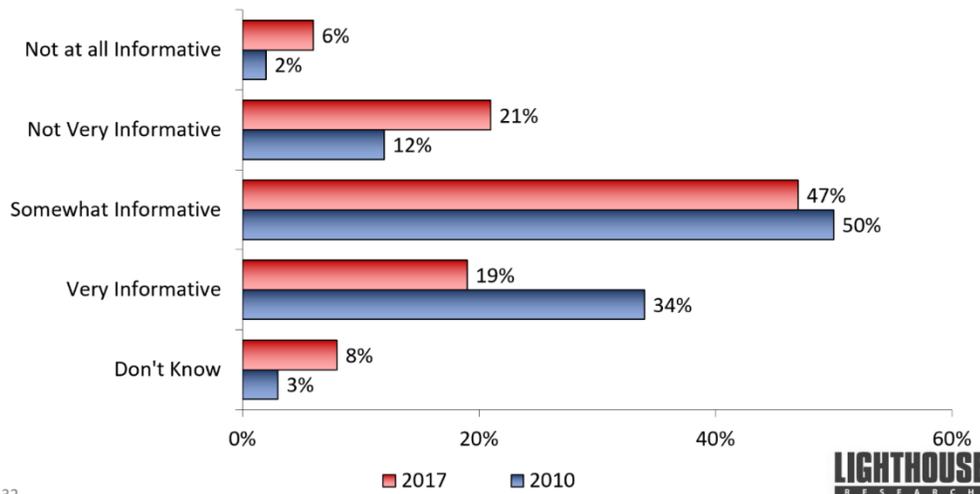


31

LIGHTHOUSE RESEARCH

Stormwater Pollution Prevention Ads

How informative do you feel the stormwater promotions or ads are in making citizens aware of stormwater issues?

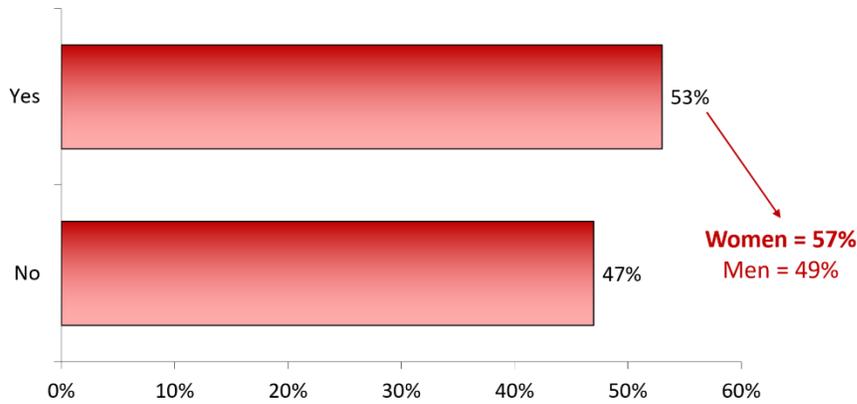


32

LIGHTHOUSE RESEARCH

Stormwater Pollution Prevention Ads

Have the ads caused you to think about changing your habits with regards to stormwater and stormwater pollution?



33

LIGHTHOUSE
RESEARCH

Analysis by Advertising Awareness

	Aware	NOT Aware
Stormwater pollution is a "very serious" problem	20%	10%
"Residents/People" is the largest contributor to stormwater pollution	52%	37%
Washing vehicles on driveway or street is harmful to the environment	76%	67%
"Definitely NOT" okay to dispose any material in drains or gutters	89%	83%
It is harmful to the environment to sweep/hose natural things into the gutter	72%	57%
It is okay to throw leftover chemicals into the garbage can	7%	13%
<u>None</u> of Salt Lake County's stormwater goes to a treatment plant	14%	8%

34

LIGHTHOUSE
RESEARCH

Interlocal Agreement with Salt Lake County

APPENDIX C – Illicit Discharge Detection and Elimination

Dry Weather Screening Inspection Form:

DRY WEATHER SCREENING INSPECTION FORM

General Information

Date: _____ Time: _____ Inspector(s): _____

Outfall Address: _____ Receiving water body: _____

Inspection Type: Initial Inspection Follow Up

Weather Information (to be obtained from weather station at CHPW site 6600 S 3000 E)

Date of last rain event: _____ Duration of last Rain Event: _____

Quantity during rain event: _____

Site Description

Sample Location: Outfall Open Channel Manhole Other (Specify Below)

Other: _____

Dominant Watershed Land Uses: Hvy. Industry Lt. Industry Commercial

Transport Public Land Agricultural Heavy Residential Medium Residentail

Light Residential Other (specify): _____

Known UPDES-Permitted Dischargers Upstream: UTR

Names of Major Industries, Neighborhoods, etc: _____

Flow Estimation at time of sampling

Was any flow observed? Yes No _____ CFS Measured Approximated

Pipe Geometry: Circular Box Culvert Elliptical

Pipe Diameter: _____ Inches Box Culvert/Elliptical: _____ Inches X _____ Inches

Channel Width: _____ Feet

Method Used:

Bucket and stopwatch method (preferred):

Volume of Water Collected: _____ mL.

Time Elapsed during collection: _____ seconds.

Flowrate (A/B): _____ mL/sec.

Flowrate (C/28316.8): _____ cfs.

Dimensions and Velocity Method:

Rectangular Channel

Circular Pipe

Water Surface Width (ft.): _____ A. Flow Depth (ft.): _____

Depth of Water (ft.): _____ B. Flow Area (sq. ft.): _____

Flow Velocity (ft./sec.): _____ C. Flow Velocity (ft./sec.): _____

Flowrate (cfs)=AxBxC: _____ D. Flowrate (cfs)=BxC: _____

Water Quality Parameter Measurements (Acceptable Ranges Indicated in Bold Text)

Time of sampling: _____ Temperature: _____ (°F)

Conductivity: _____ (µSiemens/cm) <2000 pH: _____ 6-9

Ammonia: _____ (mg/L) <1 Surfactants: _____ (mg/L) 0-5

Chlorine: _____ (mg/L) 0-5

Visual Observations (Pictures inserted at end of document)

Odor: None Musty Sewage Rotten Eggs Sour Milk Other

Color: Clear Red Yellow Brown Green Grey

Other

Turbidity: Clear Cloudy Opaque Suspended Solids

Other

Floating: None Vegetation Oily Garbage Sewage

Other

Deposits/Stains: None Sediments Oily Other

Biological: None Mosquito Larvae Bacteria/Algae

Other

Vegetation: None Normal Excessive Growth Inhibited Growth

Other

Structural Condition: Normal Concrete spall/cracks Metal Corrosion

Other

Specify any "Other" answers: _____

Action Levels

No Further Investigation

Exceeds action level

Exceeds reportable level

COMMENTS: _____

PICTURES:



Storm Drain Incident Response Report

Name of Responder(s):		
Date of Incident:	Date/Time Notified of Incident:	Duration:
Method of Discovery:		
Date/Time Investigation Initiated:		
Date of Removal, Repair or Enforcement Action:		
Date and Removal Verified By:		
Location of Incident:		
Substance involved in and description of the spill or discharge:		
Estimated amount spilled or discharged:		
Any Discharge to the Storm Drain (circle one)? Yes No		
Is the spill hazardous, or the chemical spilled unknown (circle one)? Yes No		
Analytical monitoring required (circle one)? Yes No		

Describe the decision process to require or not require analytical monitoring:

IF THE SPILL IS HAZARDOUS, EVACUATE COTTONWOOD HEIGHTS CITY EMPLOYEES, CONTRACTORS AND THE GENERAL PUBLIC TO A SAFE DISTANCE FROM THE SPILL. REPORT THE SPILL IMMEDIATELY TO THE DIVISION OF WATER QUALITY (DWQ) 24-HOUR REPORTING AT (801) 536-4123.

Description and Nature of Incident:

Safety Precautions initiated for spill cleanup:

Containment Used:

Cleanup and Disposal of spill or discharge:

Photos Taken (circle one)? Yes No

Cease and Desist Ordered (circle one)? Yes No

Person/Party given Cease and Desist Order:

Relation to Violation:

Citation or Penalties to be assessed (circle one)? Yes No

Was the spill reported to the State of Utah (circle one)? Yes No

***Note: All Sanitary Sewer Overflows are to be reported to the Department of Water Quality and the local improvement district.

Responsible Company or Party:

Business Name:

Contact Person:

Phone Number:

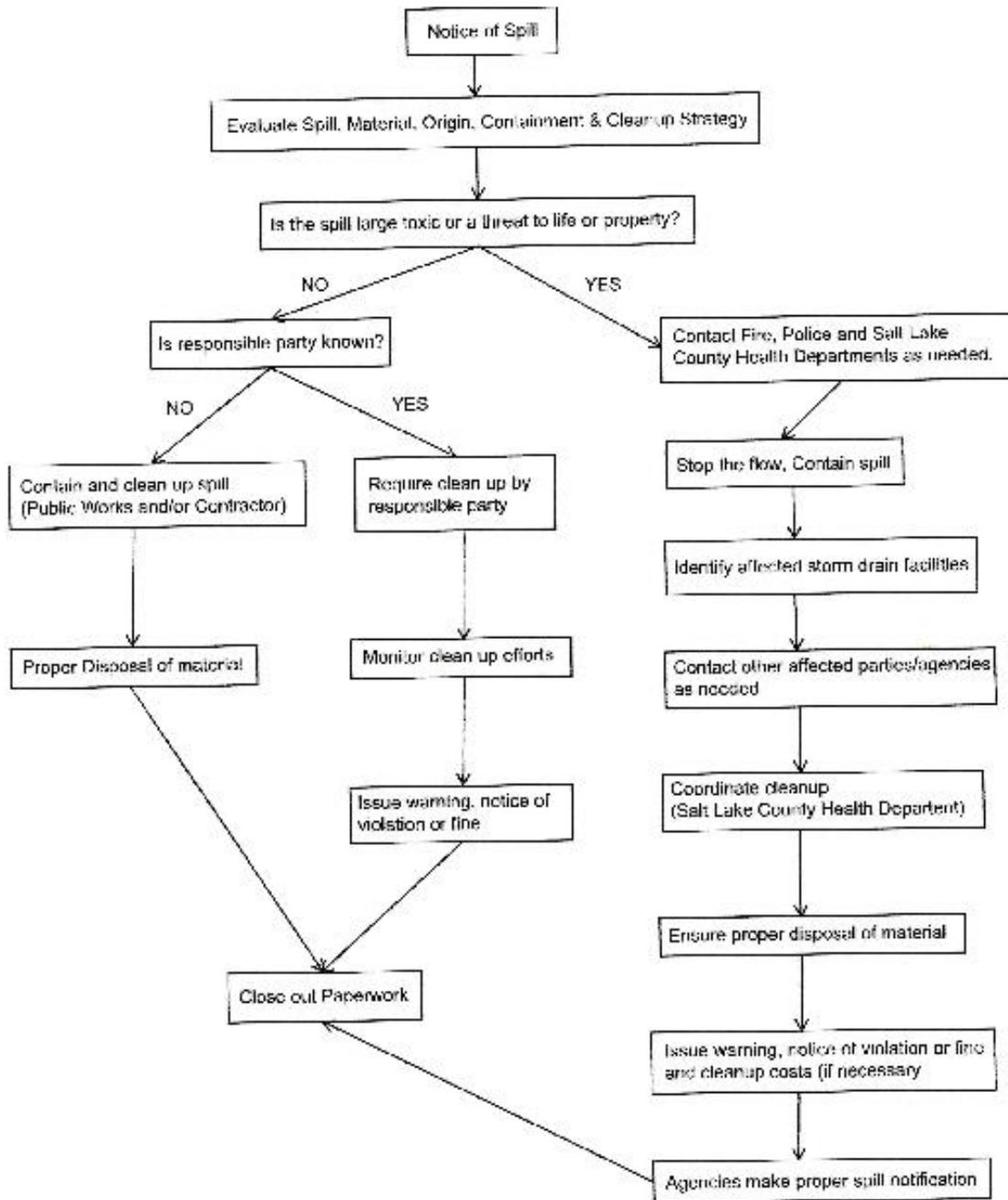
Email:

Printed Name of Responder:

Signature:

Date:

Spill Response Plan Flow Chart



APPENDIX D – Construction Site Storm Water Runoff Control

Stormwater Review



Review Date:
File Number:
Project Name:
Project Location:
Project Contact:
City Staff Contact: Mike Mirabella Public Works Stormwater Manager, CISEC mmirabella@ch.utah.gov

A full Storm Water Pollution Prevention Plan (SWPPP) is required for all sites that are greater or equal to one Acre. The following template should be used for these sites:

[UPDES Construction General Permit Number UTRC00000](#)

A basic (SWPPP) or erosion and sediment control plan (E&SC) is required for all sites. The following template should be used for these sites:

[UPDES Common Plan Permit UTRH00000](#)

The following punch list are items that should be included in submitted plans. It is expected that a site map will be included in the plan set as well as one of the templates as a supplemental document to satisfy the requirements for the storm water section approval.

General Information:

- Owner/Operator name, legal address, phone number, email address.
- Signature of SWPPP Preparer on NOI (must be a Professional Engineer for SWPPPs with engineered practices).
- Contractor (and subcontractors if applicable) certification statement(s).
- Site address and legal description of site.
- Vicinity map, showing project boundaries, receiving waters and limits of disturbance.

Erosion and sediment control plans and vegetative measures (required for all sites):

- Description/drawing and location of SWPPP notice that includes the UPDES permit tracking number, Operator’s name, and phone number.
Note: *Notice must be visible from a public access point that is nearest to the active part of the construction site, and it must use a font large enough to be readily viewed from a public right-of-way.*
- Description of temporary and permanent structural and vegetative measures for soil stabilization, runoff control and sediment control for each stage of the project from initial land clearing and grubbing to project close-out.
- Material specifications, dimensions, installation details and operations and maintenance requirements for erosion and sediment control practices, including the location and sizing calculations for any temporary sediment basins.

- Site map/construction drawings(s) showing the specific locations, sizes, and lengths of each erosion and sediment control practice with existing and proposed topography.
- Identification of any design elements not in conformance with the State of Utah, Salt Lake County, and Cottonwood Heights and the reason for the deviation or alternative design, and demonstration that the alternative is equivalent to the technical standard.
- Inspection and Maintenance schedule by the owner/operator to ensure continuous and effective operation of the erosion and sediment control practices, in accordance with Cottonwood Heights City.
Note: *E&SC plans are required to have weekly inspections, full SWPPPs have the option for bi-weekly inspections and within 24 hours of a rain event of 0.5" or greater. If the site discharges to an impaired water body, it must be inspected every 7 days and within 24 hours of a rain event of .5" or greater. Big and Little Cottonwood Creeks are listed by the EPA as impaired water bodies.*
- Weekly or bi-weekly inspection checklist identifying measures to be inspected by a qualified site inspector.
Note: *Each Best Management Practice (BMP) must be listed on this checklist and used for inspections by the owner/operator.*
- The inspector must be identified and qualified for conducting inspections. Submittal of the inspector's current qualifications is required for full SWPPPs.
Note: *for E&SCs the inspector must be a person knowledgeable in the principles and practices of erosion and sediment control that possess the skills to assess conditions at the site that could impact storm water quality and the effectiveness of a storm water control measure selected to control the quality of storm water discharges from the construction activity.*
Note: *For full SWPPPs the inspector must have the same qualifications mentioned above and have one of the following certifications: RSI, CPESC, CPSQ, CESSWI, CISEC, NICET, ECS.*
- Description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable.
- Construction phasing and sequencing plan describing the intended sequence of construction activities, including clearing and grubbing, excavation and grading, implementation, timing and duration of temporary permanent erosion and sediment control practices, installation of utilities and infrastructure, any other soil disturbing activity, and acreage to be disturbed in each phase.
- Final landscaping plans for structural stormwater management practices and any reforestation or vegetation.
- Description of pollution prevention measures to control construction litter, construction chemicals and debris.
- Description and location of any stormwater discharges associated with industrial activity other than construction at the site, including but not limited to, stormwater discharges from asphalt plants and concrete batch plants on the construction site.
- Detailed drawings of each selected BMP.
- Plans stamped and signed by qualified professional (must be a licensed professional on plans with engineered practices).

Existing and proposed mapping plans (recommended scale of 1"=50') which illustrate the following (full SWPPP):

- Existing and proposed topography (minimum 2-foot contours suggested).
- Locations of perennial and intermittent Streams.
- Mapping and descriptions of soils from USDA Soil Survey, including hydrologic soil group, as well as location of site-specific borehole investigations that may have been performed.
- Boundaries of existing predominant vegetation and proposed limits of clearing.

- Location and boundaries of resource protection areas such as wetlands, lakes, ponds, or other setbacks (e.g. stream buffers, drinking water well setbacks, and septic setbacks).
- Boundary and acreage of upstream watershed.
- Location of existing and proposed roads, lot boundaries, buildings and other structures.
- Location and size of staging areas, equipment storage areas borrow pits, waste areas and concrete washout areas.

Note: *Concrete wash outs must not allow wash waters to infiltrate to ground water.*

- Existing and proposed utilities (e.g. water, sewer, gas, electric) and easements.
- Location and flow paths of existing and proposed conveyance systems such as channels, swales, culverts and storm drains.
- Location of floodplain/floodway limits.
- Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
- Location, size, maintenance access and limits of disturbance of proposed temporary and permanent stormwater management and erosion and sediment control practices, including timing and duration of temporary practices.
- Documentation from State of Utah Historic Preservation Office that the project has no effect on property on or eligible for historic registers.

Misc. (full SWPPP):

- Post-construction maintenance schedule/agreement to ensure continuous and effective operation of each post-construction stormwater control practice, including monitoring and maintenance frequency, identification of responsible parties, description of applicable easements, vegetative requirements, access and safety issues, and testing and disposal of sediments as they are removed.
- Request to disturb greater than five acres at any given time including justification for disturbance, additional erosion and sediment control measures to mitigate disturbance, phasing plan, cuts and fills plan, and total acreage to be disturbed in each phase.
- Documentation of downstream analysis or discharge to request waiving controls of Channel Protection.
- Identification of any stormwater management practices that deviate from Cottonwood Heights and the reason for the deviation and demonstration that the alternative practice or deviation is equivalent to the technical standard.

Reviewed by: _____ Date: _____

Mike Mirabella

Corrections Required

Approved

Storm Water Manager Approval: _____ Date: _____

Mike Mirabella

Note: *Once approval has been granted, please see the check box below for the required permit that will need to be obtained from the state of Utah prior to commencement of construction activities. This permit must not be obtained prior to SWPPP/E&SC approval. Please use the link below to obtain the permit.*

Developments that are less than one acre, but part of a larger common plan of development or sale:

Common Plan Notice of Intent (NOI)

Developments/redevelopments equal to or greater than one acre:

Construction NOI

Link: <https://secure.utah.gov/deq-dashboard/index.html>

Note: *After obtaining the permit, please submit a signed copy of the NOI to the Cottonwood Heights Storm Water Manager at mmirabella@ch.utah.gov*

State SWPPP Compliance Inspection Form



SWPPP COMPLIANCE INSPECTION FORM



Project Name:		Address:		Date:			
Owner:		Contractor (Gen/Sub):		Start time:			
Site Contact:		Phone:		Stop time:			
UPDES Permit #:		Expiration:		Weather: Sunny Snowing Cloudy Raining Other:			
Date of last rain event:		Duration: Unknown		Approx. Rainfall (in):			
Inspected By (Print):		Mike Mirabella		Local Jurisdiction or County: Cottonwood Heights			
Reason for Inspection:		Scheduled Complaint/Tip Random		Receiving Waters:			
Inspection Code (circle):	SW sampling SW non-sampling	Inspector Code (circle):	(S) State (L) Local	Type Code (circle):	1 - Municipal 2 - Industrial 3 - State		
SWPPP, EROSION, SEDIMENT AND HOUSEKEEPING BMP'S INFORMATION					YES	NO	N/A
1. Is the SWPPP on site and accessible, or is the SWPPP location posted in an obvious place and reasonably accessible (in a short time)?							
2. Are erosion control, sediment control, buffer controls and good housekeeping BMP's installed on the site as shown in the SWPPP?							
3. Has the SWPPP been updated to reflect the current site conditions (modifications dated & initialed on site map, new BMPs on site map, discontinued BMPs crossed off site map, new BMP details & spec's in SWPPP, SWPPP amendment Log, etc.)?							
4. Are on-site inspections being performed and recorded by a qualified person on a weekly or biweekly basis, reporting items required by permit? (Inspector name, qualifications and signature, weather, problems/repairs, corrective action, new BMPs, removed BMPs, discharges, etc.)							
5. Have all corrective action items from previous inspections been logged, addressed and documented within the time frame allotted?							
6. Are SW flows entering and leaving the construction site controlled, managed, or diverted around the site? (e.g. buffer zones perimeter controls, berms, silt fence, up gradient boundary diversion, down gradient boundary sediment control, etc.)							
7. Is there evidence of sediment discharge such as mud flows or soil deposits from the construction site in downstream locations?							
8. Is there evidence of vehicles tracking soil off the construction site?							
9. Is there soil, construction material, landscaping items, or other debris piled on impervious surfaces (roads, drives) that could be washed with SW to a storm drain or water body?							
10. Is there a need to repair, maintain, or improve erosion control BMPs (temporary stabilization, erosion blankets, mulch, vegetated strips, riprap, surface roughening, pipe slope drain, dust control, etc)?							
11. Is there a need to repair, maintain, or improve sediment control BMPs (silt fence, check dams, fiber rolls, sediment trap/basin, inlet protection, waddles, straw bails, curb cut-back, etc)?							
12. Is there a need to repair, maintain, or improve good housekeeping controls (clean track out pad, sweeping, construction materials management, litter/trash control, portable toilet, staked down, fueling areas, concrete wash out area, proper curb ramps, spill prevention, etc)?							
13. Are there disturbed areas that have not had construction activities for 14 to 21 days without stabilization? (except snow or frozen ground)?							
14. Are there places where BMPs are needed and should be installed or not needed and should be removed?							

APPENDIX E – Long-Term Stormwater Management in New Development and Redevelopment

Evaluation form for Post Construction Controls



COTTONWOOD HEIGHTS CITY EVALUATION FORM FOR POST CONSTRUCTION CONTROLS

Site Name:				Inspection Date:			
Project Location:							
Facility Contact Information							
	Names			Phone Numbers		Email	
Owner:							
Site Contact:							
Business Type:	<input type="checkbox"/> Institution		<input type="checkbox"/> Commercial		<input type="checkbox"/> Industrial		
Is an oil/water separator required for the site? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Is an orifice required for the site? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Items Inspected	Checked?			Maintenance?		Observations and Remarks	
	Yes	No	N/A	Req'd	Not Req'd		
1. Dumping Evidence							
2. Spill Evidence							
3. Other Pollution Sources							
SS Grease Trap							
Barrels or Drums							
4. General Maintenance Status							
Inlets/Catch Basins							
Conveyance Systems							
Manholes							
Structural Devices							
Stormwater Storage							
Parking/Impervious Area							
Waste Collection							
Landscaping							
Vegetation/Soils							
Oil/Water Separator							
Channels							
Inlet/Outlet Structures							
Spillways							
Weirs							
Notes:							
Inspector:				Site Contact:			
Signature/Title				Signature		Date	

Storm Water Quality Report – Template

Date: _____

Project Name: _____

Project ID: _____

Design Engineer: _____

Is the project within a watershed that is 303(d) listed? _____

If yes:

Name of receiving water(s): _____

Listed Impairment(s): _____

Does the watershed have an approved TMDL? _____

If yes:

Approved TMDL(s): _____

I have reviewed the storm water quality design and find this report to be complete, accurate, and current.

[name], Project Manager

[name], Designate Storm Water Coordinator

[name], Head of Maintenance

[stamp required at final design phase]

[name], Landscape Architect or Equivalent

Project Information

Type of Project (New Development, Redevelopment): _____

Area of Land Disturbance (ac): _____

Project Impervious Area (ac): _____

Project Imperviousness (%): _____

Project Volumetric Runoff Coefficient, R_v : _____

90th Storm Depth (in): _____

Project 90th Percentile Volume, V_{goal} (cf): _____

Subsurface Information

Groundwater

Depth to Groundwater (ft): _____

Historical High Depth to Groundwater if known (ft): _____

Source: _____

Groundwater Contamination at Site: _____

Soil Information

Infiltration Rate (in/hr): _____

Hydrologic Soil Group: _____

Source: _____

Soil Contamination at Site: _____

Drinking Water

Within Drinking Water Source Area Protection: _____

Additional Relevant Site Information

LID Drainage Areas

Add additional rows as needed.

Contributing Drainage Area	Area (ac)	Impervious Area (ac)	Imperviousness (%)	Volumetric Runoff Coefficient, R_v	Water Quality Volume, WQV (cf)
CDA 1					
CDA 2					
CDA 3					
CDA 4					
Total WQV (cf)					

LID BMP Design

Add additional rows as needed.

Contributing Drainage Area	LID BMP Type	Water Quality Volume, WQV (cf)	Runoff Retained (cf)	Percent of Runoff Captured (%)
CDA1				
CDA 2				
CDA 3				
CDA 4				
Total Volume Retained (cf)				

Percent of V_{goal} captured by LID BMPs: _____%

If 100% of V_{goal} is not captured, document and provide narrative of technical infeasibilities and/or alternate compliance measures below:

Describe additional storm water quality measures incorporated into the site:



Guidance Document for Storm Water Management

December 2015



GILSON ENGINEERING, INC.
CONSULTING ENGINEERS AND SURVEYORS

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Chapter **Error! Bookmark not defined.**—

Introduction

Water flowing over the land during and immediately following a rainstorm is called stormwater runoff. Stormwater runoff from Cottonwood Heights is collected and concentrated into storm drain pipes and conveyed to both Big and Little Cottonwood Creek, the Jordan River, and eventually to the Great Salt Lake.

Stormwater runoff is part of a natural hydrologic process. However, human activities can greatly affect the quality and quantity of stormwater runoff.

When vegetation is removed and roadways and buildings are constructed, pollutants are more easily washed into gutters and storm drain systems which discharge to receiving waters. Consequently, improperly managed stormwater runoff can be a significant source of water pollution, causing declines in fisheries, habitat disruption, restrictions of swimming, and limiting our ability to enjoy many of the other benefits that water provides.

1.1 - Purpose and Organization of the Guidance Document

The purpose and organization of this manual is as follows:

1. To protect the waters of Cottonwood Heights from the adverse impacts of urban stormwater runoff. **(See Chapter 1)**
2. To provide the minimum stormwater design requirements for site development in Cottonwood Heights. **(See Chapter 2)**
3. To provide the minimum requirements when developing a Storm Water Pollution Prevention Plan (SWPPP). This includes the development of an erosion control plan for the site. **(See Chapter 3)**
4. To provide guidance for selecting and implementing Best Management Practices (BMP) for construction, public, municipal, and industrial activities. This document is not intended to dictate the BMP's to be implemented, rather to provide a framework for BMP selection. **(See Chapter 4)**
5. To provide Standard Operating Procedures (SOPs) for City maintenance and chemical application and storage. **(See Chapter 5)**

1.2 - Storm Water Regulations

The need to protect our environment has resulted in a number of laws and subsequent regulations and programs. The Federal Clean Water Act is the regulation which controls stormwater pollution. There are, however, other regulations that directly or indirectly deal with the stormwater. In addition, stormwater programs are in place at a number of levels: federal, state, and local.

National Pollutant Discharge Elimination System (NPDES) programs on both the Federal and State levels are discussed below in relationship to the control of stormwater pollution. Other regulations may need to be considered on a case-by-case basis; however, the user is advised to contact local regulatory officials for further information.

National Pollutant Discharge Elimination System (NPDES)

In 1972, the Federal Clean Water Act was amended to prohibit any point source discharge of pollutants to waters of the United States, unless the discharge is in compliance with a NPDES permit. In 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations establishing application requirements for stormwater discharge permits for specific categories of industries and municipalities.

Utah Pollutant Discharge Elimination System (UPDES)

In Utah, the Division of Water Quality administers the NPDES program, issuing UPDES permits for stormwater discharges into receiving waters. The permit requires a Stormwater Pollution Prevention Plan (SWPPP) which applies specific Best Management Practices (BMP's) on a site-by-site basis to reduce stormwater pollution.

Salt Lake County Flood Control Permit

For discharges to creeks, rivers and Cottonwood Heights/Salt Lake County flood control systems, a Flood Control Permit is required. The permit application requires design drawings and storm flows which discharge into the system.

Cottonwood Heights Permits

Stormwater discharges are permitted through the municipality in which the flows discharge. Permits and approvals are generally required prior to construction.

1.3 - Typical Pollutants Found in Stormwater

Construction, public, municipal, and industrial activities produce a variety of different kinds of pollutants which may cause stormwater contamination. A general discussion of typical stormwater pollutants is found below. Pollutants of concern for construction, public, municipal, and industrial activities are found in subsequent chapters.

Sediment

Sediment carried by stormwater into streams, lakes, rivers, and wetlands can affect aquatic life and habitat. Suspended soil particles can cause water to look murky or cloudy. Excessive sediment reduces light penetration in water, impairs sight feeding fish, clogs fish gills, and increases drinking water treatment costs. Fine sediment also acts as a transport for pollutants including nutrients, metals, and hydrocarbons to enter surface waters.

Nutrients

Nutrients, mostly nitrogen and phosphorus, are essential to the growth of plants and aquatic organisms. However, too many nutrients in water bodies may cause algae growth, odor problems and deterioration of the aesthetic aspects of the water body.

Ammonium, a form of nitrogen, can also have severe effects on water quality. Ammonium is converted to nitrate and nitrite in a process called nitrification. This process consumes large amounts of oxygen and can kill fish by lowering the oxygen levels in water. These conditions can impair many important uses of these waters, including recreation and fish habitat.

Metals

Metals, such as nickel, manganese, lead, chromium, cadmium, zinc, copper, iron, and mercury are toxic to aquatic life in excessive quantities. Metals are found in sediments in streams and creeks. Metals can also be a health hazard to humans through direct ingestion of contaminated water or through eating contaminated fish.

Oxygen-demanding substances

While land animals extract oxygen from the air, aquatic life depends on oxygen dissolved in water. When organic matter is eaten by microorganisms, dissolved oxygen of the water is consumed. After it rains, stormwater runoff can deposit large quantities of oxygen-demanding substance in creeks or streams. This can create a pulse of high oxygen demand that can deplete oxygen supplies in shallow, slow moving, or poorly flushed waters. Oxygen depletion is a common cause of fish kills.

Bacteria and Viruses

Bacteria and viruses are the most common microorganisms found in stormwater runoff, their levels are highest in the summer. Bacteria and viruses often carry diseases which can be transferred to animal life and to humans. Recreational uses of streams and creeks are limited in areas with high levels of microorganisms.

Oil and Grease

Oil and grease includes many hydrocarbon compounds some of which are toxic to aquatic organisms at low concentrations.

Floatables

Floatables are pieces of litter, trash or garbage which are transported into water during storm events. Litter is also commonly disposed of directly into storm drain catch basins. Floatables also create aesthetic problems and impact the operating effectiveness of drainage systems.

1.4 - Stormwater Management

For many years the effort to control stormwater focused on flooding issues and removing water from urban areas. Stormwater was generally permitted through flood control programs. In recent years regulatory programs have been established to reduce all pollution sources entering water ways.

Programs have been established for point source and non-point source discharges. An emphasis of these programs is to contain pollution at the source, before it can cause environmental problems. It has been demonstrated that keeping pollutants out of water is more cost-effective than removing the pollutants once they are in the stormwater.

However, if additional controls are needed, treatment of contaminated runoff could be required.

Stormwater management is the shift in emphasis toward comprehensive prevention orientated strategies. One of these strategies is the implementation of the Best Management Practices (BMP's). Comprehensive site management should include:

- Surface drainage;
- Flood control;
- Erosion and sediment control; and
- Reduction of pollutants in runoff.

This guidance document focuses on site controls which are designed to keep pollutants from entering storm drain systems and receiving waters. Revegetation to keep soil on-site and diverting stormwater around the site to prevent contamination are both examples of site controls. These controls and practices are called source controls and focus on prevention of pollutant introduction into stormwater runoff, or stopping the pollutant at the source, prior to reaching the drainage system or receiving waters. It is more efficient and cost-effective to prevent water quality problems than to treat the water to eliminate the pollutants after the fact.

Watershed planning is also an element in the broader comprehensive approach. This involves evaluating appropriate controls and locations of the controls to reduce pollution from all sources within a watershed or regional area. Watershed planning is not discussed in this document.

1.5 - Stormwater Management Strategies

With so many controls available, a general strategy is helpful for determining which BMP's to implement first. The strategies below are listed in order of preference and cost effectiveness.

Alter the Activities

The most preferred and least costly BMP's are those that alter the activity to prevent pollution from either being produced or from leaving the site.

Enclose the Activities

Enclosing an activity in a building is beneficial for two main reasons: 1) precipitation is prevented from coming into contact with the activity; and 2) drains inside of a building must discharge to a sanitary sewer system.

Cover the Activities

If the activity cannot be placed inside a building, covering the area will prevent most precipitation from coming into contact with the activity and/or materials.

Separate the Activities

Separate the activity that is the most significant source of pollutants from other activities that either cause little or no pollution. By separating the activities, one of the above strategies may be possible for one or more of the activities.

Treat the Stormwater

Treatment of the stormwater is the least preferred option because stormwater treatment devices are extremely expensive and generally not practicable. Most treatment systems are designed to constant flow streams with consistent or known levels of pollutants to be removed. This is not the case with most stormwater discharges.

Chapter 2 – Storm Water Design Requirements

Urban development has a significant influence on storm water runoff quality. From initial construction the local hydrologic cycle is dramatically altered. Trees and vegetation that had intercepted rainfall are removed and natural depressions that had provided temporary ponding of water are regraded to a uniform slope. Careful consideration during the design phase of a project can greatly reduce the impact of development on storm water leaving the area.

The following items should be considered when designing a site. These items are listed as a guide to aid in design. Additional items may need to be considered for specific sites:

- Storm drain facilities shall be constructed throughout the entire subdivision to carry off water from all inlets and catch basins, and need to be connected to a city approved outfall. Alternatively, the use of Low Impact Development (LID) and Green Infrastructure (GI) is strongly encouraged to be used to dispose of stormwater through Infiltration evapotranspiration, or harvest and use stormwater from the site to protect water quality. The system shall be designed to carry the 100-year storm through the subdivision without inundating homes or other structures built on the lots.
- The minimum size of storm drain pipe carrying storm water originating from a roadway is 15-inch. Storm drain pipe installed within a roadway improvement must be furnished as reinforced concrete pipe.
- Storm water inlets and catch basins shall be provided within the roadway improvement as necessary to the collect the runoff from a 10-year storm event.
- The storm water generated from a subdivision must be released into a city approved drainage facilities or natural tributaries. No private ditch or canal shall be approved without the written permission of the appropriate ditch or canal company. The storm water generated must be released at a controlled rate from a detention facility at a rate of no greater than 0.1 cubic feet per acre if property falls within the sensitive lands overlay zone or 0.2 cubic feet per acre if the development is outside the sensitive lands overlay zone.
- No storm drain facility shall be used for storm water runoff unless it is adequately improved to handle such water as might be reasonable expected from existing upstream flows

- All construction and substantial improvement projects shall be designed to include specific measures to reduce pollutants generated from a 10-year storm event. This shall not apply to the alterations of an existing developed property that change the “footprint” of a site or building in such a way that there is a disturbance of less than 5,000 square feet of land.

Erosion and Sediment

Storm water runoff becomes polluted by picking up soil particles and other pollutants as it flows over surfaces where chemicals, pesticides, herbicides, soaps or other pollutants have been used. Vegetation protects soil from erosion slowing, intercepting and absorbing rainfall and by binding soil together with root structures.

Erosion controls are used in and around disturbed areas. These are designed to prevent storm water runoff from reaching open disturbed areas; reduce velocities and volumes of runoff on open areas; and stabilize the soil surface. Erosion control measures should be in place before construction activities begin.

Nutrients, nitrogen and phosphorus from fertilizers, pesticides and other sources may result in algae growth which can cause odor problems and reduce the dissolved oxygen available to fish and other aquatic life. Oil and grease contain a wide variety of hydrocarbon compounds, some of which can be toxic to aquatic organisms at low concentrations. Other miscellaneous wastes include wash water from construction activities, or solid waste from land clearing, food containers, and other packaging materials. These can lead to unsightly and polluted waterways and can plug drains and lead to localized flooding.

Sediment controls are used to filter runoff from disturbed areas and to trap sediment in a controlled area prior to leaving the site. Sediment controls used include sediment barriers, sediment traps, and protection of storm drainage facilities. Sediment controls should be placed before activities in the drainage area begin.

Waterways should be protected prior to the start of construction activities and maintained throughout the project. Waterways are susceptible to increased sediment as well as high velocity or volume of runoff which may erode channels and banks. If a permanent discharge is proposed, some means of permanent protection should be installed such as rip-rap outlet protection and permanent sediment trap up gradient. Non-storm water discharges to waterways or existing storm water systems are prohibited, with a few exceptions as outlined in the UPDES general permit.

BMP Selection

BMP selection is specific to each site and is dependent on activity, topography, soil conditions, and storm water facilities. The selection of BMPs is generally a three step process involving defining the BMP objective, identifying the BMP category, and selecting the appropriate BMP.

Some examples of BMP objectives include good housekeeping, containing waste, minimizing and stabilizing disturbed areas, protecting slopes and channels, controlling site perimeter, and controlling internal erosion. The BMP category is a group of BMP which are related in how they control storm water pollution. Selecting the BMP should be done considering cost-effectiveness however not all BMPs should be considered for each site. In addition different BMPs may be needed for different phases of the construction project.

Once the BMPs have been selected it is important to observe that they are properly implemented and performing according to design. For most projects a Utah Pollutant Discharge Elimination System (UPDES) permit as well as a Cottonwood Heights City permit is required.

Chapter 3 – Storm Water Pollution Prevention Plan

Any construction site which disturbs an area of 1 acre or more must obtain a UPDES permit from the State of Utah. One of the requirements of the permit is that a Storm Water Pollution Prevention Plan (SWPPP) be developed and implemented. Furthermore any construction that impacts more than one acre within the City is required to submit a SWPPP to the City. The SWPPP plan shall be submitted to the city for review and approval prior to the commencement of work upon the property which is the subject of the plan. Plans shall be prepared by a licensed professional engineer and shall include detailed plans and specifications for the construction and installation of all drainage system facilities for the control and drainage of excess waters on the property within said development. Any work which affects the county storm water collection system will not be required to obtain a permit from the city however a county permit will be required. All SWPPPs shall run with the land and shall be binding on anyone doing work on the site.

An erosion control plan shall be included in the SWPPP if the site is greater than one acre in size, the site is part of a total development that is larger than or equal to one acre in size, or the city determines that the site has a high potential for sedimentation due to soil conditions, steep or irregular slopes, past regional sedimentation problems, or other applicable criteria.

1.1 - Construction Activities

The SWPPP is the focus of the UPDES and a key component to controlling pollutants in storm water discharges around construction activities. Careful development and implementation of the SWPPP will maximize the benefit of control measures. Responsibility for the developing of the SWPPP typically lies with the owner of the property that is being developed, or with the owner and operator of the construction project.

For best results the SWPPP should be prepared during the project planning and design phases. A SWPPP is required with all projects submitted for approval through the City. The SWPPP must be finalized before construction begins. Implementation of the SWPPP begins as soon as activities begin on the site. Inspection and maintenance of the best management practices should take place throughout construction until the site is stabilized.

1.2 - SWPPP Development

The development of a SWPPP consists of the collection of construction site information, assessment of that information to determine best management practices and procedures, and compilation of the SWPPP.

1.2.1 – Collect Site Information

Prior to preparing a SWPPP several pieces of information should be collected. This information will provide the basis for selection of erosion and sedimentation control BMPs and post construction BMPs. Much of this data must be included in the SWPPP, as specified by the UPDES permit. The following is a suggestion of data to be collected.

Existing Conditions Map

Obtain a topographic site map of the proposed construction area. The map should indicate the existing land use of the site as well as the location of surface waters on or near the site boundaries.

Soils Information

Collect soil information about the site. This information can be obtained generally from the National Resources Conservation Service (NRCS) or site specific soils testing may be required. This information will typically identify soil constraints, design criteria, and slope stability.

Receiving Water

Identify the receiving water(s) which collect runoff from the site. This may include tributaries such as Little or Big Cottonwood Creek as well as the Jordan River.

Rainfall Data

Determine the amount of rainfall you anticipate in your design of storm water management measures. Use NOAA precipitation estimates. Locate data at http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Measure Site Area

An estimate of the total area of the site as well as the total area of the site that will be disturbed by excavation, grading, or other activities is required by the UPDES storm water permit. The area of the site will typically be the area of the recorded plat, site survey, or deed of sale. The amount of area to be disturbed is typically estimated based upon the area needed to construct all aspects of the project.

Determine the Runoff Coefficient

The runoff coefficient is a number relating the amount of runoff to the amount of rainfall. It provides an estimate of the developer's impact of runoff after construction is complete.

1.2.2 – Develop a Erosion Control Site Plan

Based on assessment, objectives of the proposed construction project, and information obtained during the site collection a site plan will be developed. Some key points to consider when developing a site plan for the project are:

- Disturb the smallest vegetated area possible;
- Keep the amount of cut and fill to a minimum; and
- Limit impacts to sensitive areas such as: steep and/or unstable slopes, surface waters, including wetlands, areas with erodible soils, existing canals and drainage channels.

Once the site plan drawing is developed, a written description of the nature of the construction activity should be prepared and included in the SWPPP. The narrative should include a brief description of the project, a schedule of major soil disturbing activities involved in the project, and the approximate project duration.

Included in the site plan shall be all permanent water quality BMPs to be used on the fully-developed site. Detailed maintenance and repair procedures shall be included to ensure their continued functioning. These procedures will identify the parts or components of a storm water management facility that need to be maintained and the equipment and skills or training necessary.

1.2.3 – Select Best Management Practices

After development of the site plan, the Best Management Practices (BMPs) to be used during the construction activities should be identified. BMPs for erosion and sediment control are used to limit the amount and rate of erosion and to capture the transported sediment before it has the opportunity to enter the storm water system or water course. Refer to chapter 4 for more information on selection of BMPs for construction activities.

1.2.4 – Prepare Pollution Prevention Site Map

A site map of the proposed construction area should be prepared. The map should be of sufficient scale to clearly show on-site features. The following items should be identified:

- Area of soil disturbance;
- Drainage patterns;
- Approximate slopes after major grading;

- Locations of areas where stabilization practices are planned;
- Areas of cut and fill;
- Surface waters (including wetlands);
- Locations where storm water is discharged to a surface water; and
- The name(s) of the receiving water(s) and the ultimate receiving water(s).

1.3 - SWPPP Implementation

The implementation stage occurs during the commencement of construction and consists of implementation of BMPs, monitoring, inspection, maintenance, SWPPP review and modification, and final stabilization of the site.

The construction general permit requires that a Notice of Intent (NOI) be submitted to the Utah Division of Water Quality (UDWQ) prior to the start of construction. The NOI is a notification that a construction project is about to begin, the location of the project is given as well as the responsible parties, and a certification that a SWPPP has been prepared and will be followed is included. The owner of the project is responsible for submitting the NOI.

1.3.1 – Select Best Management Practices

After development of the site plan, the Best Management Practices (BMPs) to be used during the construction activities should be identified. BMPs for erosion and sediment control are used to limit the amount and rate of erosion and to capture the transported sediment before it has the opportunity to enter the storm water system or water course. Refer to chapter 4 for more information on selection of BMPs for construction activities.

Storm Water Quality Report – Template

Date: _____

Project Name: _____

Project ID: _____

Design Engineer: _____

Is the project within a watershed that is 303(d) listed? _____

If yes:

Name of receiving water(s): _____

Listed Impairment(s): _____

Does the watershed have an approved TMDL? _____

If yes:

Approved TMDL(s): _____

I have reviewed the storm water quality design and find this report to be complete, accurate, and current.

[name], Project Manager

[name], Designate Storm Water Coordinator

[name], Head of Maintenance

[stamp required at final design phase]

[name], Landscape Architect or Equivalent

Project Information

Type of Project (New Development, Redevelopment): _____

Area of Land Disturbance (ac): _____

Project Impervious Area (ac): _____

Project Imperviousness (%): _____

Project Volumetric Runoff Coefficient, R_v : _____

90th Storm Depth (in): _____

Project 90th Percentile Volume, V_{goal} (cf): _____

Subsurface Information

Groundwater

Depth to Groundwater (ft): _____

Historical High Depth to Groundwater if known (ft): _____

Source: _____

Groundwater Contamination at Site: _____

Soil Information

Infiltration Rate (in/hr): _____

Hydrologic Soil Group: _____

Source: _____

Soil Contamination at Site: _____

Drinking Water

Within Drinking Water Source Area Protection: _____

Additional Relevant Site Information

LID Drainage Areas

Add additional rows as needed.

Contributing Drainage Area	Area (ac)	Impervious Area (ac)	Imperviousness (%)	Volumetric Runoff Coefficient, R_v	Water Quality Volume, WQV (cf)
CDA 1					
CDA 2					
CDA 3					
CDA 4					
Total WQV (cf)					

LID BMP Design

Add additional rows as needed.

Contributing Drainage Area	LID BMP Type	Water Quality Volume, WQV (cf)	Runoff Retained (cf)	Percent of Runoff Captured (%)
CDA1				
CDA 2				
CDA 3				
CDA 4				
Total Volume Retained (cf)				

Percent of V_{goal} captured by LID BMPs: _____%

If 100% of V_{goal} is not captured, document and provide narrative of technical infeasibilities and/or alternate compliance measures below:

Describe additional storm water quality measures incorporated into the site:

APPENDIX F – Pollution Prevention and Good Housekeeping for Municipal Operations

City owned or operated facilities list:

4.2.6.1 CITY OWNED FACILITIES INVENTORY			
NAME	ADDRESS	PRIORITY	REASON
MUNICIPAL CENTER	2277 E Bengal Blvd.	Low	
PUBLIC WORKS SITE	6600 S 3000 E	High	Proximity to BCC
MOUNTVIEW PARK	1651 Fort Union Blvd	Low	
Berry Hill Park	2640 E 6620 S	Low	
Golden Hills Park	8303 Wasatch Blvd.	Low	

Assessment of City-owned facilities and parks:

MUNICIPAL CENTER		PUBLIC WORKS FACILITY	
HIGH PRIORTIY		MEDIUM PRIORITY	
POLLUTANT	POTENTIAL LEVEL	POLLUTANT	POTENTIAL LEVEL
SEDIMENT		SEDIMENT	LOW
NUTRIENTS	MEDIUM	NUTRIENTS	LOW
METALS	NONE	METALS	LOW
HYDROCARBONS	LOW	HYDROCARBONS	MEDUIM
PESTICIDES	LOW	PESTICIDES	LOW
CHLORIDES	LOW	CHLORIDES	HIGH
TRASH	LOW	TRASH	LOW
BACTERIA	LOW	BACTERIA	LOW
CHLORINE	LOW	CHLORINE	LOW
ORGANIC MATTER	MEDIUM	ORGANIC MATTER	MEDIUM

MOUNTVIEW PARK		BERRY HILL PARK	
MEDIUM PRIORITY		LOW PRIORITY	
POLLUTANT	POTENTIAL LEVEL	POLLUTANT	POTENTIAL LEVEL
SEDIMENT	LOW	SEDIMENT	LOW
NUTRIENTS	MEDIUM	NUTRIENTS	MEDIUM
METALS	LOW	METALS	LOW
HYDROCARBONS	LOW	HYDROCARBONS	LOW
PESTICIDES	LOW	PESTICIDES	LOW
CHLORIDES	LOW	CHLORIDES	LOW
TRASH	MEDIUM	TRASH	LOW
BACTERIA	MEDIUM	BACTERIA	LOW
CHLORINE	LOW	CHLORINE	LOW
ORGANIC MATTER	MEDIUM	ORGANIC MATTER	MEDIUM

GOLDEN HILLS PARK**MEDIUM PRIORITY**

POLLUTANT	POTENTIAL LEVEL
SEDIMENT	LOW
NUTRIENTS	MEDIUM
METALS	LOW
HYDROCARBONS	LOW
PESTICIDES	LOW
CHLORIDES	LOW
TRASH	MEDIUM
BACTERIA	MEDIUM
CHLORINE	LOW
ORGANIC MATTER	MEDIUM

Vacuum Daily Tracking

Vacuum Daily Tracking					
Date:		Operator Name:		Total Daily Loads:	
Address:	Access ID:	Direction Cleaned:	Linear Feet of pipe cleaned:		
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
	Cleanout Catch Basin Combo	N S E W			
Notes:					

Potholes Maintenance Log

Potholes Maintenance Log				
Date:		Name(s):		Total Daily Hours:
Address:		Measurements:	Address:	Measurements:
Notes:				

Public Works Site Quarterly Comprehensive & Visual Observation of Stormwater Discharges Inspection Form

Quarterly Inspection Form				
Inspector Name(s): Mike Mirabella Date/Time: Temperature: °				
Site/Location: Public Works Site Weather Conditions: Last Rain Event:				
Item description to be inspected	Yes	No	Not Applicable	Comments/corrective action (date corrected):
Is the SWPPP up to date and provide all necessary documentation?				
Are weekly and monthly inspection checklists complete and included in the SWPPP?				
Were previous corrective actions completed?				
Are there any signs of spills or discharges of pollutants to storm drains or waterways, or sensitive waters?				
Is each storm drain inlet and/or catch basin clean and free of debris, accumulations of sediment and signs of contamination?				
If installed, are BMP's (silt fence, filter fabric, trash grate, oil absorbents, etc.) in good condition?				
Should BMP's be added at other locations to prevent pollutants from migrating to the storm drain/BCC?				
Are there adequate means to prevent a discharge to storm water outfalls (drip pans, spill kits, etc.)?				
Are the portable toilets secured/staked down.				

Is there evidence of spills or leaks around outdoor drums or containers?				
Is there any defect or deterioration of oil or other chemical containers (e.g. bulging, dented, rusting) or secondary containment equipment (e.g. cracks, breaks, warping)?				
Are dumpsters and waste storage/recycling areas clean?				
Are containers closed?				
Are chemical storage containers closed and protected from rain?				
Is salt properly covered, contained and the surrounding area clean?				
Are dry chemical, topsoil, mulch, sand or other storage areas clean?				
Are vehicles and mobile equipment parking and storage areas clean?				
Are there any signs of leaks that require clean up or drip pans?				
Is housekeeping in other areas of the site adequate to prevent pollutants from being mobilized in storm water?				
Are waste oils, used chemicals, and fuels being disposed of properly?				
Is there anything else stored outside that might be a concern for storm water exposure?				
Is there an adequate Spill Response Kit and is it fully stocked?				
Are there adequate controls to prevent unauthorized access to the site, such as fences, locks, security patrols? Are they working properly?				

Additional Comments:				
Visual observation of storm water discharges				
Sample location				
Color				
Foam	YES		NO	
Sheen	YES		NO	
Turbidity				
Comments and corrective actions taken:				
I Certify that the information provided on this form is true to the best of my knowledge, and that any deficiencies noted will be passed on to the facility manager for correction.				
Inspector Signature: Date:				
Mike Mirabella				
Facility Signature: Date:				
Danny Martinez				

**Cottonwood Heights Department of Public Works Detention/Retention Basin
Inspection Form**

Site:

Date:	Time:	Weather Conditions:
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Inspection Item	Yes	No	Not Applicable	Comments and Corrective Actions
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Are the inlets/outlets clear of trash, weeds, leaves, or any other obstructions?				
--	--	--	--	--

Is there overgrowth of vegetation throughout the basin that could be a fire threat?				
---	--	--	--	--

Is there evidence of dumping at the site?				
---	--	--	--	--

Is there excessive tree growth?				
---------------------------------	--	--	--	--

Is there an immediate need for maintenance at the site?				
---	--	--	--	--

Please note any other observations at site:

Interlocal Agreement with Cottonwood Heights Parks and Recreation Service Area

Equipment and Vehicle Washing Policies

4.2.6.4.4

Multiple departments or divisions have different vehicle washing standards. When reference is made to the Vehicle Wash Bay at the Public Works Site, it refers to the outdoor wash facility that is designed to drain all of the wash waters to the sanitary sewer. All city staff may wash their vehicles at any of the following locations:

- Public Works Site in the Vehicle Wash Bay
- At a Commercial Car Wash
- At their place of residence

STRUCTURAL CONTROL ASSESSMENT FORM

Date of Assessment:	
Person(s) Assessing Controls:	

Description of Existing Structural Control:	
Assessment Findings:	
Recommendations of changes or additions to improve water quality:	

Date Changes or Additions Implemented:

Stormwater BMP checklist for public construction projects

- Have oil/water separator(s) been incorporated in to the storm drain system?

Hydrodynamic separators use vortex forces to separate pollutants from surface water runoff, settling out total suspended solids (TSS), biochemical oxygen demand (BOD) and solid-bound heavy metals and nutrients, while oils and floatables are captured at the surface.

- Is there an opportunity for any of the following LID techniques to be incorporated in to the project?
 - On site detention/retention
 - Bio-swales
 - Rain gardens
 - Permeable Pavement
 - Soil amendments
 - Minimize impervious areas

- Is the use of filters or screens been considered for removal of suspended solids, trash and other debris?

Filters use the physical and chemical properties of custom filtration media to capture a wide range of pollutants from surface water runoff. Screens provide a physical barrier to catch trash, litter and other gross waterborne pollutants, preventing them from passing into the MS4.

- Have buffer zones been considered/incorporated in to the design?

During the site assessment, natural drainages must be identified along with their connection to creeks and/or streams, if any. Natural drainages offer a benefit to storm water management as the soils and habitat already function as a natural filtering/infiltrating swale. When determining the development footprint of the site, altering natural drainages should be avoided. By providing a development envelope set back from natural drainages, the drainage can retain some water quality benefits to the watershed. In some situations, site constraints, regulations, economics, or other factors may not allow avoidance of drainages and sensitive areas.

- Has flow control been incorporated in to the design to minimize downstream impacts?

Flow controls can improve drainage control and provide flood protection. Requiring no power and with few or no moving parts, they can provide exceptional water management.

- Have post-construction maintenance considerations been outlined?

Maintenance is a key component of ensuring the system will continue to provide effective water quality control.

The less maintenance that needs to be performed will ensure that the stormwater system is an economic benefit to the City.

APPENDIX G – Standard Operating Procedures

Escalating Enforcement Procedures

	Standard Operating Procedure Department of Public Works Activity: Escalating Enforcement Procedures	SOP Number:	Issue Date: 12/18/2017
Approved By: Mike Mirabella Department Manager or Director			
Permit Requirement Summary: 4.2.4.2.1 – Processes and sanctions to minimize the occurrence of, and obtain compliance from violators.	Targeted Pollutants or Hazards:		
<p>1. Purpose/Description: Develop a standard for enforcing compliance from contractors, businesses, and the general public with the City’s storm drainage and flood control development; groundwater source protection ordinance.</p> <p>2. Public Works Procedures:</p> <p>A. Verbal warning issued during all preconstruction meetings.</p> <p>B. In the event a preconstruction meeting was not warranted (e.g. Illicit Discharge, Single residential lot construction, etc...), a verbal warning may be issued for the first violation or at the discretion of the City’s personnel.</p> <p>C. Storm Water Enforcement – Citations issued by Cottonwood Heights Code Enforcement.</p> <ol style="list-style-type: none"> Issue violation, including case number. Include corrective action(s) required. Give deadline date(s) for corrective actions to be completed. If not in compliance after deadline date has passed, issue a Citation. <p>D. A violation is defined as a failure to implement or maintain any single BMP or construction activity which poses a pollution risk to the MS4. One violation may be considered multiple instances of the same offence (e.g. each catch basin without protection can be one offence). It is at the discretion of the Public Works/Code Enforcement/Health Department to determine the seriousness of the violation and determine the appropriate number of violations observed. Issue the violation per Title 17 of the City Municipal Code per procedure:</p> <ol style="list-style-type: none"> Issue the citation with reference to a case number Issue a deadline of 10 days (or less determined by personnel issuing violation) after date sent for compliance (give to the nearest day of the week City Offices are open). Fine as outlined in the City’s Municipal Code once deadline has expired. Track the dates with inspection reports and/or pictures. If non-compliance persists, Cottonwood Heights Public Works may incur the cost to implement the corrective action(s) and recoup, through the appropriate legal channels, the cost for completing the work from the violator. The violator may appeal by pleading not guilty and having the case heard by a judge in a bench trial. <p>E. In the event a violator refuses to sign the citation or is not present, the citation is delivered by certified mail to the responsible party’s main address.</p> <p>F. After a citation is delivered or mailed, receipt of payment is the responsibility of the Police Department. If payment is not received, a warrant will be issued to the violator.</p>			

- G. A Stop Work Order may be issued at any time by authorized Public Works Personnel for egregious acts which the inspector deems to pose a significant risk to health, safety, and environmental quality.
- H. Case may be escalated to the Salt Lake County Health Department or State for further infractions as necessary.

3. Crew Members Involved:

- A. Cottonwood Heights Public Works Personnel.
- B. Cottonwood Heights Code Enforcement Personnel.
- C. Salt Lake County Health Department.

4. Equipment (If applicable):

Camera/smartphone
Street Sweeper
Vacuum Truck

5. Equipment Cleanup Procedures:

To be completed by violator. If violator does not correct the violation by the City's Municipal Code, the City may correct the violation at the expense of the violator.

6. Forms and Documentation:

Construction Inspection Report
Storm Drain Incident Response Report

Tracing the Source of an Illicit Discharge

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Tracing the Source of an Illicit Discharge</p>	<p>SOP Number:</p>	<p>Issue Date: 12/19/2017</p>
<p>Approved By:</p> <p>Mike Mirabella Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.3.4 – Requires documentation for tracing the source of an Illicit Discharge to the source for the purpose of determining sanctions or penalties, and or other detailed inspection procedures.</p>	<p>Targeted Pollutants or Hazards: Any known non-storm water pollutant which enters into the storm drain</p>		
<p>1. Purpose/Description: Follow a methodical process to properly identify the contaminating source of an illicit discharge. Ideally, several people will be utilized for tracing the discharge in order to verify the source before the pollutant ceases to be observed.</p> <p>2. Public Works Procedures:</p> <ol style="list-style-type: none"> A. Arrive and verify the location where the initial discharge was reported. B. Visually inspect and observe reported discharge. C. Respondents should never enter private property without permission and never put themselves in danger, including entering storm structures in any manner or form without proper protective equipment. D. Utilizing the storm water system map, locate the next structure upstream of the discharge where observations can be made and open manhole lids to visually inspect discharges. E. Observe the upstream structure if there is non-storm water discharge at that location. F. Steps 2 and 3 will be repeated until locating a structure where the discharge is not present. G. If necessary, and as appropriate, the Cottonwood Heights Public Works Personnel will use the mobile video camera, equipment and field tests to verify pollutants and help trace the source of the discharge. H. Where respondent feels it necessary, a 3rd party lab or health department may be contacted for sampling and testing of samples. I. When a structure observed does not contain evidence of an illicit discharge, one of two things will be determined. <ol style="list-style-type: none"> a. The source is no longer producing discharge and may not be further traced. The source may or may not be near this location. Observe surrounding areas for any further indication of the source of the discharge. If none is found, document the findings for future reference. b. The discharge source should be located between the structure with no evidence of discharge and the next downstream structure. Observe surrounding areas to determine the source. If necessary, utilize video inspection equipment to locate the connection of the illicit discharge. J. As appropriate, follow additional SOPs for next steps (Cease Illicit Discharge, Spill Response Plan and/or Characterize the Nature and/or Threat of the Illicit Discharge). K. Complete all appropriate paperwork and inspection notes. 			

3. Crew Members Involved:

Public Works Personnel

4. Equipment (If applicable):

Camera Van

Personal Protective Equipment

5. Equipment Cleanup Procedures:

N/A

6. Forms and Documentation:

Storm Drain Incident Report

Characterize the Nature and/or Threat of the Illicit Discharge

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Characterize the Nature and/or Threat of the Illicit Discharge</p>	<p>SOP Number:</p>	<p>Issue Date: 12/19/2017</p>
<p>Approved By:</p> <p>Mike Mirabella Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.3.5 – Develop procedure for characterizing the nature of, and the potential public or environmental threat posed by, any illicit discharges.</p>	<p>Targeted Pollutants or Hazards: Any non-stormwater pollutant that enters the storm drain system.</p>		
<p>1. Purpose/Description: To determine the nature of a discharge and if it poses a threat to the safety of the public or human and ecological life. This may be done by visual indicators (e.g. pH soap suds, discoloration, floating pollutants) and or analysis (e.g. pH levels, chemicals present, hydrocarbon levels, etc.)</p> <p>2. Public Works Procedures:</p> <p>A. If informant of the illicit discharge knows what substance was discharged into the system, further identification may be unnecessary (e.g. paint was dumped into the system).</p> <p>B. Characterize the nature of the discharged based on visual observation.</p> <p>C. Samples of the discharge are collected, if necessary, and analysis may be completed if appropriate tools are readily available.</p> <p>D. If it is a hazardous substance, appropriate hazmat teams will be dispatched and can run necessary test to determine the nature and extent of a threat the discharge may pose to public safety and life.</p> <p>E. When necessary, labs will be utilized to determine complete composition of substances; however lab results may take a long time to process. Potential cleanup measures may have already taken place and if lab results indicate any further safety concerns, even after cleanup measures were completed, public notices may be issued as necessary.</p> <p>F. Documentation will be completed with the decision process to characterize the discharge, including; steps indicating why a particular method was used, what containment measures were completed analytical results.</p> <p>3. Crew Members Involved: Public Works Personnel Salt Lake County Health Department 3rd party lab personnel</p> <p>4. Equipment (If applicable): Dry weather screening kit</p> <p>5. Equipment Cleanup Procedures: N/A</p>			

6. Forms and Documentation:

Storm Drain Incident Response Report

Dry Weather Screening Inspection Form

Cease the Illicit Discharge

	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Cease the Illicit Discharge</p>	<p>SOP Number:</p>	<p>Issue Date: 12/19/2017</p>
<p>Approved By:</p> <p>Mike Mirabella Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.3.6 – Document for ceasing the illicit discharge, including notification of appropriate authorities; notification of the property owner; technical assistance for removing the source of the discharge or otherwise eliminating the discharge.</p>	<p>Targeted Pollutants or Hazards: Any non-stormwater pollutant that enters the storm drain system.</p>		
<p>1. Purpose/Description: The intent of these procedures is not to transform Cottonwood Heights City into a cleanup company. As necessary, third-parties may be called in for clean-up efforts and Cottonwood Heights reserves the right to recoup any associated cleanup costs and/or construction costs per Cottonwood Heights Municipal Code in order to comply with the permit requirements.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. Verify the source of the discharge. B. Contact the property owner and/or responsible party. C. Require immediate cessation of the illegal discharge from the source upon confirmation of responsible parties as provided by Cottonwood Heights Municipal Code Title 17.18. D. In the event that the illicit discharge is a sanitary sewer overflow, the improvement district with jurisdiction at the location for the discharge will be contacted to cease the illicit discharge and provide cleanup of the discharge per the improvement district’s procedures. E. If Cottonwood Heights Public Works personnel are trained in removing the substance, proceed with spill/dumping response procedures. Otherwise, Unified Fire Authority/hazmat teams should be dispatched for spill containment and cleanup. F. A notice of violation/citation/stop work order shall be issued to the responsible party as necessary at the discretion of the responding parties. G. Require corrective measures as allowed by Cottonwood Heights Municipal Code when necessary. H. In some cases, the property owner or business operator may be unaware of the hazards posed by the illicit discharge or that an illegal connection exists. In these cases, provide necessary education and training to these individuals to prevent re-occurrence of illicit discharge. I. As necessary, provide follow-up inspections after corrective measures have been installed to ensure proper construction and use of BMPs. J. In certain circumstances it may be necessary to escalate enforcement to legal actions in order to achieve compliance of this minimum control measure. <p>3. Crew Members Involved: Public Works Personnel</p>			

Unified Fire Authority

4. Equipment (If applicable):

N/A

5. Equipment Cleanup Procedures:

N/A

6. Forms and Documentation:

Storm Drain Incident Response Report

Dry Weather Screening Inspection Form

4.2.3.9.1 - SPILL RESPONSE PLAN SOP FOR: COTTONWOOD HEIGHTS PUBLIC WORKS

EMERGENCY CONTACTS:

Emergency services (police, fire department, ambulance services): 911 or dispatch (801) 840-4000.

Mike Mirabella, Storm Water Coordinator (385) 887-2647.

Danny Martinez, Public Works Superintendent (801) 824-7656.

Matthew Shipp, Public Works Director (801) 944-7090 or (801) 616-6636.

Salt Lake County Public Health Department Emergency Response (801) 580-6681.

Unified Fire Authority/HAZMAT (801) 743-7200.

Cottonwood Heights Non-Emergency Police Dispatch (801) 840-4000.

State of Utah 24-Hour Environmental Incidents Hotline (801) 536-4123.

Environmental Protection Agency (801) 968-9081.

Improvement Districts (Sanitary Sewer Overflow)

Cottonwood Improvement District (801) 943-7671

Midvalley Improvement District (801) 255-7321

CLEAN UP PROCEDURES

Spilled chemicals should be effectively and quickly contained and cleaned up. Employees should clean up spills themselves **only if properly trained and protected**. Employees who are not trained in spill cleanup procedures should report the spill to the Responsible Person(s) listed above, warn other employees, and leave the area.

The Maximum Cleanup Amounts that properly trained employee can cleanup are listed on page 10. In the event of spills greater than these amounts, contact the appropriate responders listed in the Emergency Contact Numbers listed above.

The following general guidelines should be followed for evacuation, spill control, notification of proper authorities, and general emergency procedures in the event of a chemical incident in which there is potential for a significant release of hazardous materials.

1. Evacuation

Persons in the immediate vicinity of a spill should immediately evacuate the premises (except for employees with training in spill response in circumstances described below). If the spill is of “medium” or “large” size, or if the spill seems hazardous, immediately notify emergency response personnel.

2. Spill Control Techniques

Once a spill has occurred, the employee needs to decide whether the spill is small enough to handle without outside assistance. Only employees with training in spill response should attempt to contain or clean up a spill.

NOTE: If you are cleaning up a spill yourself, make sure you are aware of the hazards associated with the materials spilled, have adequate ventilation, and proper personal protective equipment. Treat all residual chemical and cleanup materials as hazardous waste.

Spill control equipment should be located wherever significant quantities of hazardous materials are received or stored. MSDSs, absorbents, over-pack containers, container patch kits, spill dams, shovels, floor dry, acid/base neutralizers, and "caution-keep out" signs are common spill response items.

3. Spill Response Cleanup

Chemical spills are divided into three categories: Small, Medium and Large. Response and cleanup procedures vary depending on the size of the spill.

Small Spills: Any spill where the major dimension is less than 18 inches in diameter. Small spills are generally handled by internal personnel and usually do not require an emergency response by police or fire department HAZMAT teams.

- Quickly control the spill by stopping or securing the spill source. This could be as simple as up-righting a container and using floor-dry or absorbent pads to soak up spilled material. Wear gloves and protective clothing, if necessary.
- Put spill material and absorbents in secure containers if any are available.
- Consult with the Facility Responsible Person and the MSDS for spill and waste disposal procedures.
- In all instances, the area of the spill should not be washed with water. Use Dry Cleanup Methods and never wash spills down the drain, onto a storm drain or onto the driveway or parking lot.
- Both the spilled material and the absorbent may be considered hazardous waste and must be disposed of in compliance with state and federal environmental regulations.

Medium Spills: Spills where the major dimension exceeds 18 inches, but is less than 6 feet. Outside emergency response personnel (police and fire department HAZMAT teams) should usually be called for medium spills. Common sense, however, will dictate when it is necessary to call them.

- Immediately try to help contain the spill at its source by simple measures only. This means quickly up-righting a container, or putting a lid on a container, if possible. Do not use absorbents unless they are immediately available. Once you have made a quick attempt to contain the spill, or once you have quickly determined you cannot take any brief containment measures, leave the area and alert Emergency Responders at 911. Closing doors behind you while leaving helps contain fumes from spills. Give police accurate information as to the location, chemical, and estimated amount of the spill.
- Evaluate the area outside the spill. Engines and electrical equipment near the spill area must be turned off. This eliminates various sources of ignition in the area. Advise Emergency Responders on how to turn off engines or electrical sources. Do not go back into the spill area once you have left. Help emergency responders by trying to determine how to shut off heating, air conditioning equipment, or air circulating equipment, if necessary.
- If emergency responders evacuate the spill area, follow their instructions in leaving the area.
- After emergency responders have contained the spill, be prepared to assist them with any other information that may be necessary, such as MSDSs and questions about the facility. Emergency responders or trained personnel with proper personal protective equipment will then clean up the spill residue. Do not re-enter the area until the responder in charge gives the all clear. Be prepared to assist these persons from outside the spill area with MSDSs, absorbents, and containers.
- Reports must be filed with proper authorities. It is the responsibility of the spiller to inform both his/her supervisor and the emergency responders as to what caused the spill. The response for large spills is similar to the procedures for medium spills, except that the exposure danger is greater.

Large Spills: Any spill involving flammable liquid where the major dimension exceeds 6 feet in diameter; and any “running” spill, where the source of the spill has not been contained or flow has not been stopped.

- Leave the area and notify Emergency Responders (911). Give the operator the spill location, chemical name, and approximate amount.
- From a safe area, attempt to get MSDS information for the spilled chemical for the emergency responders to use. Also, be prepared to advise responders as to any ignition sources, engines, electrical power, or air conditioning/ventilation systems that may need to be shut off. Advise responders of any absorbents, containers, or spill control equipment that may be available. This may need to be done from a remote area, because an evacuation that would place the spiller far from the scene may be needed. Use radio or phone to assist from a distance, if necessary.
- Only emergency response personnel, in accordance with their own established procedures, should handle spills greater than 6 feet in any dimension or that are continuous. Remember, once the emergency responders or HAZMAT team is on the job cleaning up spills or putting out fires, the area is under their control and no one may reenter the area until the responder in charge gives the all clear.
- Provide information for reports to supervisors and responders, just as in medium spills.

REPORTING SPILLS

All chemical spills, regardless of size, should be reported as soon as possible to the Facility Responsible Person. The Responsible Person will determine whether the spill has the potential to affect the environment outside of the facility and must be reported to 911 or the National Response Center at 800-424-8802. Examples of spills that could affect the outside environment include spills that are accompanied by fire or explosion and spills that could reach nearby water bodies.

SPILLS (MATERIALS) THAT REQUIRE SPECIAL CLEANUP

PUBLIC WORKS SITE HAZARDOUS MATERIALS INVENTORY

MATERIAL	HAZARDS
DEF	Health:1
Mineral Spirits	Combustable
Anitfreze	May be combustable at high temperatures
Penofin	Flamable
Transmission Fluid	Flamable at high temperatures
GADUS (Grease)	Not flamable, will burn
Rain-X	
Diesel Engine Oil	Flamable at high temperatures

Winshield Washer Fluid	
MACK Hydraulic Oil	Flamable at high temperatures
MACK Motor Oil	Flamable at high temperatures
Gasoline	Flamable
Chan Saw Lubricant	Flamable at high temperatures
Salt	

MATERIAL INVENTORY

PUBLIC WORKS FACILITY HAZARDOUS MATERIALS INVENTORY

MATERIAL	AMOUNT (MAX)	LOCATION
DEF	100 gallons	Yellow locker in mobile office trailer #2/Conex #1
Mineral Spirits	1 gallon	Yellow locker in mobile office trailer #2
Anitfreze	25 gallons	Yellow locker in mobile office trailer #2/Conex #1
Penofin	5 gallons	Yellow locker in mobile office trailer #2
Transmission Fluid	10 gallons	Conex #1
GADUS (Grease)	500 oz	Conex #1
Rain-X windshield washer fluid	12 gallons	Conex #1
Diesel Engine Oil	24 gallons	Conex #1
Winter Winshield Washer Fluid	55 gallons	Conex #1
MACK Hydraulic Oil	55 gallons	Conex #1
MACK Motor Oil	55 gallons	Conex #1
Gasoline	10 gallons	Conex #2
Chan Saw Lubricant	5 gallons	Conex #2

2 cycle engine oil	50 oz	Conex #2
Salt	2000 tons	Salt Shed (covered)

MAXIMUM CLEANUP AMOUNTS

PUBLIC WORKS SITE		
MATERIAL	Maximum Volume to be cleaned	Disposal Method/Location
DEF	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Mineral Spirits	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Anitfreze	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Penofin	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Transmission Fluid	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
GADUS (Grease)	50 oz	Wiped up with paper towels and placed in dumpster.
Rain-X	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Diesel Engine Oil	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Winshield Washer Fluid	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
MACK Hydraulic Oil	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
MACK Motor Oil	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Gasoline	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Chan Saw Lubricant	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
2 cycle engine oil	3 gallon	Absorbed, put in to garbage bag and placed in dumpster.
Salt	2000 tons	Collected with loader bucket or shovel and placed in salt shed

Spill Response Plan SOP

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Spill Response Plan</p>	<p>SOP Number:</p>	<p>Issue Date: 12/20/2017</p>
<p>Approved By:</p> <p>Mike Mirabella Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.3.9.1 – Establish a spill/dumping response procedure, and a flow chart for internal use.</p>	<p>Targeted Pollutants or Hazards: Any non-stormwater discharges.</p>		
<p>1. Purpose/Description: To prevent spills from reaching storm drain systems and impacting receiving waters.</p> <p>2. Public Works Procedures:</p> <p>A. Initial notification of discharge received.</p> <p>B. Observe and investigate the reported discharge per the Tracing the Source of an Illicit Discharge procedure</p> <p>C. Define the size, location, and content of the spill; its direction and speed of movement; and its hazard or risk to the safety of the general public or likelihood of affecting sensitive habitats.</p> <p>D. Contact appropriate authorities as needed from the internal flow sheet based on provided information and/or initial observation for containment and cleanup. The product, if known, may dictate the response. These may include:</p> <ul style="list-style-type: none"> a. Cottonwood Heights Public Works stormwater personnel b. Cottonwood Heights Police Department/Code Enforcement c. Unified Fire Authority/Hazmat d. Salt Lake County Health Department e. State of Utah Division of Water Quality f. Environmental Protection Agency g. Local wastewater improvement districts (Cottonwood Improvement District, Midvalley Improvement District) <p>E. Get trained personnel and equipment to the site quickly.</p> <p>F. Ensure the safety of all responsible personnel and the public.</p> <p>G. Stop the flow from the source, if possible, and prevent ignition, if flammable.</p> <p>H. Contain the spill to a limited area.</p> <p>I. Remove the spilled material using proper techniques for the particular substance.</p> <p>J. Dispose properly of the spilled material after removal.</p> <p>K. Issue citations as appropriate following the Escalating Enforcement SOP.</p> <p>L. Follow up as needed where corrective actions are required.</p> <p>3. Crew Members Involved: Public works personnel</p>			

4. Equipment (If applicable):

N/A

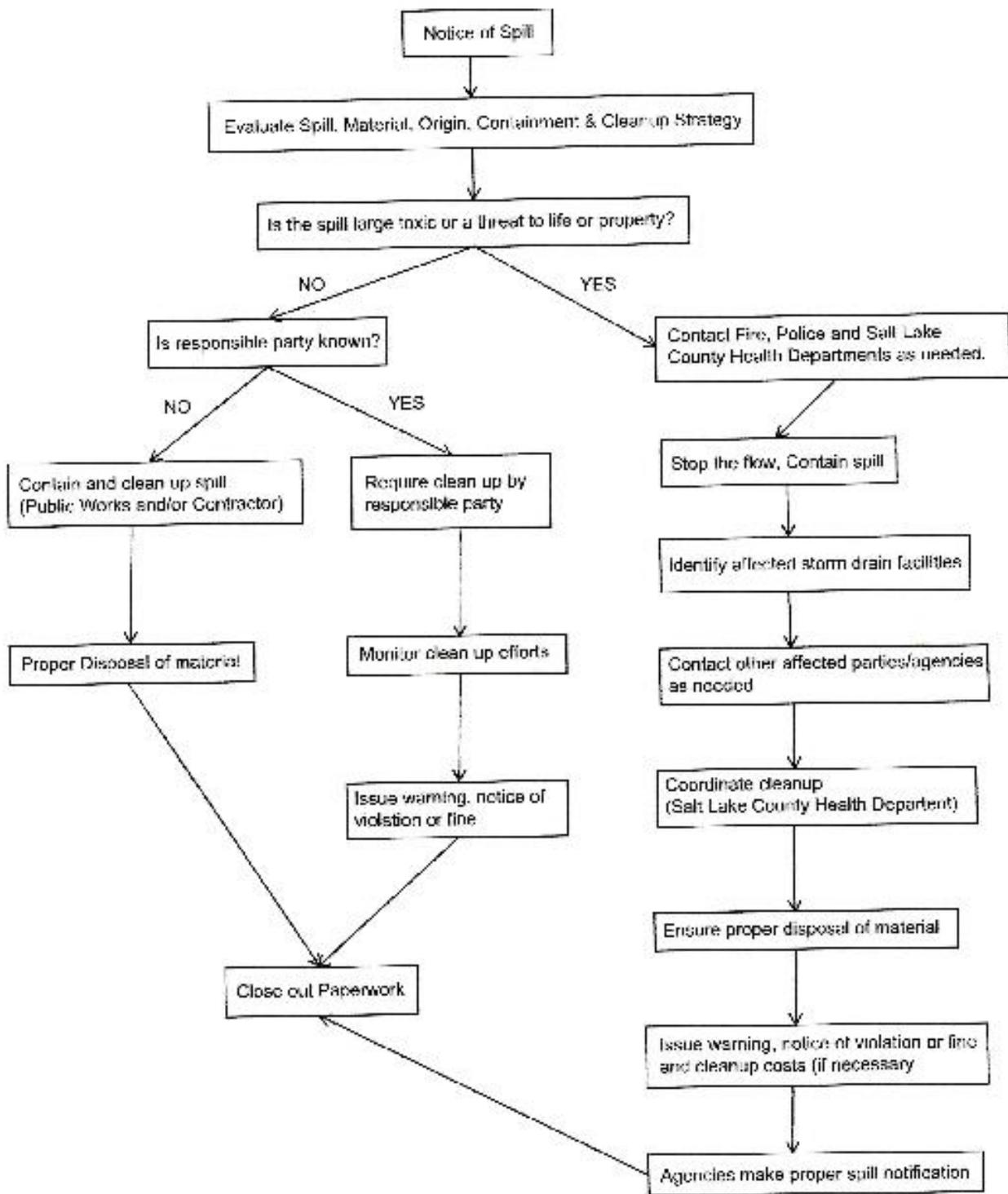
5. Equipment Cleanup Procedures:

N/A

6. Forms and Documentation:

Storm Drain Incident Response Report

Dry Weather Screening Inspection Form



SWPPP Review SOP

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Storm Water Pollution Prevention Plan Review and Inspection</p>	<p>SOP Number:</p>	<p>Issue Date: 12/20/2017</p>
<p>Approved By:</p> <p>Mike Mirabella Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.4.3 – review and record keeping for all construction sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, to ensure plans are complete and in compliance with State and Local regulations.</p>		<p>Targeted Pollutants or Hazards: Various, depends on site</p>	
<ol style="list-style-type: none"> 1. Purpose/Description: Develop a standard procedure for reviewing and keeping record of active Storm Water Pollution Prevention Plans 2. Public Works Procedures: <ol style="list-style-type: none"> A. SWPPP is submitted by developer and reviewed in office – NOI verification and verification that State DEQ template was followed in the SWPPP development. B. Identify potential water quality impacts – especially sites that discharge directly into or immediately upstream of water that the state recognizes as impaired through the use of the SWPPP Plan Review Checklist. C. Ensure that opportunities for LID and green infrastructure are considered by developers through the use of the Guidance Document for Storm Water Management. D. Ensure that appropriate long-term storm water management measures meet requirements of the long-term storm water management program. E. Cottonwood Heights Building Permit issued after SWPPP approval. F. A pre-construction review of the SWPPP and training is held which includes a review of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development. G. Maintain a copy of the SWPPP in the City’s database for a minimum of 5 years or until the project is complete, whichever is longer. 3. Crew Members Involved: SWPPP reviewer Storm Water Inspector(s) 4. Equipment (If applicable): Person Protective Equipment for site inspections. 5. Equipment Cleanup Procedures: N/A 			

6. Forms and Documentation:
SWPPP Plan Review Checklist

Construction Site Inspection SOP

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Construction Site Inspection</p>	<p>SOP Number:</p>	<p>Issue Date: 12/1/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella</u> Manager or Director</p>			
<p>Permit Requirement Summary:</p> <p>4.2.4.4 – Construction site inspection and enforcement of construction storm water pollution control measures.</p>		<p>Targeted Pollutants or Hazards:</p> <p>Identified in the Storm Water Pollution Prevention Plan (SWPPP)</p>	
<p>1. Purpose/Description:</p> <p>A. Develop a standard procedure for inspecting construction sites and ensuring that they are in compliance with the developed SWPPP and the Construction General Permit.</p> <p>2. Public Works Procedures:</p> <p>A. Registered Stormwater Inspector (RSI) to obtain a copy of the approved SWPPP from the Public Works Database.</p> <p>B. RSI to review SWPPP prior to meeting with owner/operator and if applicable their designated environmental control supervisor (ECS).</p> <p>C. Discuss/review approved SWPPP during the stormwater training and pre-construction meeting.</p> <p>D. Visually inspect the permitted site SWPPP and verify all required Best Management Practices (BMPs) are properly are properly installed per the approved SWPPP.</p> <p>E. Observe roadways for any sediment or other materials tracking. If tracking is observed, require cleanup and issue appropriate enforcement measures.</p> <p>F. Verify findings of the site inspection by completing the approved state UPDES Storm Water Inspection Evaluation Form for SWPPP Compliance</p> <p>G. Inform on site ECS of any possible SWPPP deficiencies and possible violations.</p> <p>H. Follow up as needed (as directed by RSI on written inspection).</p> <p>I. Note: UPDES inspections are to take place at a minimum once a month during the active construction progression. A SWPPP is required for all new developments/re-development sites one acre in size or greater. Sites smaller than one acre that are part of a common plan of development are required to use the State Common Plan of Development SWPPP template. Other sites less than one acre are required to use the NOI exempt SWPPP available from the City.</p> <p>3. Crew Members Involved:</p> <p>A. Public Works Registered Stormwater Inspector (RSI)</p> <p>B. Stormwater Manager/Public Works Director Designee</p> <p>4. Equipment (If applicable):</p> <p>A. Personal Protective Equipment – as required by site.</p>			

B. Camera/Smartphone

5. Equipment Cleanup Procedures:

A. (N/A)

6. Forms and Documentation:

A. UPDES inspection form (digital or physical copy).

B. Storm Water Pollution Prevention Plan

Post-Construction Structural Control Inspection

	Standard Operating Procedure Department of Public Works Activity: Post-Construction Structural Control Inspection	SOP Number:	Issue Date: 12/20/2017
Approved By: Mike Mirabella Department Manager or Director			
Permit Requirement Summary: 4.2.5.5 – Site inspection and enforcement of post-construction storm water control measures.	Targeted Pollutants or Hazards:		
<p>1. Purpose/Description: To conduct post-construction inspections to work with commercial and industrial businesses to educate, inform, require, and when necessary enforce the implementation of Storm Water Management Plans as required in the Storm Water Permit. Inspections are a tool to require industry to implement Best Management Practices that eliminate illegal dumping and eliminate or mitigate the impacts of illicit discharges from spills or leaks. The ultimate goal is to improve water quality by preventing pollutants from getting into the municipal separate storm sewer systems and Waters of the State.</p> <p>2. Public Works Procedures:</p> <p>A. Inspector reviews file of industry to be inspected. This will include reviewing previous inspections, contact information, enforcements, storm drain maps, and any other information to improve the inspection.</p> <p>B. After the inspector has reviewed the file he/she has the following inspection options:</p> <p>a. If the history of the industry indicates no previous problems and minimal potential of contamination to the storm drain, the inspector may inspect the property without making contact with the company representative. If the inspector finds no issues the inspection is complete. If the inspector finds storm water issues that require corrections, an inspection is done with the proper company representative.</p> <p>b. The inspector makes contact with the proper company representative and makes an appointment for an inspection.</p> <p>C. Inspector discusses with the company representative the goal of the storm water program and the benefits of following their Management Plan to eliminate pollutants from entering the storm water system. This includes the benefit of better water quality, and the encouragement to the industries of keeping pollutants from discharging to the storm drain system that may lead to expensive clean-up and potential fines.</p> <p>D. The inspector will ask if the company representative has any questions or concerns regarding the inspection or the Storm Water Management Requirements.</p> <p>E. The Inspector will ask for a copy of applicable Storm Water Permits. The company should have a copy of the Stormwater Management Plan on file. A State of Utah Storm Water Permit for Industrial Activities may also be presented if the company is required to have a State permit.</p> <p>F. The inspector reviews with the company representative their Storm Water Management Plan.</p> <p>G. The inspector will review all documentation of the company storm water inspections, storm drain box cleaning, if any spills occurred, and clean-up measures taken, changes to the SWMP, employee training and any additional pertinent storm water related improvements.</p> <p>H. The inspector will look at general housekeeping practices to include landscaped areas, paved areas, dumpster locations, containment areas, fueling islands, bone yards, docking areas, etc....</p>			

- I. The inspector has company representative show him spill kit(s) if applicable to site.
- J. If the company has raw materials and finished product stored inside that are loaded and unloaded at the facility on a regular basis, the inspector may tour the inside building(s) of the facility.
- K. If during the inspection a deficiency is observed, the inspector will require corrections to be made. In some instances where serious violations are found an immediate cease of the discharge order may be initiated and other government agencies may be contacted for additional enforcement and cleanup.
- L. The inspector will take photos as needed.
- M. Conclude inspection and let the company representative know of findings. Best Management Practices that appear to be working should be mentioned as a positive finding. The inspector lets the representative know of any deficiencies that will require immediate attention, or deficiencies that need to be corrected within 30-60 days as applicable.
- N. Complete industrial storm water checklist (if applicable).
- O. The inspector writes a letter or email to the company representative with inspection findings. This may include implementation of Best Management Practices that appear to be working, and any requirements to make corrections to deficient areas found during the inspection. The letter or email requires representative to call for a re-inspection when corrections are made.
- P. If corrections were required the inspector re-inspects the facility and check off correction if it is satisfactory. If corrections are not satisfactory, the inspector requires the problem to be fixed and re-inspects until correction is made. In some cases, enforcement and penalties may be needed.

3. Crew Members Involved:

Storm Water Inspector

4. Equipment (If applicable):

N/A

5. Equipment Cleanup Procedures:

Varies depending on site.

6. Forms and Documentation:

Storm Water Management Agreement including site plan
Inspection Form

Public Works/Parks and Recreation maintenance, Pesticide, Herbicide, and Fertilizer application. Public Works Shop and Site Maintenance

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works/Cottonwood Heights Parks and Recreation.</p> <p>Activity: Public Works/Parks and Recreation Maintenance, Pesticide, Herbicide, and Fertilizer application. Public Works Shop and Site Maintenance</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp,</u> <u>Ryan Gardner</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4 – Protect water quality and minimize the discharge of pollutants to the MS4 for maintenance of parks and open spaces.</p>	<p>Targeted Pollutants or Hazards: Herbicides, Pesticides, Fertilizers, Salts,</p>		
<p>1. Purpose/Description: Onsite management of mowing, trimming, edging, debris removal and fertilizer and pesticide applications to provide a safe working environment and pollution free buildings, facilities, Material storage areas, heavy equipment storage areas, maintenance areas, parks, open spaces, vehicles and equipment, roads, highways, parking lots, and storm water collection and conveyance system.</p> <p>2. Public Works Procedures:</p> <p>A. Stormwater training and inspections</p> <p>a. Pollution prevention training for all Public Works personnel will be performed annually (typically during the winter months at the first of the year). This training will also be part of orientation of new employees as well as rehired seasonal employees. Training of Cottonwood Heights Parks and Recreation employees is done annually as well.</p> <p>b. Employees are supervised to ensure compliance.</p> <p>c. The Public Works Site is inspected weekly and quarterly by qualified personnel.</p> <p>B. Lawn Maintenance Activities</p> <p>a. Ensure that all procedures used are in compliance with the City’s written Public Works Safety Policies including PPEs.</p> <p>b. Check area to be mowed and remove all trash, rocks, and other debris.</p> <p>c. When mowing, always make two or three passes around the outside discharging clippings to the inside of the property being mowed.</p> <p>d. After mowing, blow or brush all grass clippings from walks to ensure that the curb and gutters are cleaned of all grass clippings and dirt. In some instances, clippings may be blown to the gutter/street and swept up promptly by the street sweeper.</p> <p>e. Always refuel safely, follow refueling SOPs.</p> <p>f. Ensure there is an adequately supplied spill kit.</p> <p>g. Always use fertilizers, herbicides and pesticides in accordance with manufacturer’s specifications and application rates.</p> <p>h. Only use fertilizers, herbicides and pesticides as needed to problem areas.</p>			

- i. After applying fertilizers, herbicides and pesticides, blow or brush any excess back on to application area.
- j. ensure spreading device is calibrated or adjusted correctly.

C. Vehicles and Equipment and Maintenance Activities

- a. Visually check equipment to ensure all safety equipment is functional.
- b. Check for leaks (e.g. hydraulic, cooling, engine fluids or fuel) daily. Each driver is responsible to do a walk around of vehicles requiring a CDL checking for leaking fluids.
- c. Dispose of all fluids in a manner not to pollute storm drains.
- d. Maintenance activities where spills are possible are to be done in the Public Works Shop or vehicle wash bay.
- e. In the event of a spill, the vehicle/equipment is brought in to the repair shop unless the vehicle/equipment can be repaired in the field.
- f. The shop is a “dry shop” meaning all spills are cleaned up with rags or swept up for reuse. Used rags are placed in a bag and taken away and washed by a service company.
- g. Vehicles and equipment are to be washed in the wash bay where wash waters drain to the sanitary sewer system or a commercial car wash.

D. Chemical/Materials storage

- a. All fertilizer, herbicide, and pesticide containers are in designated areas either indoors or in a storage conex where rain water will not fall on them.
- b. Liquid formulations are mixed in the vehicle wash bay. In the event of a spill, the excess material can be drained to the sewer.
- c. Granular formulations are to be swept and removed off paths and roadways.
- d. Never apply a product adjacent to waterways unless the product label indicates that it is safe to do so.
- e. Fertilizer and pesticide applicators will be licensed or supervised directly by a licensed applicator.
- f. In the event of a spill the affected will be cleaned/treated as the label of the particular formulation requires.

E. Refueling Procedures (with a fuel pump)

- a. Park next to the appropriate pump.
- b. Turn engine off.
- c. While equipment is being refueled, the operator is to stay where he/she can see the nozzle.
- d. If a spill occurs, spread the appropriate spill containment (located by pumps) to soak up the spill, and dispose of spent material properly.
- e. Fill out the spill log if spill was in excess of 1 quart and turn in to the Stormwater Manager or Public Works Superintendent.

F. Refueling Procedures (in the field or using a gas can)

- a. If possible, bring equipment to be refueled to an impervious surface such as a parking lot or sidewalk.
- b. Turn engine off.
- c. Use caution while refueling to ensure fuel does not spill.
- d. If a spill occurs, spread the absorbent and clean up and dispose of the material as required.
- e. Fill out the spill log if spill was in excess of 1 quart and turn in to the Stormwater Manager or Public Works Superintendent.

G. Proper Sediment and Erosion control measures.

- a. Silt fences and/or fiber rolls are to be installed to prevent soil from running into adjacent waterways during project and when bare soil is present.
- b. gravel bags and inlet protection is to be used when there is a possibility of sediments entering a storm drain.

c. Impervious surfaces such as sidewalks, curb, gutter and roadways are to be swept clean at the end of a shift and prior to lunch breaks.

d. All disturbed areas will be permanently stabilized within 21 days.

H. Spill Prevention Plan and Clean up Procedures

a. Whenever possible, liquid or hazardous materials should be handled, used, stored, repackaged and transferred indoors or under cover.

b. Deliveries of bulk liquids should be supervised. Down gradient storm drain inlets should be covered during these deliveries.

c. Cover and contain containers, materials and wastes.

d. Keep all containers closed unless adding or removing materials.

e. Spill kits are located in the following locations: Conex #1 at the Public Works Site, at the fueling pumps in the access road, and with the lawnmowers/snow blowers at the Municipal center.

f. In the event of a gasoline or diesel spill, if safe to do so, stop the source of the spill, use absorbents as necessary to clean and dispose of the spill. Contact appropriate spill response personnel. If necessary decontaminate the spill site, personnel and equipment. Fill out the spill log and turn in to the Stormwater Manager or Public Works Superintendent.

g. In the event of a hydraulic spill, if safe to do so, stop the source of the spill, use absorbents as necessary to clean and dispose of the spill. Contact appropriate spill response personnel. If spill reaches soil, dig up affected area and dispose of soil appropriately. Fill out the spill log and turn in to the Stormwater Manager or Public Works Superintendent.

h. In the event of a granular chemical spill, clean up the spill by sweeping or blowing to produce a pile for collection. Notify supervisor, fill out a spill log, and turn in to the Stormwater Manager or Public Works Superintendent.

i. In the event of a chemical liquid spill, follow proper cleaning procedures using mats, absorbents, and wattles to prevent spreading, dispose of spent materials properly. Notify supervisor, fill out a spill log, and turn in to the Stormwater Manager or Public Works Superintendent.

I. Public Works Site Storage and Cleaning Procedures

a. All City vehicles are to be parked within the fenced area of the Public Works Site when not in use.

b. Vehicles which are leaking fluids will be placed inside the shop; otherwise a containment pan and/or rag will be tied on to leaking parts to catch fluids until it is possible to repair leak.

c. Any equipment which stores oil based products will be placed in the shop, conexas, or offices.

d. Any equipment which stores herbicides and/or pesticides will be stored inside of the shop, conexas, or office.

e. All cleaning of equipment will be done in designated wash-out areas.

3. Crew Members Involved:

All Public Works Personnel

Cottonwood Heights Parks and Recreation grounds maintenance personnel

4. Equipment (If applicable):

Dump trucks/snow plows

Fertilizer/herbicide/pesticide applicators

lawn mowers

5. Equipment Cleanup Procedures:

N/A

6. Forms and Documentation:

Spill log

Weekly checklist

Quarterly Comprehensive Inspection checklist

Dump tickets from landfill.

Roads, Highways and Parking Lot Procedures

Remove and Replace Asphalt

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Remove and Replace Asphalt</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize road debris and other pollutants from entering the MS4 and improve public safety.</p>		<p>Targeted Pollutants or Hazards: Sediments/asphalt debris</p>	
<ol style="list-style-type: none"> 1. Purpose/Description: Patch road surfaces, remove potholes (using ½ “, ¾” Asphalt) 2. Public Works Procedures: <ol style="list-style-type: none"> A. Place safety devices and signs (traffic control) B. Place BMPs to protect inlet boxes and gutters where necessary. C. Sawcut and remove the failed asphalt and clean all edges. D. Repair the subgrade/road base if necessary. E. Compact the road base. F. Tack all vertical edges. G. Place the asphalt and compact with a roller. H. Broom sweep any excess materials (may be done with the street sweeper as needed). 3. Crew Members Involved: Public Works Personnel – ground workers, roller operator, flaggers 4. Equipment (If applicable): 1 ton truck Roller Arrow Board 5. Equipment Cleanup Procedures: Clean tools with diesel/degreaser catch all spent materials and cleaning agents and collect them in a 55 gallon barrel. Material is taken by a 3rd party for recycling. 6. Forms and Documentation: N/A 			

Pothole Patching with EZ Street Asphalt

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Pothole Patching with EZ Street Asphalt</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize road debris and other pollutants from entering the MS4 and improve public safety.</p>	<p>Targeted Pollutants or Hazards: Sediments/asphalt debris</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Patch potholes in asphalt surfaces using UPM. Locations of potholes may be reported by concerned citizens or staff members. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Place safety devices and signs (traffic control as needed). B. Broom Clean and collect excess raveled asphalt for disposal. C. Shovel mix into the hole and level. D. Compact with truck wheels or compactor. E. Ensure that patch is level or up to ¼" lower than street level in order to prevent snow plows from scraping them out. 3. Crew Members Involved: Public Works Personnel – ground workers and flaggers 4. Equipment (If applicable): 1 ton truck 5. Equipment Cleanup Procedures: Clean tools with diesel/degreaser catch all spent materials and cleaning agents and collect them in a 55 gallon barrel. Material is taken by a 3rd party for recycling. 6. Forms and Documentation: N/A 			

Pothole/street repair with Dura-Patcher

	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Pothole/street repair with Dura-Patcher.</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize road debris and other pollutants from entering the MS4 and improve public safety.</p>	<p>Targeted Pollutants or Hazards: Sediments/asphalt debris</p>		
<p>1. Purpose/Description: Patch potholes in asphalt surfaces using a mixture of 3/8" washed, crushed gravel and emulsification. Locations of potholes may be reported by concerned citizens or staff members.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. Sweep Roadway with street sweeper to ensure sediments are removed from potholes and cracks in the asphalt surface. B. Place BMPs at storm drain grates and set up traffic control as necessary. C. Use blower to blow any additional sediments from surface to be patched. D. Place layer of emulsification on surface to be patched. E. Place gravel and emulsification to patch, turn off emulsification and place a thin layer of gravel to prevent emulsification from tracking. F. Compact patch. G. Use street sweeper to sweep up any excess gravel. H. Monitor for at least one week and sweep up excess gravel as necessary. <p>3. Crew Members Involved: Public Works Personnel – ground workers and flaggers</p> <p>4. Equipment (If applicable): GMC Top Kick (truck) Dura-Patcher Plate Compactor</p> <p>5. Equipment Cleanup Procedures: Clean tools with diesel/degreaser catch all spent materials and cleaning agents and collect them in a 55 gallon barrel. Material is taken by a 3rd party for recycling.</p> <p>6. Forms and Documentation: N/A</p>			

Street Sweeping

 <p>Cottonwood Heights <i>City between the canyons</i></p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Street Sweeping</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to reduce road debris and other pollutants from entering the MS4 and improve public safety.</p>	<p>Targeted Pollutants or Hazards: Sediments, Debris, Trash, Leaves.</p>		
<p>1. Purpose/Description: Sweep all city streets once a year in order to keep the city clean and to prevent traffic/pedestrian accidents from occurring as a result of rocks and debris on road ways. The city has been split up in to 8 different areas for the purposes of snow plowing. These areas are also used to break up the sweeping schedule.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. Perform walk around on vehicle to ensure its safety. B. Calibrate all brooms and brushes. C. Fill water tank with water. D. Streets are swept on an area and arterial schedule. When one area is complete, the next area will be swept. E. Streets may be swept as a need arises. <p>3. Crew Members Involved: Public Works Personnel</p> <p>4. Equipment (If applicable): Street Sweeper</p> <p>5. Equipment Cleanup Procedures: Sweepings are dumped in a retention area at the Public Works Site. The containment of the sweepings is washed with a pressure washer equipped on the street sweeper.</p> <p>6. Forms and Documentation: Street Sweeping Log GPS weekly tracking log Dump tickets from landfill.</p>			

Right-of-Way Maintenance

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Right-of-Way Maintenance.</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize organic debris and other pollutants from entering the MS4.</p>	<p>Targeted Pollutants or Hazards: Organic Materials, trash.</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Clean trash and cut weeds from the City's Right-of-Ways. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Clean up trash and haul away. B. Cut weeds/overgrowth with grass-weed trimmers and or hedge trimmers. C. Collect clippings and place on to truck. D. Cover clippings in bed of truck, and dispose of in the dumpster at the Public Works Site. E. If there is any type of herbicide application, follow the manufacturers application and safety guidelines that are marked on the product container. Do not apply herbicides during windy conditions. Spray only the problem areas and not around storm drains or impervious areas that drain to the MS4. 3. Crew Members Involved: Public Works Personnel 4. Equipment (If applicable): 1 ton truck Grass-weed trimmers Hedge Trimmer Leaf Blowers Rakes 5. Equipment Cleanup Procedures: Clean any equipment in the vehicle wash bay. All debris/garbage is disposed of in the dumpster at the Public Works Site. 6. Forms and Documentation: Dump tickets from landfill. 			

Lawn Mowing

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Lawn Mowing</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize organic debris and other pollutants from entering the MS4.</p>	<p>Targeted Pollutants or Hazards: Organic Matter.</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Mow the vegetation at the Municipal Center including on-site detention basins. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Ensure mower is in proper working condition and safe for operation. B. Remove any trash from the area to be mowed. C. Use weed-grass trimmer around edges. Orient the direction to be D. Mow around edges 2 to 3 times blowing clippings to the center of the landscaped areas. E. Blow excess clippings back on to landscape areas. In some areas the clippings may be blown away from storm drains and collected with the street sweeper. F. 3. Crew Members Involved: Public Works Personnel 4. Equipment (If applicable): Standing Mower Weed-grass trimmer 5. Equipment Cleanup Procedures: Haul mower on trailer to Public Works Site and wash off in vehicle wash bay. 6. Forms and Documentation: N/A 			

Salt Mixing and Storage Cleanup

	Standard Operating Procedure Department of Public Works Activity: Salt Mixing and Storage Cleanup	SOP Number:	Issue Date: 12/27/2017
Approved By: Mike Mirabella, Danny Martinez, Matthew Shipp Department Manager or Director			
Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize the amount of salt from entering the MS4.	Targeted Pollutants or Hazards: De-icing salt		
<p>1. Purpose/Description: To keep the salt storage area clean and to prevent it from flowing into the storm drain. The salt shed was designed with a 10' concrete pad in front of the covered shed that drains back to the structure and to the adjacent retention area where street sweepings are kept. The city may mix different types of salt to experiment with the effectiveness of de-icing operations.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. During a snow event, trucks are loaded on the concrete pad in front of the salt shed. Trucks that are overloaded will start and stop abruptly to shake of excess salt that may fall off of the top of the truck. B. Any salt that falls off a truck outside of the concrete pad is pushed back in to the salt shed. C. Salt is mixed at the Public Works Site in the area between the salt shed and vehicle wash bay. D. Once mixed, the salt is placed in the salt shed to be covered from stormwater. <p>3. Crew Members Involved: Public Works Personnel</p> <p>4. Equipment (If applicable): Snow Plows Loader Street Sweeper</p> <p>5. Equipment Cleanup Procedures: Salt is mixed at the Public Works Site between the salt shed and the vehicle wash bay. The Public Works Superintendent determines the ratio of salts being mixed. Once the salt is mixed and placed in the salt shed, the area is swept with the street sweeper.</p> <p>When de-icing and plow operations have been completed or at the end of a plow shift. Trucks that will not be used are backed up to the salt pile as close as possible and unloaded from the trucks sander. This operation requires the trucks to pull forward periodically once the pile is to the height of the sander. Once all de-icing operations are complete, salt is cleaned up with the loader and pushed back in to the shed for reuse. Once all of the salt that can be cleaned with the loader is back in the shed, any excess salt is swept up with the street sweeper and dumped in the street sweepings retention area.</p> <p>Depending on the weather forecast, the Public Works Superintendent will schedule a day that the trucks will</p>			

be washed in the vehicle wash bay that drains to the sanitary sewer.

6. Forms and Documentation:

N/A

Snow Plowing/de-icing

	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Snow Plowing/de-icing</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp, Ryan Gardner</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to minimize the amount of salt from entering the MS4.</p>	<p>Targeted Pollutants or Hazards: De-icing salt</p>		
<p>1. Purpose/Description: To remove snow and ice from city streets and ensure a safe driving surface</p> <p>2. Public Works Procedures:</p> <p>A. Snow is plowed from city streets to the curb and gutter.</p> <p>B. Snow plows are calibrated annually prior to the snow season to apply salt at a rate of 250 pounds per mile.</p> <p>C. Snow plow operators have the ability to increase the amount of salt applied to the roadway based on the Public Works Superintendent’s discretion. Salt can be applied up to 400 pounds per mile with the internal sander controls. Alternatively, the Public Works Superintendent may also have the snow plow operators raise the gate on the sanders by 50% from 2 (calibrated setting) to 3, in effect increasing the amount of salt applied by 150%.</p> <p>3. Crew Members Involved: Public Works Personnel</p> <p>4. Equipment (If applicable): Snow Plows Loader Street Sweeper</p> <p>b</p> <p>5. Equipment Cleanup Procedures: When de-icing and plow operations have been completed or at the end of a plow shift. Trucks that will not be used are backed up to the salt pile as close as possible and unloaded from the trucks sander. This operation requires the trucks to pull forward periodically once the pile is to the height of the sander. Oce all de-icing operations are complete, salt is cleaned up with the loader and pushed back in to the shed for reuse. Once all of the salt that can be cleaned with the loader is back in the shed, any excess salt is swept up with the street sweeper and dumped in the street sweepings retention area.</p> <p>Depending on the weather forecast, the Public Works Superintendent will schedule a day that the trucks will be washed in the vehicle wash bay that drains to the sanitary sewer.</p>			

6. Forms and Documentation:
N/A

Excess snow disposal

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Excess snow disposal</p>	<p>SOP Number:</p>	<p>Issue Date: 12/228/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish SOP for BMPs designed to ensure that areas used for snow disposal will not result in discharges to receiving waters.</p>	<p>Targeted Pollutants or Hazards:</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: To properly remove and dispose of snow from city streets when it has built up to the point that there is no longer enough room to plow snow and allow for safe public access or push future snow. 2. Public Works Procedures: Load snow into dump truck from the side of roads and haul to the west side of the Public Works Site (permeable/unpaved surface). 3. Crew Members Involved: Public works Personnel 4. Equipment (If applicable): Loader 10 wheeler dump truck/bobtail/top kick 5. Equipment Cleanup Procedures: Clean up trucks and loader in Vehicle Wash Bay 6. Forms and Documentation: N/A 			

Graffiti Removal

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Graffiti Removal</p>	<p>SOP Number:</p>	<p>Issue Date: 12/27/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Graffiti cleanup within the right-of-way of public roadways to maintain good curb appeal and remove all appearances of code violations as it relates to graffiti.</p>	<p>Targeted Pollutants or Hazards: Spray Paint</p>		
<p>1. Purpose/Description: Proper procedures will be followed to remove all traces of graffiti on walls, fences and metal surfaces by using Taginator (biodegradable), Tagaway (biodegradable) or latex paint. Protect the storm drain system from potential pollutants during graffiti removal activities</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. Locate nearest downstream storm drain inlet and try to maintain a buffer distance of 100 feet from inlet. B. Where it is not possible to maintain the buffer distance, place bumpers at inlet to prevent any potential spill from entering the storm drain system. C. Follow all safety recommendations from the manufacturer of the graffiti removal material and apply following manufacturer’s recommendations. D. Use spray equipment or rollers to apply the removal material. E. Prevent removal materials from coming into contact with the ground use sand, cat litter or other absorbent to pick up the spilled material. Sweep up absorbed materials into a proper container. F. Cleanup spill area with water as needed. G. Dispose of spoiled material at local landfill or dumpster at public works site. H. If surface was painted prior to graffiti, the graffiti will be painted over with paint. Drop cloths and absorbents will be used as necessary and disposed of in the dumpster at the public works yard. <p>3. Crew Members Involved: Public Works Personnel</p> <p>4. Equipment (If applicable): Taginator, Tagaway or latex paint Rollers Paint Sprayer</p> <p>5. Equipment Cleanup Procedures: Use water for latex based paints and wash in vehicle wash bay or sink. Use paint thinner as directed by manufacturer to clean up application equipment.</p>			

6. Forms and Documentation:

N/A

Pavement Marking

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Pavement Marking</p>	<p>SOP Number:</p>	<p>Issue Date: 12/28/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.5 – Establish an SOP for proper roadway and parking lot maintenance, including pavement marking.</p>	<p>Targeted Pollutants or Hazards: Paint</p>		
<p>1. Purpose/Description: To apply pavement markings (not including striping).</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. Identify storm drain inlets in proximity of marking location (if any) and block of any storm drain inlet structures within 20 feet of marking location. B. Implement traffic control plan as necessary to block off traffic from entering marking location. C. Clean area where marking is to be applied. D. Lay down stencil/template. E. Apply paint on template with roller or sprayer. F. Spill Cleanup <ul style="list-style-type: none"> a. If spill occurs, stop paint from continuing to spill and contain the spill to prevent it from entering the storm drain b. Apply absorbents as appropriate to absorb spilled paint. c. Apply water as necessary to cleanup any paint remnants and remove with vacuum (the street sweeper power washer and vacuum may be employed for this task). G. Remove stencil/template. H. Allow appropriate time to dry per manufacturer’s recommendations I. Remove traffic controls. <p>3. Crew Members Involved: Public Works Personnel.</p> <p>4. Equipment (If applicable): PPEs Stencil/template Roller Paint Striper</p> <p>5. Equipment Cleanup Procedures: Clean templates, rollers, brushes and sprayers and other equipment per manufacturers recommendations at the Public Works Site in the vehicle wash bay or in the sink. All wash waters must drain to the sanitary sewer.</p>			

6. Forms and Documentation:

Storm Drain Incident Response Report.

Storm Water Collection and Conveyance System Maintenance

Cleaning Storm Drain Grates

 <p>Cottonwood Heights City between the canyons</p>	Standard Operating Procedure Department of Public Works Activity: Cleaning Storm Drain Grates	SOP Number:	Issue Date: 12/28/2017
Approved By: <u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director			
Permit Requirement Summary: 4.2.6.4.6 – Establish procedures for prioritizing and cleaning storm drain grates.		Targeted Pollutants or Hazards: Organic Materials, sediments.	
<p>1. Purpose/Description: Clean the debris from the city street grates as well as the debris from larger grates located at detention basins. The city has been divided in to 8 snow plow areas. These areas are also used to divide the city so multiple crews can effectively clean more grates. Typically when rain is forecasted, public works personnel are dispatched in crews of 2 to clean debris from the grates prior to the rain event and during the rain event.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none">A. Drive snow plow routes beginning on arterial streets.B. Visually check catch basins along routes, if debris is present, remove it from the grate and place in the bed of the vehicle.C. Once material is removed from grate, check inside the structure for buildup of sediments. If sediment is blocking 25% or more of the storm drain pipe, schedule cleaning of storm drain structure with the street sweeper (Power washer and vacuum).D. Gathered material is dumped at the public works site in the Street Sweepings Retention area.E. Dispose of collected debris at local landfill. <p>3. Crew Members Involved: Public works Personnel</p> <p>4. Equipment (If applicable): 1 ton truck street sweeper</p> <p>5. Equipment Cleanup Procedures: Wash equipment in the Street Sweepings Retention area or vehicle wash bay.</p> <p>6. Forms and Documentation: Storm Drain Inlet Maintenance Log Dump tickets from landfill.</p>			

Vacuum Storm Drains

	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Vacuum Storm Drains</p>	<p>SOP Number:</p>	<p>Issue Date: 12/28/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.6 – Establish procedures for prioritizing and cleaning storm drain structures.</p>	<p>Targeted Pollutants or Hazards: Sediments, organic matter, etc...</p>		
<p>1. Purpose/Description: Clean storm drain boxes and pipes. As this is a maintenance program for the storm drains, in the event of a flood this crew will be used in various ways with similar goals in mind. The purpose and goal in cleaning storm drains is to remove as much debris as possible in order to prevent any blockages from further down the pipe and to improve the water quality in the overall storm water system. The City currently contracts out storm drain pipe cleaning on an as needed basis. A GIS priority map has been developed by means of visual inspections with a storm drain camera.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none"> A. Clean and remove the storm drain lid/inlet cover. B. Clean silt and debris from the bottom of the box and as far in to the pipe as possible. C. In the event a blockage is causing flooding, use the street sweeper vacuum attachment to collect waters. D. If the blockage cannot be removed and flooding persists, a 3rd party is employed to jet wash the pipe. <p>3. Crew Members Involved: Public Works Personnel 3rd party pipe cleaning personnel</p> <p>4. Equipment (If applicable): Street Sweeper Vacuum/jet wash truck</p> <p>5. Equipment Cleanup Procedures: Dump all collected material at Public Works Site in the street sweepings containment area. Wash all equipment in either the street sweepings containment or vehicle wash bay.</p> <p>6. Forms and Documentation: Street Sweeper Daily Tracking Form Vacuum Daily Tracking Form Dump tickets from landfill.</p>			

Rodding Storm Drains

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Rodding Storm Drains</p>	<p>SOP Number:</p>	<p>Issue Date: 12/28/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.6 – Establish procedures for prioritizing and cleaning storm drain pipes from roots and miscellaneous blockages.</p>	<p>Targeted Pollutants or Hazards: Organic Matter, flooding</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Cutting tree roots out from the inside of storm drain pipes. This allows for better water flow and eliminates pipe blockages and prevents flooding. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Clean and remove lid/inlet to box. B. Start root auger into pipe traveling up stream when possible. C. One person must stay with the rodder at all times while the other person waits for the rodder to arrive at the next box. D. If rodder can't make it all the way through, pull it back, clean the roots off the end, and start the process over again until the rodder comes out clean. E. If the rodder can't get past a point in the box, remove the rodder, deploy the storm drain camera for further investigation. F. Repeat steps B through E until pipe is clean. 3. Crew Members Involved: Public Works Personnel 3rd party rodding personnel 4. Equipment (If applicable): Rod trailer/truck 5. Equipment Cleanup Procedures: Clean equipment in the street sweepings retention area and vehicle wash bay. 6. Forms and Documentation: Vacuum Daily Traking Dump tickets from landfill. 			

Ditch Cleaning

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Ditch Cleaning</p>	<p>SOP Number:</p>	<p>Issue Date: 12/28/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.6 – Establish schedule for regular inspection and cleaning and repair of ditches.</p>	<p>Targeted Pollutants or Hazards: Trash, Organic Matter</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Clean ditches of debris that could cause possible flooding. The ditches are to be inspected annually as per state requirements. Cleaning is performed as necessary. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Remove any obstructions and place debris on truck. B. Dump collected obstructions at the street sweepings retention area or at a local landfill. 3. Crew Members Involved: Public Works Personnel 4. Equipment (If applicable): 1 ton truck Backhoe (if needed) 5. Equipment Cleanup Procedures: Clean equipment in the street sweepings retention area and vehicle wash bay. 6. Forms and Documentation: Dump tickets from landfill. 			

Detention/Retention Basin Cleaning

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Detention/Retention Basin Cleaning</p>	<p>SOP Number:</p>	<p>Issue Date: 12/28/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.6 – Establish schedule for regular inspection and cleaning and repair of retention/detention ponds.</p>	<p>Targeted Pollutants or Hazards: Sediments, trash, organic matter, etc...</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Keep basins free of debris, weeds, trash, etc... This allows better water flow at all times and also adds a pleasing aesthetic look to the city as well as ensures the proper function of the facilities. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Clean trash from the basin and haul it away. B. Cut the weeds around the storm drain basin and haul away. C. Trim trees if necessary and haul limbs away. 3. Crew Members Involved: Public Works Personnel 4. Equipment (If applicable): 1 ton truck Grass-weed trimmers hedge trimmers leaf blowers 5. Equipment Cleanup Procedures: All debris to be dumped into the street sweeping retention area or dumpster and disposed of at a local landfill. Tree limbs are hauled off to an organic waste recycler. 6. Forms and Documentation: Detention/Retention Basin inspection form. 			

Weekly Visual Inspections

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Weekly Visual Inspections</p>	<p>SOP Number:</p>	<p>Issue Date: 12/28/2017</p>
<p>Approved By:</p> <p>Mike Mirabella, Matthew Shipp Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.6.1 – Establish a standard for inspecting high priority facilities for potential non-stormwater discharges.</p>		<p>Targeted Pollutants or Hazards: Salts, oils, household hazardous waste, sediments, etc...</p>	
<ol style="list-style-type: none"> 1. Purpose/Description: Provide comprehensive visual inspections for high-priority city owned facilities. Record weekly observations and corrections made. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Obtain weekly checklist for inspection B. Visually inspect each item on the checklist including under equipment and around facilities for spills or any other pollutants that may enter the storm drain system. C. Make a list of any items that require correction. D. Fill out the Corrective Action Log and turn in to the Public Works Superintendent. E. Ensure in next week inspection that the corrective actions from previous inspections are either corrected or have scheduled to be corrected. 3. Crew Members Involved: Public Works Stormwater Inspector(s) 4. Equipment (If applicable): N/A 5. Equipment Cleanup Procedures: N/A 6. Forms and Documentation: Public Works Weekly Checklist Corrective Action Log 			

Quarterly “High Priority” Site Inspection & Visual Observation of Stormwater Discharges

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Quarterly “High Priority” Site Inspection & Visual Observation of Stormwater Discharges</p>	<p>SOP Number:</p>	<p>Issue Date: 12/29/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.6.2 & 4.2.6.6.3 - Establish a standard for inspecting high priority facilities for potential non-stormwater discharges.</p>	<p>Targeted Pollutants or Hazards: Salts, oils, household hazardous waste, sediments, etc...</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Provide a comprehensive visual inspection for high-priority city owned facilities. Record weekly the observations made with a full UPDES report done quarterly. Quarterly water samples will be taken and documented. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Obtain the Quarterly Inspection Form B. Walk the site and look for spills, debris and any pollutants that might enter the storm drain system. C. Note any comments/corrective actions on the form. D. Collect sample of stormwater discharge from the downstream side of the oil/water separator. E. If it is not raining at the time of inspection, check local weather reports and schedule a sample to be taken during the next rain event. F. Review the inspection form with the Public Works Superintendent & let him know of any corrective actions that need to be completed to bring the site in to compliance. G. Schedule follow up inspection for any corrective actions. 3. Crew Members Involved: Public Works Personnel 4. Equipment (If applicable): N/A 5. Equipment Cleanup Procedures: N/A 6. Forms and Documentation: Quarterly Inspection Form 			

Disposal of Waste

 <p>Cottonwood Heights City between the canyons</p>	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Disposal of Waste</p>	<p>SOP Number:</p>	<p>Issue Date: 12/29/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.6 – Develop and ensure proper disposal methods of all waste and wastewater that are used and collected in operations activities.</p>	<p>Targeted Pollutants or Hazards: Organic matter, debris and suspended solids.</p>		
<ol style="list-style-type: none"> 1. Purpose/Description: Properly dispose of waste accumulated through street sweeping and storm drain system cleaning activities. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Use filter fabric to cover and protect storm drain inlet closest to the sweepings containment area. B. Use front end loader to pick up material and place it in the back of the dump truck. C. Dump truck driver checks bed rails to make sure no debris will fall out. D. Dump truck driver unrolls bed tarp to cover the load ensuring that debris will not fall out when in transit. E. Driver transports load to landfill, dumps load and returns to shop for another load of material. F. Before the end of shift, driver proceeds to designated wash area to clean dump truck. G. Sweep area in front of sweeper retention area with street sweeper. H. Waste collected from tree trimmings are loaded directly on to dump truck and taken to a green waste recycler. Any leaves are cleaned up and put in either the street sweepings retention area or dumpster. 3. Crew Members Involved: Public Works Personnel 4. Equipment (If applicable): Dump Truck Front End Loader Filter Fabric Street Sweeper PPE 5. Equipment Cleanup Procedures: All equipment to be cleaned in vehicle wash bay that drains to sanitary sewer. 6. Forms and Documentation: Dump ticket from landfill or green waste recycler. 			

Snow and Ice removal on sidewalks and walking paths

	<p>Standard Operating Procedure Department of Public Works</p> <p>Activity: Snow and Ice removal on sidewalks and walking paths.</p>	<p>SOP Number:</p>	<p>Issue Date: 12/29/2017</p>
<p>Approved By:</p> <p><u>Mike Mirabella, Danny Martinez, Matthew Shipp, Ryan Gardner</u> Department Manager or Director</p>			
<p>Permit Requirement Summary: 4.2.6.4.7 – Identify any facilities and operations that would reasonably be expected to discharge contaminated runoff, and develop, implement, and document the appropriate BMPs to protect water quality from discharges from these sites.</p>		<p>Targeted Pollutants or Hazards: Salts</p>	
<ol style="list-style-type: none"> 1. Purpose/Description: Apply Ice Melt to make sidewalks safe from slips and falls. 2. Public Works Procedures: <ol style="list-style-type: none"> A. Remove snow from sidewalk and walking paths with snow shovels, snow blowers/throwers and Rhino ATV. B. Inspect for ice. C. Where ice is present, apply a thin layer of ice melt according to the manufacturer’s recommendations as noted on the product label. D. Keep ice melt stored in designated areas inside or under cover. E. Only apply the minimum amount of Ice Melt necessary to melt ice. F. As the weather permits, sweep any excess Ice Melt up and return to storage for re-use. G. Keep all equipment in designated covered storage area. 3. Crew Members Involved: Public Works Personnel 3rd party personnel 4. Equipment (If applicable): Snow Shovels Snow Blower/Thrower Ice Melt Applicators Rhino ATV PPE 5. Equipment Cleanup Procedures: 			

6. Forms and Documentation:

N/A

Spill Response Escalation Procedure

	Standard Operating Procedure Department of Public Works Activity: Spill Response Escalation Procedure	SOP Number:	Issue Date: 12/29/2017
Approved By: <u>Mike Mirabella, Danny Martinez, Matthew Shipp,</u> <u>Ryan Gardner</u> Department Manager or Director			
Permit Requirement Summary: Establish a spill response escalation procedure to ensure spills are cleaned up and disposed of properly.	Targeted Pollutants or Hazards: Non-stormwater spills		
<p>1. Purpose/Description: To ensure the proper procedures are followed to notify the proper personnel in the event of a spill.</p> <p>2. Public Works Procedures:</p> <ul style="list-style-type: none">A. Person in field identifies a spill has occurred.B. Person tries to contain the spill to the best of their ability and stop the source of the spill if safely possible.C. Person notifies Stormwater Manager & Public Works Superintendent.D. Storm Water Manager and Public Works superintendent coordinate a plan for the safe and proper disposal of the spilled material.E. If material is unknown and/or hazardous, Unified Fire Authority and/or Salt Lake County Health Department is notified to handle spill. <p>3. Crew Members Involved: Public Works Personnel Public Works Stormwater Manager Public Works Superintendent</p> <p>4. Equipment (If applicable): Various</p> <p>5. Equipment Cleanup Procedures: Varies depending on equipment used.</p> <p>6. Forms and Documentation: Storm Drain Incident Report Dry Weather Screening Inspection Report</p>			

Documentation of spill and clean up procedures is kept by the city regardless of who handles spill.

HAZMAT Spill Response Procedures (Unified Fire Authority)

UNIFIED FIRE AUTHORITY Rules, Policies and Procedures		
Volume III <i>Related Information</i>	Chapter 1 <i>Salt Lake Valley Fire Alliance Field Operations Guide (F.O.G.) 2006</i>	Section 13 <i>Haz-Mat Release/ Leak/Spill</i>

Haz-Mat Release/Leak/Spill:

Generally, large leaks involve a spill from a large package or multiple spills from many small packages

- **Scene safety:**
 - **Initially isolate** spill or leak for at least 330 feet in all directions, unless
 - Involving a FIRE, Isolate for ½ mile in all directions. SEE TANKER FIRE FOG.
 - Stay upwind. Keep out of low areas.
 - **Deny entry**
 - **Evacuate:** Send evacuees to a specific place by a specific route.
 - **Shelter in Place:**
 - Direct all people to close windows and doors and
 - Shut down HVAC.
 - Maintain communication with competent person inside the building.
 - Wear PPE / SCBA. Turnouts may not be effective in spill situations.
 - **I.D. the material** - Placard, Labels, Shipping Papers, Container Shapes/Size.
 - Call Emergency Response Telephone Number on Shipping Papers.
 - **Consult Emergency Response Guidebook**
 - **Evacuate:** Send evacuees to a specific place by a specific route.
 - **Shelter in Place:**
 - Direct all people to close windows and doors and
 - Shut down HVAC.
 - Maintain communication with competent person inside the building.
 - **Health:** Consider health risks and contact health department.
 - **Spill or Leak:** Use water spray or foam to reduce vapors or divert vapor cloud drift.
- **LOCATE WATER SUPPLY**
- **Prevent runoff:**
 - Predict product flow pathway and destination.
 - Stop product from entering waterways.
 - Dike far ahead of liquid spill, if possible.